

2014

Kinesiology and Exercise Sciences Abstracts

10th Annual International
Conference on Kinesiology and
Exercise Sciences, 4-7 August
2014, Athens, Greece
Edited by Gregory T. Papanikos

THE ATHENS INSTITUTE FOR EDUCATION AND RESEARCH



Kinesiology and Exercise
Sciences Abstracts

10th Annual International
Conference on Kinesiology
and Exercise Sciences, 4-7
August 2014, Athens, Greece
Edited by Gregory T. Papanikos

First Published in Athens, Greece by the Athens Institute for Education and Research.

ISBN: 978-618-5065-69-0

All rights reserved. No part of this publication may be reproduced, stored, retrieved system, or transmitted, in any form or by any means, without the written permission of the publisher, nor be otherwise circulated in any form of binding or cover.

8 Valaoritou Street
Kolonaki, 10671 Athens, Greece
www.atiner.gr

©Copyright 2014 by the Athens Institute for Education and Research. The individual essays remain the intellectual properties of the contributors.

TABLE OF CONTENTS

(In Alphabetical Order by Author's Family name)

	Preface	7
	Conference Program	9
1	The Consistency of Knee Kinematic and Kinetic Variables Collected During Single Leg Squat (SIs) and Single Leg Landing (SII) Manoeuvres <i>Saud Alarifi, Herrington, L, C. & Jones, R, K.</i>	13
2	Effects of Plyometric Exercises on Trunk and Hip Muscles in Premenopausal Women <i>Kubra Alpay, Safinaz Albayrak Yildiz & Turker Sahinkaya</i>	15
3	A Comparison of American And Turkish College Students' Physical Activity Level <i>Ramiz Arabaci, Leonardo Acquisto, Olivia Florence & Timothy Burnham</i>	16
4	Self-Defense Basics for Beginners <i>Theresa Bakke-Wenzel</i>	17
5	The Prognostic Value of Nonlinear Analysis of Stepping Movements for Walking Attainment in Preterm and Full-Term Infants <i>Yin-Ju Chen, Fang-Ting Tsai & Hong-Ji Luo</i>	18
6	The Development of Physical Education as a Subject in the School Curricula <i>Maria Rosaria D' Acierno</i>	19
7	The Effects of Pronated and Supinated Foot Postures on Quadriceps Angle <i>Hilal Denizoglu Kulli & Ipek Yeldan</i>	21
8	Effect of Competitive Marathon Running on the Upper Respiratory Tract Infection Status and Lung Function (FEV1) of Professional and Recreational Runners <i>Krishnamurthy Dommalapati</i>	22
9	The Prevalence of Acute Netball Musculoskeletal Injury among Female Adolescent Kwa Zulu Natal Players <i>Terry Ellapen</i>	23
10	The Association between Single Leg Hop Distances and Various Tests of Force Production <i>Hussain Ghulam, Lee Herrington, Paul Comfort & Richard Jones</i>	24
11	The Effects of Caffeinated Chewing Gum on Sprint Performance <i>Theocharis Ispoglou & Daniel Gardiner</i>	26
12	"Panoptic Differential Training: Bio-Dynamics Approach for Sprint Time Trial Cycling Performance" - A Critical Perspective <i>Rajasekhar Kali Venkata</i>	27
13	The Popes on Sport <i>Raymond Kardas</i>	29
14	Status of Upper Respiratory Tract Infection and Lung Function Due to Acute Half Marathon Running among Male Recreational Runners <i>Samson Mallavarapu</i>	30

15	Exercise in Cancer Prevention and Survivorship. <i>Anne McTiernan</i>	31
16	Sacroiliac Joint Dysfunction as a Cause of Scoliosis <i>Zoran Sarcevic</i>	32
17	Accuracy of Three Commercially Available Pedometers when Used on Various Walking Terrains <i>Kimberly Smith</i>	33
18	Effect of Foot Orthosis and Physical Therapy on Standing Balance and Mobility in Children with Hypotonia <i>Fang-Ting Tsai, Wei-Yi Tsu, Yin-Ju Chen, Shwon-Jen Lee & Hong-Ji Luo</i>	34
19	The Attitudes of Middle School Students and Their Parents toward Physical Education <i>Lindy Valdez</i>	35
20	Special Breathing Exercises in Persons with SCL and Evaluation of their Effectiveness by using X-ray of Lungs and Other Tests <i>Artem Vetkasov</i>	36
21	The Influence of Cardiovascular Fitness on the Relationship between Genotype and Neurocognitive Function during Executive Challenge in Adolescence <i>Minjung Woo & Eunjin Kwon</i>	37
22	Effects of Two Endurance Training Protocols with Different Exercise and Recovery Intervals on CaMKII, PGC-1α, NRFs and mtTFA Proteins in the Mitochondrial Biogenesis Signalling Pathway in Rat Skeletal Muscle <i>Shi Zhou, Jiwen Qiu, Liping Huang, Gaiqing Yang & Allan Davie</i>	38

Preface

This abstract book includes all the summaries of the papers presented at 10th Annual International Conference on Kinesiology and Exercise Sciences, 4-7 August 2014, Athens, Greece, organized by the Health Research Unit of the Athens Institute for Education and Research. In total there were 22 papers, coming from 12 different countries (Australia, Canada, Czech Republic, India, Italy, Serbia, South Africa, South Korea, Taiwan, Turkey, UK and USA). The conference was organized into 7 sessions that included areas of applied and integrated health sciences, including physiology, health psychology, health promotion, epidemiology, biomechanics, sports medicine, training methods, nutrition, and physical education and other related fields. As it is the publication policy of the Institute, the papers presented in this conference will be considered for publication in one of the books of ATINER.

The Institute was established in 1995 as an independent academic organization with the mission to become a forum where academics and researchers from all over the world could meet in Athens and exchange ideas on their research and consider the future developments of their fields of study. Our mission is to make ATHENS a place where academics and researchers from all over the world meet to discuss the developments of their discipline and present their work. To serve this purpose, conferences are organized along the lines of well established and well defined scientific disciplines. In addition, interdisciplinary conferences are also organized because they serve the mission statement of the Institute. Since 1995, ATINER has organized more than 150 international conferences and has published over 100 books. Academically, the Institute is organized into four research divisions and nineteen research units. Each research unit organizes at least one annual conference and undertakes various small and large research projects.

I would like to thank all the participants, the members of the organizing and academic committee and most importantly the administration staff of ATINER for putting this conference together.

Gregory T. Papanikos
President

Athens Institute for Education and Research
Human Development Research Division
Research Unit of Sports



C O N F E R E N C E P R O G R A M
(The time for each session includes at least 10 minutes coffee break)

Organizing and Scientific Committee

1. Dr. Gregory T. Papanikos, President, ATINER.
2. Mr. Vagelis Kritikos, President, PASEM.
3. Dr. George Poulos, Vice-President of Research, ATINER & Emeritus Professor, University of South Africa, South Africa.
4. Dr. Nicholas Pappas, Vice-President of Academic Affairs, ATINER & Professor, Sam Houston University, USA.
5. Dr. Panagiotis Petratos, Vice-President of ICT, ATINER & Associate Professor of Computer Information Systems, California State University, Stanislaus, USA.
6. Dr. Chris Sakellariou, Vice-President of Finance, ATINER & Associate Professor, Nanyang Technological University, Singapore.
7. Dr. Panagiota (Nota) Klentrou, Professor and Associate Dean Research and Graduate Studies, Faculty of Applied Health Sciences, Brock University, Canada.
8. Dr. Maria Konstantaki, Senior Lecturer, Buckinghamshire New University, U.K.
9. Mr. Christos Anagnostopoulos, Head, Research Unit of Sports, ATINER & Lecturer, Coventry University, U.K.
10. Dr. Lakhdari Abdelkader, Professor, Institute of Pysical Education and Sports, Algeria.
11. Dr. Andrew Yiannakis, Professor, University of New Mexico, USA.
12. Dr. Margo Apostolos, Associate Professor, University of Southern California, USA.
13. Mr. Aboussalam Kose, Associate Professor, Erciyes University, Turkey.
14. Dr. Phoebe Constantinou, Assistant Professor, Ithaca College, USA.
15. Dr. Saidia Houari, Director, Institute of Technical Sessions and Physical & Sports Activities, University of Tissemsilt, Algeria.
16. Dr. Rakesh Dubey, Sports Officer, U.C.E. Rajasthan Technical University, India.
17. Dr. Joseph I. Esformes, Lecturer, University of Wales Institute, Cardiff (UWIC), U.K.
18. Dr. Soumendra Saha, Senior Lecturer, Universiti Sains Malaysia, Malaysia.
19. Dr. Srilekha Saha, Senior Lecturer, Universiti Sains Malaysia, Malaysia.
20. Dr. Vassilios Ziakas, Senior Lecturer, Leeds Metropolitan University, UK.
21. Mr. Nadim Nassif, Instructor, Notre-Dame University, Lebanon.

Administration

Fani Balaska, Stavroula Kiritsi, Eirini Lentzou, Konstantinos Manolidis, Katerina Maraki, Celia Sakka, Konstantinos Spiropoulos & Ioanna Trafali

C O N F E R E N C E P R O G R A M

(The time for each session includes at least 10 minutes coffee break)

Monday 4 August 2014

08:30-09:00 Registration

09:00-09:30 Welcome and Opening Remarks

- Dr. George Poulos, Vice-President of Research, ATINER & Emeritus Professor, University of South Africa, South Africa.
- Dr. Gregory T. Papanikos, President, ATINER.
- Dr. Maria Konstantaki, Senior Lecturer, Buckinghamshire New University, U.K.

09:30-11:00 Session I: Exercise Training

Chair: Maria Konstantaki, Senior Lecturer, Buckinghamshire New University, U.K.

1. Anne McTiernan, Professor, Fred Hutchinson Cancer Research Center, USA. Exercise in Cancer Prevention and Survivorship.
2. Jiwen Qiu, M.A. Candidate, Tianjin University of Sport, China, Liping Huang, Professor & Head of Department, Department of Health and Exercise Science, Tianjin University of Sport, China, Gaiqing Yang, M.A. Candidate, Tianjin University of Sport, China, Allan Davie, Associate Professor, Southern Cross University, Australia & Shi Zhou, Professor, Southern Cross University, Australia. Effects of Two Endurance Training Protocols with Different Exercise and Recovery Intervals on CaMKII, PGC-1 α , NRFs and mtTFA Proteins in the Mitochondrial Biogenesis Signalling Pathway in Rat Skeletal Muscle.
3. *Maria Rosaria D' Acierno, Associate Professor, University of Napoli Parthenope, Italy. The Development of Physical Education as a Subject in the School Curricula.
4. Minjung Woo, Assistant Professor, University of Ulsan, South Korea & Eunjin Kwon, Middle School Teacher, Kyungpook National University, South Korea. The Influence of Cardiovascular Fitness on the Relationship between Genotype and Neurocognitive Function during Executive Challenge in Adolescence. (Monday 4th of August, morning).

11:00-12:30 Session II: Behavioral and Socio-cultural I

Chair: *Rajasekhar Kali Venkata, Assistant Director, University of Hyderabad, India.

1. Raymond Kardas, Chair & Instructor, Grande Prairie Regional College, Canada. The Popes on Sport.
2. Lindy Valdez, Professor, California State University, USA. The Attitudes of Middle School Students and Their Parents toward Physical Education.

12:30-13:30 Lunch

13:30-15:00 Session III: Biomechanics I

Chair: Raymond Kardas, Chair & Instructor, Grande Prairie Regional College, Canada.

1. Kimberly Smith, Associate Professor, Slippery Rock University of Pennsylvania, USA. Accuracy of Three Commercially Available Pedometers when Used on Various Walking Terrains.
2. Yin-Ju Chen, M.Sc. Student, National Yang-Ming University, Taiwan, Fang-Ting Tsai, M.Sc. Student, National Yang-Ming University, Taiwan & Hong-Ji Luo, Assistant Professor, National Yang-Ming University, Taiwan. The Prognostic Value of Nonlinear Analysis of Stepping Movements for Walking Attainment in Preterm and Full-Term Infants.
3. Saud Alarifi, Ph.D. Student, University of Salford, UK, Herrington, L, C., Ph.D. Student, University of Salford, UK & Jones, R, K., Ph.D. Student, University of Salford, UK. The Consistency of Knee Kinematic and Kinetic Variables Collected During Single Leg Squat (Sl) and Single Leg Landing (Sll) Manoeuvres.

15:00-16:30 Session IV: Respiratory

Chair: Kimberly Smith, Associate Professor, Slippery Rock University of Pennsylvania, USA.

1. Krishnamurthy Dommalapati, Deputy Director, Sri Venkateswara University, India. Effect of Competitive Marathon Running on the Upper Respiratory Tract Infection Status and Lung Function (FEV1) of Professional and Recreational Runners.
2. Artem Vetkasov, Ph.D. Student, Sport Charles University, Czech Republic. Special Breathing Exercises in Persons with SCL and Evaluation of their Effectiveness by using X-ray of Lungs and Other Tests.
3. Samson Mallavarapu, Physical Education Teacher, University of Hyderabad, India. Status of Upper Respiratory Tract Infection and Lung Function Due to Acute Half Marathon Running among Male Recreational Runners.

21:00-23:00 Greek Night and Dinner (Details during registration)

Tuesday 5 August 2014

09:00-10:30 Session V: Exercise and Rehabilitation

Chair: *Theocharis Ispoglou, Lecturer, Leeds Metropolitan University, UK.

1. Terry Ellapen, Lecturer, University of Kwa Zulu Natal, South Africa. The Prevalence of Acute Netball Musculoskeletal Injury among Female Adolescent Kwa Zulu Natal Players.
2. Fang-Ting Tsai, M.Sc. Student, National Yang-Ming University, Taiwan, Wei-Yi Tsu, Physical Therapist, Taichung Veterans General Hospital, Taiwan, Yin-Ju Chen, M.Sc. Student, National Yang-Ming University, Taiwan, Shwn-Jen Lee, Associate Professor, National Yang-Ming University, Taiwan & Hong-Ji Luo, Assistant Professor, National Yang-Ming University, Taiwan. Effect of Foot Orthosis and Physical Therapy on Standing Balance and Mobility in Children with Hypotonia.
3. Kubra Alpay, M.Sc. Student, Bezmialem Vakıf University, Turkey, Safinaz Albayrak Yıldız, Professor, Istanbul University, Turkey & Turker Sahinkaya, M.Sc. Student, Istanbul University, Turkey. Effects of Plyometric Exercises on Trunk and Hip Muscles in Premenopausal Women.
4. Zoran Sarcevic, Sports Medicine Specialist, Serbia. Sacroiliac Joint Dysfunction as a Cause of Scoliosis.

10:30-12:00 Session VI: Applied Sport and Performance

Chair: Terry Ellapen, Lecturer, University of Kwa Zulu Natal, South Africa.

1. *Rajasekhar Kali Venkata, Assistant Director, University of Hyderabad, India. "Panoptic Differential Training: Bio-Dynamics Approach for Sprint Time Trial Cycling Performance" - a Critical Perspective.
2. *Theocharis Ispoglou, Lecturer, Leeds Metropolitan University, UK & Daniel Gardiner, Lecturer, Leeds Metropolitan University, UK. The Effects of Caffeinated Chewing Gum on Sprint Performance.

12:00-13:00 Lunch

13:00-14:30 Session VII: Biomechanics II/ Behavioral and Socio-Cultural II

Chair: Shi Zhou, Professor, Southern Cross University, Australia.

1. Hilal Denizoglu Kulli, Lecturer, Bezmialem Vakif University, Turkey & Ipek Yeldan, Assistant Professor, Istanbul University, Turkey. The Effects of Pronated and Supinated Foot Postures on Quadriceps Angle.
2. Hussain Ghulam, Ph.D. Student, Salford University, UK, Lee Herrington, Senior Lecturer, University of Salford, UK, Paul Comfort, Senior Lecturer, University of Salford, UK & Richard Jones, Senior Lecturer, University of Salford, UK. The Association between Single Leg Hop Distances and Various Tests of Force Production.
3. Theresa Bakke-Wenzel, Instructional Associate Professor, Texas A&M University, USA. Self-Defense Basics for Beginners.
4. Ramiz Arabaci, Associate Professor, Uludag University, Turkey, Leonardo Acquisto, Professor, Central Washington University, USA, Olivia Florence, Graduate Students, Central Washington University, USA & Timothy Burnham, Associate Professor, Central Washington University, USA. A Comparison of American And Turkish College Students' Physical Activity Level.

17:30-20:30 Urban Walk (Details during registration)

21:00-22:00 Dinner (Details during registration)

Wednesday 6 August 2014

Cruise (Details during registration)

Thursday 7 August 2014

Delphi Visit (Details during registration)

Saud Alarifi

Ph.D. Student, University of Salford, UK

Herrington L. C.

Ph.D. Student, University of Salford, UK

&

Jones R. K.

Ph.D. Student, University of Salford, UK

The Consistency of Knee Kinematic and Kinetic Variables Collected During Single Leg Squat (Sls) and Single Leg Landing (Sll) Manoeuvres

Introduction: Abnormal biomechanics during sports activities can lead to increased joint-reaction forces, an increased valgus angle and increased load at the knee. The majority of studies that assess lower-limb biomechanics commonly use 3D motion analysis techniques, which allow clinicians and researchers to quantify all three planes of joint motion during complex tasks. The purpose of this study, however, was to compare the within-day and between-days reliability of discrete kinematic, kinetic variables around the knee joint collected during Single Squat and Single Leg Landing tasks.

Methods: Six uninjured recreational athletes, 4 males and 2 females, took part in three testing sessions. Their mean +/- standard deviation age, height and mass was 29.6 ± 3.5 years, 1.67 ± 9.7 m, 67.5 ± 12.6 kg, respectively. Each participant underwent two sessions on the same day and another session one week later. A twelve-camera motion analysis system (Qualisys, sampled at 240 Hz) and a force platform (AMTI, sampled at 1200 Hz) embedded into the floor, was used to collect kinematic and kinetic data during the support phase. For SLS task, they were required to stand on their right leg. They were asked to squat down as far as possible, to at least 45° knee flexion, for a period of 5 seconds. For the SLL trials, subjects dropped from a 30-cm step, again leaning forward and dropping as vertical as possible.

Results: Tables 1 & 2 shows that between-day ICCs were lower as compared to within-day ICCs. Specifically, 4 of 12 between-day measures fell below an ICC value of 0.75 compared to all within-day measures above 0.75.

Transverse plane ICCs ranged from 0.92 to 0.99, whereas frontal & sagittal planes ranged from 0.33 to 99. GRF data were more reliable within day than between days as compared to kinematic and kinetic data.

Table 1. Mean (SEM) ¹ for Knee Joint Angles (°) & Moments (Nm/kg) & Force (* body weight) Data around the Knee Joint

	SLL		SLS	
	Within-day	Between-days	Within-day	Between-days
Valgus angle	-5.33(2.18)	-3.87(2.03)	-3.89(1.64)	-3.06(1.89)
Valg. Moment	-0.72(0.07)	-0.67(0.07)	-0.33(.04)	-0.36(.07)
Flexion angle	70.49(3.90)	71.46(4.77)	88.43(2.37)	89.66(2.41)
Flex. Moment	2.78(0.15)	2.65(0.30)	1.57(0.09)	1.54(0.18)
Int. Rot. angle	8.14(2.29)	7.04(2.44)	6.88(2.07)	6.39(1.93)
Vertical GRF	2.70(0.12)	2.6(0.11)	3.04(0.19)	3.09(0.18)

(¹) Standard Error of Measurement

Table (2). Within & Between Day ICC² (95% CI) ³ Values for Knee Variables during SLL & SLS

	SLL		SLS	
	Within-day	Between-days	Within-day	Between-days
Knee Valgus angle	0.99 (0.93-0.99)	0.91 (0.36-0.98)	0.97 (0.81-0.99)	0.89 (0.21-0.98)
Knee Valgus Moment	0.89 (0.27-0.98)	0.60(-0.15_0.86)	0.93 (0.56-0.99)	0.61(-0.10_0.86)
Knee Flexion angle	0.94 (0.63-0.99)	0.92 (0.45-0.98)	0.94(0.57-0.99)	0.76 (-0.67-0.96)
Knee. Flex. Moment	0.97 (0.82-0.99)	0.74 (-0.80-0.96)	0.97 (0.84-0.99)	0.33 (-3.74-0.90)
Knee Int. Rot. angle	0.98 (0.86-0.99)	0.92 (0.43-0.98)	0.99 (0.93-0.99)	0.96 (0.71-0.99)
Vertical GRF	0.95(0.86_0.98)	0.90(0.72_0.97)	0.97(0.90_0.99)	0.92(0.78_0.97)

(²) ICC Interclass Correlation Coefficient (3, k) of peak values.

(³) 95% Confidence interval

Discussion & Conclusion: In the first comparison, between-day kinematic and kinetic ICC values were lower than within-day values, which is in agreement with previous studies [1, 2 & 4]. Several factors may contribute to the reduced consistency during repeated measurements, such as errors in marker reapplication, static alignment and tasks difficulty [4]. As expected, GRF data were more consistent than kinematic data, since GRF data are representative of the sum of all the segmental masses and accelerations [3], and less variability will be seen as compared to individual joint kinetic or kinematic patterns. Also, no markers are necessary to collect GRF data and will therefore be more consistent [2]. These kinds of investigations should be performed before undertaking studies which involve repeated measurements of the same participant over time.

Kubra Alpay

M.Sc. Student, Bezmialem Vakıf University, Turkey

Safinaz Albayrak Yıldız

Professor, Istanbul University, Turkey

&

Turker Sahinkaya

M.Sc. Student, Istanbul University, Turkey

Effects of Plyometric Exercises on Trunk and Hip Muscles in Premenopausal Women

Objective: Plyometric exercises have positive effects on muscle strength, proprioception and bone mineral density. Its effects on trunk muscles strength have not been determined clearly in premenopausal women. In this study; therefore, we aimed to examine the effects of plyometric exercises on trunk and hip muscles in premenopausal women.

Methods: Eighteen healthy and sedentary premenopausal women (age $47,2 \pm 3,5$ years) were included in this study. All participants were divided into two groups: Exercise Group (n=10) and Control Group (n=8). Isokinetic dynamometer was used in both groups for testing muscle strength of trunk flexors and extensors, hip abductors and adductors at baseline and after 6 weeks. Exercise Group women trained in plyometric exercises 3 days a week, for 6 weeks. Data of both groups before and after the programme were analyzed using SPSS version 16.0

Results: In the Exercise Group, parameters of trunk and hip muscle strength after the programme were significantly increased ($p < 0.05$). Trunk extensor and hip abductor strength peak torque improvements were $23,2 \pm 17,2$ Nm (26,8%) and $8 \pm 9,5$ Nm (14,6%). In the Control Group there was no difference in muscle strengths.

Conclusion: Plyometric exercises might be used to increase trunk and hip muscles strength in the exercise programmes of premenopausal women.

This study was presented as a poster at XI Turkish National Congress of Sports Medicine (6-9 December 2007 and Susesi Hotel Antalya)

Ramiz Arabaci

Associate Professor, Uludag University, Turkey

Leonardo Acquisto

Professor, Central Washington University, USA

Timothy Burnham

Associate Professor, Central Washington University, USA

Olivia Florence

Graduate Students, Central Washington University, USA

A Comparison of American and Turkish College Students' Physical Activity Level

Many studies have highlighted the benefits of physical activity (PA). The protective role of PA on cardiovascular diseases, obesity, hypertension, diabetes, osteoporosis, mental diseases and certain types of cancer is widely accepted. There are a few studies assessed cultural differences in PA and variables related to general health status and behaviors. Therefore the aim of present study was to compare physical activity level, and some health status and behavior parameters between American and Turkish college age students. In total, 1044 American and 1371 Turkish college age students were recruited and interviewed for information on physical activity level, sitting time, and lifetime physical activity exposure using the International Physical Activity Questionnaire (IPAQ) - short form. At the same time, a self-administered 14-item semi-structured questionnaire was used to obtain health-related (physical fitness, stress, physical fitness, smoke cigarettes, drink alcohol, perceive body weight and participate in sport) and descriptive (age, body weight, height, department and class) information from participants. American and Turkish female college students state 3925.4 ± 2569.9 MET-min/week and 3356.6 ± 2471.4 MET-min/week PA, 30.4% and 66% never drink alcohol, 94.3% and 84.1% no smoke cigarette, 75.3% and 69.5% perceive good or very health related physical fitness, 55.7% and 44.7 moderate stress, 67.6.% and 72.4% perceive about right body weight, 43.5% and 33.5% participate sport, respectively. American and Turkish male college students state 4933.3 ± 3065.6 MET-min/week and 4457.1 ± 3008.1 MET-min/week PA, 22.2% and 55.2% never drink alcohol, 92% and 71.2% no smoke cigarette, 81.8% and 72.8% health related physical fitness, 41.5% and 39 moderate stress, 69.6.% and 64.5% perceive about right body weight, 62.7% and 62.67% participate sport, respectively. In conclusion, American and Turkish college students are physically active but physical activity level of male students is higher than female students.

Theresa Bakke-Wenzel

Instructional Associate Professor, Texas A&M University, USA

Self-Defense Basics for Beginners

1. Know your ABC's (of Self Defense)
2. The Nuts and Bolts of Awareness?
3. What is Successful Self Defense? Knowing the difference between the ability to defend your-self and the ability to fight.

The ABC's of Self Defense are very basic concepts that anyone can use to feel confident and avoid potentially dangerous situations. Examples and scenarios of each will be covered:

- A. Avoidance
- B. Breathe And Be Calm
- C. Communicate With Confidence
- D. Do Not Anticipate
- E. Environment: Use It To Your Advantage
- F. Fire Is Heard Before Help
- G. Get Away

The Nuts and Bolts of Awareness. What is Awareness?

- * Knowing what to look for and taking the time to notice safety related aspects of what is happening around you.
- * The ability to read people and situations and anticipate the probability of violence before it happens.
- * Awareness is not about being fearful or paranoid.
- * It is a relaxed state of alertness that one can incorporate into their character.

What is Successful Self Defense?

1. Avoidance if possible
2. If you cannot avoid the fight, try to defuse it
3. If you cannot defuse it, try to escape
4. If you cannot escape you MUST fight
5. If the attack is violent the response needs to be violent.

So we are in the fight, what do we do? What works the best?

- * Simple basic gross motor skills work the best as adrenaline inhibits fine motor control.
- * Basic techniques using one's own natural defenses!
- * Know the most vulnerable areas to attack!

Yin-Ju Chen

M.Sc. Student, National Yang-Ming University, Taiwan

Fang-Ting Tsai

M.Sc. Student, National Yang-Ming University, Taiwan

Hong-Ji Luo

Assistant Professor, National Yang-Ming University, Taiwan

The Prognostic Value of Nonlinear Analysis of Stepping Movements for Walking Attainment in Preterm and Full-Term Infants

Preterm infants are at risk for motor impairments related to movement complexity. We aimed to explore the associations between complexity of stepping movements and age of walking attainment in preterm and full-term infants. Twenty-eight preterm and 19 full-term infants (GA=29±4 vs. 39±1 weeks; BW=1.2±0.6 vs. 3.3±0.5 kg) were examined for supported stepping on a treadmill (0.2 m/s) at 7 and 9 months and age of walking attainment (independent walking ≥ 5 consecutive steps). Three dimensional stepping movements were collected using 2 synchronized 60-Hz video cameras and were analyzed using the Peak Performance Motion Analysis System. Complexity of stepping movements was calculated using approximate entropy (ApEn), a nonlinear approach. The associations between ApEn of step variables and walking outcome were examined using linear regression and Cox's proportional hazard regression. Of all infants, 14 attained walking ≤ 11 months (early walkers), 28 attained walking 11 to 15 months (normal walkers), and 4 attained walking > 15 months (late walkers). No significant difference was found for all ApEn of stepping variables across group and over time except early walkers exhibited a lower 9-month ApEn of ankle dorsiflexion/plantarflexion movement than normal walkers ($p=.018$). However, from 7 to 9 months, early walkers tended to lower complexity of stepping movements but normal and late walkers tended to increase complexity of stepping movements. Furthermore, both linear regression and Cox's proportional hazards regression analysis indicated that a higher 9-month ApEn of ankle dorsiflexion/plantarflexion movement was significantly associated with an older age of walking attainment (both $p<.008$). The findings suggested that infants exhibited a less organized ankle dorsiflexion/plantarflexion movement at 9 months was at risk for late attainment of independent walking. The use of nonlinear analysis in the assessment of infants' movements may assist in early detection of deviated movement organizations related to complexity.

Maria Rosaria D' Acierno

Associate Professor, University of Napoli Parthenope, Italy

The Development of Physical Education as a Subject in the School Curricula

This research has been developed after various years (three years) of extemporal observation about how teachers consider the subject of Physical Education within the school curricula. The observation has been developed specifically in the Italian Scuola Media. The pupils (aged 11 to 13) face an important period of their growth from both the physiological and the psychological side. Thus, it seems necessary to stimulate them by stressing the importance of physical education combined with different areas. During my research, the teachers of this school were very cooperative, even organizing, during the school year, theoretical seminars in which I had the chance to explain to pupils and parents the main aims of physical exercises, but above all to link gymnastics to the other subjects of the school curriculum. This Meta analysis wants to evaluate my results by combining and contrasting them with other studies referring to the importance of movements for everybody, but in particular for teenagers. In our society, nowadays, PE is growing in importance, so, it seems necessary to focus on this subject also within the school curriculum.

I personally attest that PE, even though is still considered a 'Cinderella' compared to languages, mathematics, science, etc., is gaining considerable steps also because it is supported by different social organizations which point on the value of physical exercises from different sides. In fact, physical exercises is of great help for improving the growth of the body as well as the mind and the behaviour, too. In our Western world, food is even too much for each of us, so, many children are obese or might easily develop obesity if parents do not stimulate them to movement and associate to it a right knowledge about food and its nutritional value. If viewed from this point, physical education is no more an isolated subject but it is linked to other subjects on both humanistic and scientific sides. Apart from Olympic games, which introduce every year new kinds of sports, thus, stimulating young people to practice a large variety of exercises, also private and governmental institutions co-ordinate sporting events basing their organization on a variety of topics which go from socializing, to intercultural communication, to favouring help among people, but most importantly to spread the knowledge about the development of our body and how to maintain it in a good shape as well as in a psychological harmony with ourselves and the others. In fact, as long as

physical activity decreases obesity and its attendant illnesses increases. Our life style (eating 'junk food' watching TV, listening to CD, playing video games and so on) induces to a lazy life, thus increasing heart attacks, hypertension and drug abuse. Viewed under these premises Physical Education should be inter-related to other subjects - Biology, Physics, Medicine, Nutrition, etc. A lot has been done but I hope Physical Education will achieve such a high level to compete on equal terms with all the subjects students are supposed to study during their school carrier.

Hilal Denizoglu Kulli

Lecturer, Bezmialem Vakıf University, Turkey

&

Ipek Yeldan

Assistant Professor, Istanbul University, Turkey

The Effects of Pronated and Supinated Foot Postures on Quadriceps Angle

Objective: The aim of this study was to determine whether pronated and supinated foot types influence measurement of Quadriceps (Q) angle.

Methods: The foot type of right dominant healthy individuals (34 female, 34 male) was assessed to determine pronated foot and supinated foot. After evaluation, participants (N=68) were divided equally to two groups depending on foot type as defined by calcaneal tendon position; inward (pronated group) or outward (supinated group). Assessment was performed for right sides while the participants were in the erect, weight-bearing position. Q angle, formed by a line drawn from the ASIS to central patella and a second line drawn from central patella to tibial tubercle, was measured with using manual goniometer while participants are standing position. Statistical analysis was performed using the SPSS version 16.0. Independent samples t test was used for statistical analysis. A p value <0.05 was considered significant.

Results: The mean ages in pronator group and supinator group were 21.70 ± 1.89 and 20.94 ± 1.27 years; the mean Q angle in both groups were 14.42 ± 2.95 , 12.33 ± 4.38 ; respectively. The difference in groups related to Q angle was significant ($p=0.02$).

Conclusion: Our study demonstrated that increased Q angle was seen in pronated foot posture more than supinated foot posture. Measurement of Q angle should be included in routine assessment to determine the effects of different foot types on lower extremity biomechanics for preventing injuries and therapeutic programs.

Krishnamurthy Dommalapati
Deputy Director, Sri Venkateswara University, India

Effect of Competitive Marathon Running on the Upper Respiratory Tract Infection Status and Lung Function (FEV₁) of Professional and Recreational Runners

Exercise immunology studies are providing increasing evidence about the effect of high intensity extended aerobic activity on the mucosal immunity and respiratory tract infection status and loss of lung function. This study investigated the effect of competitive marathon running on the Upper Respiratory Tract Infection status and consequent loss of lung function taking FEV₁ among the professional and recreational runners. Methodology: Thirty volunteer professional men runners and thirty recreational men runners who participated in different marathon competitions were included. Their URTI status was measured through Wisconsin Upper Respiratory Symptom Survey (WURSS-21) and FEV₁ through the digital spirometer, once before the event day and four times after the event once in each day. Results and discussion: Analysis of Variance (<0.05) indicated that for both URTI status and FEV₁ values, there was significant difference both among professional runners and recreational runners. Mean and Tukey Post Hoc analysis indicated professional runners experienced significant increase in URTI on the third day (53.8 compared to 17.533) after marathon, whereas the recreational runners experienced significant increase in their URTI on the second (71.066) and third (84.33) days after the marathon running. FEV₁ decrements for professional runners was constant on every day, the maximum was on the fourth day with 84.76, whereas in recreational runners the FEV₁ decrements were also constant and lowest FEV₁ recorded was on the fourth day (77.27). The results also indicated that the FEV₁ value difference between the third and fourth day for professional runners was not significant and this indicates the professional runners started recovering on the fourth day, whereas this is not observed for the recreational runners indicating their recovery is late. Conclusions: Both professional and recreational runners would get affected on competitive marathon running on their URTI and also experience loss in lung function (FEV₁), though the professional runners would tend to recover earlier when compared to the recreational runners from the URTI and loss of lung function.

Terry Ellapen

Lecturer, University of Kwa Zulu Natal, South Africa

The Prevalence of Acute Netball Musculoskeletal Injury among Female Adolescent Kwa Zulu Natal Players

Background: While the most vulnerable anatomical sites of injury and the extrinsic predisposing mechanism of injury have been investigated, the intrinsic risk factors of quadriceps angles and navicular foot height to musculoskeletal injury have not been investigated among netball players.

Aim: To profile the prevalence of acute netball musculoskeletal injury among female adolescent Kwa Zulu Natal players over a 12 month period (November-October 2012).

Methods: Data were collected from 413 high school players who belonged to the KZN Netball School league via voluntary parental informed consent. Players completed a self-report musculoskeletal questionnaire probing the nature of acute musculoskeletal injuries. The respective relationships among the intrinsic factors (players' quadriceps angle and navicular foot heights) to knee and ankle injuries were investigated. Probability was set at $p \leq 0.05$.

Results: Two hundred and fifty-eight players sustained acute musculoskeletal injuries with the knee (31%) and ankle (23.7%) being most prevalent ($p < 0.001$). The mechanisms producing the musculoskeletal injuries were physical trauma (43.1%), poor landing (39.3%) and rapid, rotational movement (17.4%) ($p < 0.05$). The injured cohort played netball for a longer period ($p < 0.05$).

Conclusion: Netball players experience a high prevalence of acute musculoskeletal knee and ankle injuries, highlighting the need for greater awareness of the causes of injuries and the need to engaging in rehabilitative and preventative exercises. Identification of the intrinsic risk factors will enhance the efficacy of the rehabilitative and preventive exercises.

Hussain Ghulam

Ph.D. Student, Salford University, UK

Lee Herrington

Senior Lecturer, University of Salford, UK

Paul Comfort

Senior Lecturer, University of Salford, UK

&

Richard Jones

Senior Lecturer, University of Salford, UK

The Association between Single Leg Hop Distances and Various Tests of Force Production

Background: Hop tests are mostly seen as physical performance measures of athletic function. These tests may also be used for monitoring progress so as to be able to specify a return to sport or normal activity in persons recovering from a sport injury or surgical intervention. These different tests mix multiple elements together when testing conditions such as joint stability, muscle strength and neuromuscular coordination, which might be affected after any injury. Muscular power has been considered as one of the essential elements of dynamic athletic performance, especially in sporting occasions that involve high force generation in a short period of time (Newton and Kraemer, 1994). Therefore, the aim of this study is to investigate the association between different force tests using Ballistic Measurement System and horizontal hop for distance in healthy subjects.

Design: A correlation study.

Setting: Undertaken in the Human Performance Laboratory at the University of Salford.

Participants: 20 recreational athletes, 11 males and 9 females, were recruited (age 33.65 ± 3.47 years; height 170.9 ± 5.87 cm; and mass 81.05 ± 15.93 kg).

Interventions: Two different tests have been taken on both legs individually:

1- Hop for distance test.

2- Force tests: there are four different tests under this test which are: squat jump(SJ), countermovement jump(CMJ), ten jumps, and isometric mid-thigh pull.

Main Outcome Measurements:

1- Hop test: maximum distance when undertaking single hop for distance.

2- Force tests: six variables for SJ, CMJ, and ten jumps which are: maximum rate of force development (RFD), peak force, peak power,

peak velocity, time to peak force, and time to peak power. While six different variables for isometric pull which are: RFD, peak force, impulse 0-100ms, impulse 0-200ms, impulse 0-250ms, and impulse 0-300ms.

Results:

Test	Hop Rt Leg <i>r value (P value)</i>	Hop Lt Leg <i>r value (P value)</i>
SJ (Max RFD)	-.208 (.378)	-.184 (.439)
SJ (Peak Force)	-.509 (.022)	-.471 (.036)
SJ (Peak Power)	-.019 (.936)	-.020 (.934)
SJ (Peak Velocity)	.025 (.917)	.017 (.945)
SJ (Time to Peak Force)	.137 (.566)	.453 (.045)
SJ (Time to Peak Power)	.175 (.459)	.346 (.135)
CMJ (Max RFD)	.143 (.547)	.345 (.136)
CMJ (Peak Force)	-.412 (.071)	-.409 (.073)
CMJ (Peak Power)	.039 (.872)	-.018 (.940)
CMJ (Peak Velocity)	.076 (.751)	.008 (.973)
CMJ (Time to Peak Force)	.097 (.684)	-.112 (.639)
CMJ (Time to Peak Power)	.075 (.755)	-.175 (.459)
10 Jumps (Max RFD)	-.124 (.604)	.123 (.607)
10 Jumps (Peak Force)	-.434 (.056)	-.321 (.168)
10 Jumps (Peak Power)	-.019 (.936)	.010 (.968)
10 Jumps (Peak Velocity)	.008 (.975)	.059 (.804)
10 Jumps (Time to Peak Force)	.227 (.335)	-.086 (.718)
10 Jumps (Time to Peak Power)	.627 (.003)	.636 (.003)
Iso Pull (Max RFD)	.173 (.465)	.117 (.623)
Iso Pull (Peak Force)	-.226 (.339)	-.162 (.494)
Iso Pull (Impulse 0-100)	-.536 (.015)	-.577 (.008)
Iso Pull (Impulse 0-200)	-.541 (.014)	-.596 (.006)
Iso Pull (Impulse 0-250)	-.548 (.012)	-.602 (.005)
Iso Pull (Impulse 0-300)	-.557 (.011)	-.604 (.005)

SJ: Squat Jump CMJ: Countermovement Jump Iso Pull: Isometric Mid-Thigh Pull

Conclusion: Certain force production tests show moderate significant correlations to the distance hopped whilst others fail to show any association.

Theocharis Ispoglou

Lecturer, Leeds Metropolitan University, UK

&

Daniel Gardiner

Lecturer, Leeds Metropolitan University, UK

The Effects of Caffeinated Chewing Gum on Sprint Performance

Background: Potential mechanisms responsible for the ergogenic potential of Caffeine are its actions on the central nervous system (CNS) and adrenaline. Oral ingestion of caffeine 1-1½ h before exercise is a widely used ergogenic practice, however there is limited research on the effects of caffeinated chewing gum on exercise performance Aim: To investigate the acute effects of caffeinated chewing gum on sprint performance. Methods: Ten experienced track and field male athletes, aged 22.4(±2.6) years old [height 184.3(±6.9) cm, body mass 84.8(±11.5) kg], participated in this study. Following ethical approval, the participants signed a consent form and took part in a screening and a familiarisation session before they completed two trials (3x40m sprints with 4min recovery between runs) a week apart. A double-blind randomized crossover design was adopted where participants chewed for 5 min a caffeinated gum (6 mg/kg-1/BW, Stay Alert Mint flavour) or a placebo (Trident Splash Sugar-free Mint flavour) 15 min before the start of the exercise trials. Blood lactate and glucose concentration, heart rate, ratings of perceived exertion, arousal and feeling levels were recorded before and immediately after each run and 5 min after the last run. Results: Mean time to complete sprints 1, 2, and 3 were 5.05(±0.25), 5.00(±0.26), 5.03(±0.23) and 5.11(±0.25), 5.07(±0.25), 5.06(±0.25) seconds for the caffeine and placebo conditions respectively. Participants run faster in all sprints during the caffeine condition with sprint two being significantly faster than the placebo (p=0.024). In addition, blood glucose and arousal levels were significantly higher during the caffeine trial (p=0.015 and p=0.034 respectively). No other significant differences were observed between conditions. Conclusions: Our data suggests that caffeinated chewing gum can improve sprint performance when consumed approximately 15 min before exercise and this ergogenic effect is probably due to the stimulatory effect of caffeine on the CNS and release of adrenaline.

Rajasekhar Kali Venkata

Assistant Director, University of Hyderabad, India

“Panoptic Differential Training: Bio-Dynamics Approach for Sprint Time Trial Cycling Performance” - a Critical Perspective

Background: Intensity of the exercise mostly determines the dominant metabolic pathway for energy. In sprint cycling like 1km time trial, the dominant metabolic pathway must be ATP hydrolysis and glycolysis. Phosphocreatine (PCr) hydrolysis and Anaerobic Glycolysis lead to lactate and H⁺ accumulation in sarcolemmal cytosol, interfering the muscle contraction leading to fatigue and reduction in power output. To resist fatigue and to continue the high power output throughout the cycling sprint, the lactate flux is an essential phenomenon apart from the regeneration of the ATP. The appearance of H⁺ and lactate is simultaneous with high intensity exercise, hence the co transport of lactate-H⁺ is essential and the training should target both the systems to resist fatigue and sustain the cycling sprint power output at maximum throughout the time trial. Biodynamic Implications: Resting ATP and PCr stores of muscle seems very less responsive to training and hence strengthening lactate transfer and oxidation appear better alternative along with more concentration on early oxidative phosphorylation. Monocarboxylate Transporter (MCT) isoforms like MCT1 and MCT4 expression should be increased to increase the lactate transport. Load of pH gradient along with lactate flux to be targeted during the training. MCTs also facilitate the H⁺ efflux and prevent the decrements in intracellular pH. Training Implications: High intensity training has significant influence on the status of both MCT1 and MCT4 ranging from 18% to 120%, though inter individual differences been observed. Slow endurance training, like sub maximal sprint repetitions increases MCT1 and MCT4 expression leading to lactate uptake and oxidation. With the increase in sustained sprints without much lactate accumulation during the initial seconds improves oxidative enzymal expression significantly. Acute high intensity sprint form of exercise could reduce the MCT1 expression considerably wherein high expression of H⁺ is seen in the myocytes. . Recommendation: very high intensity sprint cycling in repetitions of high intensity need to be reduced to minimum to avoid excess accumulation of H⁺. Instead differential training like repetitions of sub maximal runs with initial forty seconds of high intensity sprint cycling followed by sub maximal sprinting for another thirty or forty

seconds. Supra maximal sprint cycling of sixty seconds to seventy seconds may be done once in a week with complete recovery in between for two to three times. The training protocol need to be structured in more vivid form keeping in view of the bio dynamics of the sprint cycling instead of simple interval training.

Raymond Kardas

Chair & Instructor, Grande Prairie Regional College, Canada

The Popes on Sport

The socio-cultural reality of sport exerts a tremendous influence in the modern world. Sport is subject to a great deal of investigation and analysis by various segments of society. The paper examines the teaching of the Popes on sport against the background of the modern age. In order to effectively analyze and evaluate the Papal reflections on sport the First Part of the presentation examines the critical literature and writings of respected sources that reveal the characteristics of a conservative, liberal, and radical approach to sport. After establishing the significance of the ideological typology for the Papal statements on sport, the Second Part of the presentation offers a brief review of the history of sport in Western Civilization. The Presentation argues that sport in the twentieth and twenty-first centuries is a social phenomenon *sui generis*, distinct from previous forms of sport while additionally reflecting the character of modernity. Therefore sport deserves new evaluative reflection.

The papal dialogue with sport began with a meeting between Pius X and Baron Pierre de Coubertin, the acknowledged “founder” of the modern Olympic Games. Relying on the interpretive concepts derived in the first two parts of the Paper, Part Three of the Presentation examines the papal teaching on sport since this meeting in 1905 to the present. The various addresses, pronouncements, and audiences with sport officials and athletes on sport from Pius X to Frances I demonstrate an evolution of papal reflections on sport from a rather cautious and conservative approval to a more affirmative and liberal approval. Even so, the final approbation of modern sport is accompanied by an ethical and religious critique that is a unique contribution to the analysis of modern sport. Coupled to this religious critique the Paper argues that the critical perspective of the Popes concerning sport shares many insights with the radical secular critics of mass culture.

Samson Mallavarapu

Physical Education Teacher, University of Hyderabad, India

Status of Upper Respiratory Tract Infection and Lung Function Due to Acute Half Marathon Running among Male Recreational Runners

Background: High intensity long duration aerobic exercise can cause suppression of mucosal immunity factors leading to Upper Respiratory Tract Infections (URTIs). This could cause obstruction in the lungs leading to loss of lung function. This study examined the effect of acute half marathon running on the status of URTI and Forced Expiratory Volume of first second (FEV1) among the recreational runners, who ran their first ever half marathon. Methods: Seventy five first time recreational half marathoners in four age groups were analysed on their URTI and FEV1. Wisconsin Upper Respiratory Symptom Survey (WURSS-21) score was used to analyse the URTI and Digital spirometer was used to record the FEV1. Fifteen volunteers for each age group were analysed and results compared. Age groups studied were 20-25yrs, 25-30, 30-35 and 35 above. Pre run and post run URTI and FEV1 were analysed with Analysis of Covariance (ANCOVA). Highest scores of the URTI and FEV1 within the first seven days of post run were included. Results: Covariance analysis ($P<.05$) indicated, for both URTI and FEV1 the four groups showed significant difference among themselves on their post run status. Adjusted post run URTI means were 71.93(20-25 yrs), 59.65(25-30), 83.67(30-35) and 86.12(35 above). Tukey HSD post hoc comparison indicated that 35+ group experienced significant increases ($P<.05$) in their URTI symptoms, though the 30-35 group also experienced considerable increase in URTI symptoms. Adjusted post run FEV1 were 80.16, 82.28, 78.17 and 76.84 for the four groups and the Tukey post hoc analysis ($P<.05$) indicated that there were significant decrements in the FEV1 of both 30-35 and 35+ groups. Conclusions: Recreational runners of plus 35 years are vulnerable group with respect to the upper respiratory tract infections and loss of lung function considerably due to acute half marathon running.

Anne McTiernan

Professor, Fred Hutchinson Cancer Research Center, USA

Exercise in Cancer Prevention and Survivorship

The International Agency for Research on Cancer estimates that 25% of cancer cases are due to overweight/obesity and a sedentary lifestyle. These lifestyle patterns may increase cancer risk by several mechanisms including increased estrogens and testosterone, hyperinsulinemia and insulin resistance, increased inflammation, and depressed immune function. Many of these mechanisms relate also to cancer progression and survival.

Several randomized clinical trials have shown that physical activity and diet interventions can change biomarkers of cancer risk. In a randomized controlled trial in 173 women, we have found decreases in serum estrogen, testosterone, and insulin in overweight, sedentary postmenopausal women with a 1-year exercise program consisting of moderate-intensity aerobic exercise, 45 minutes/day, 5 days/week. We found stronger reductions in these biomarkers in another 1-year trial in 438 women in which we added a dietary weight loss program to the exercise intervention. In a controlled trial in 202 mid-aged to older men and women, we found that a 1-year exercise intervention of 60 minutes/day, 6 days/week reduced colon crypt cell proliferation in men who adhered closely to the program. We and others have shown reductions in hyperinsulinemia with exercise in overweight/obese adults, and large reductions in inflammation-related biomarkers with a 1-year combined dietary weight loss and exercise program.

In the Women's Health Initiative and HEAL cohorts, we showed that women who are physically active have significantly reduced risk of developing breast cancer, and improved survival if they do develop breast cancer.

The worldwide trends to increasing overweight and obesity and decreased physical activity may lead to an increasing incidence of several cancers unless other means of risk reduction counteract these effects. Thus, adoption of lifestyle changes by individuals and populations may have a large impact on the future incidence and prognosis of cancer.

Zoran Sarcevic

Sports Medicine Specialist, Serbia

Sacroiliac Joint Dysfunction as a Cause of Scoliosis

When walking, on the side of the leg that is raised, iliac bone is rotated back comparing to the iliac bone of the leg that is on the ground. Also, sacrum is bent towards the leg that is raised, and the lumbar spine is bent towards the leg that is on the ground and rotated towards the leg that is raised. Theoretically, with the dysfunction of the sacroiliac joint, during walking iliac bone is steadily rotated forward on the side of dysfunction against the opposite side; lumbar segment of the spine is also constantly bent to the side of the lumbar dysfunction and rotated in the opposite side. With all patients with juvenile scoliosis which I reviewed (45 children aged 9 to 17 years) Gillet test is positive on the concave side of the lumbar scoliosis, specific for the dysfunction of sacroiliac joint; when lifting leg on the side of dysfunction, spina iliaca posterior superior is set higher in relation to the opposite spina iliaca posterior superior.

After correction of sacroiliac dysfunction with manual method, patients have been given instructions to practice at home. Exercise program consisted of exercise to maintain proper function of the sacroiliac joint, exercises to strengthen the m. obliquus externus and m. quadratus lumborum and m. gluteus medius on the lumbar convex side of scoliosis, to strengthen m. lumbar spinae erector on the lumbar concave side of the scoliosis, and to strengthen m. transversus abdominis, and also to strengthen both lower m. trapezius segment, m. romboideus strain on the concave thoracic scoliosis and middle segment of m. trapezius on the convex side of the thoracic scoliosis.

This method of treatment successfully stopped the progression of scoliosis in all patients and reduced the volume of scoliosis in more than 90 percent of patients.

Kimberly Smith

Associate Professor, Slippery Rock University of Pennsylvania, USA

Accuracy of Three Commercially Available Pedometers when Used on Various Walking Terrains

Purpose: To determine the accuracy of three commercially available pedometers (BCF, Yamax CW-701, and Omron HJ-720 ITC) as a means to estimate step counts, distance traveled, and kilocalorie (kcal) expenditure during one mile walking trials performed on three terrains: treadmill, track and trail.

Methods: Nineteen subjects aged 19.5±1.5y wore three pedometers on their waistband at the level of the umbilicus and in line with the middle of the thigh. Subjects' weight and stride length were entered in to each pedometer prior to each walking trial. The three walking trials were counterbalanced and performed on separate days, with at least 48 hours separating each trial. To determine the step count accuracy, researchers counted each step using a tally counter. To determine the accuracy of distance traveled, the subjects walked exactly one mile at a self-selected brisk pace on a calibrated treadmill, 200m indoor track, and measured trail. To determine the accuracy of kcal expenditure, subjects wore the Cosmed K4b2 portable metabolic analyzer which indirectly measured kcal expenditure. An ANOVA with post-hoc analysis was used to determine differences between the actual and pedometer-estimated values for step count, distance traveled, and kcal expenditure during each of the three trials.

Results: The BCF pedometer significantly underestimated step count, distance traveled and kcal expenditure during each of the three trials ($p < 0.05$). The Yamax pedometer accurately estimated step counts and distance traveled, but significantly underestimated kcal expenditure during the trail walking trial. The Omron pedometer accurately estimated step counts and distance traveled, but significantly underestimated kcal expenditure during each walking trial.

Conclusion: The BCF pedometer significantly underestimated all three measures during each trial. The Yamax and Omron pedometers accurately estimated step counts and distance traveled; however, kcal expenditure was significantly underestimated by the Yamax during the trail trial and by the Omron for all three trials.

Fang-Ting Tsai

M.Sc. Student, National Yang-Ming University, Taiwan

Wei-Yi Tsu

Physical Therapist, Taichung Veterans General Hospital, Taiwan

Yin-Ju Chen

M.Sc. Student, National Yang-Ming University, Taiwan

Shwn-Jen Lee

Associate Professor, National Yang-Ming University, Taiwan

&

Hong-Ji Luo

Assistant Professor, National Yang-Ming University, Taiwan

Effect of Foot Orthosis and Physical Therapy on Standing Balance and Mobility in Children with Hypotonia

This study aimed to explore the effects of modified stabilizing foot splints and physical therapy on standing stability and mobility in children with hypotonia. Eleven subjects (mean age 21.3 ± 8.2 months, 13-24 months) who could stand along but not yet walk independently were examined. All subjects received a 30-minute physical therapy once a week that aimed to enhance the subject's static and dynamic posture control in standing and walking ability. In addition, custom-made modified stabilizing foot splints were introduced for each subject to wear at least 2 hours per day during standing activities. Standing stability was measured by the length of time to stand along and by the excursion in length and sway area of COP while quietly standing using the Zebris FDM-S pressure mat. Standing mobility was assessed by the sum of scores of 3 items in PDMS-II (32, 34, and 35) and by the number of steps walked independently without falling. Outcomes were examined over 3 weeks. Significant improvement in standing stability and mobility after 3-week intervention was observed. The length of time to stand along significantly increased from 28.3 s (SD=21.6) to 186.6 s (SD=141.9). The sway area of COP significantly reduced from 1111.9 mm² (SD=181.9) mm² to 461.2 mm² (SD=70.47); however, excursion in length of COP was not significantly reduced after intervention. Furthermore, the sum of scores of 3 items in PDMS-II significantly increased from 2.7 points (SD=1.4) to 5.8 points (SD=0.4) and the number of steps walked independently increased from 0.8 steps (SD=1.8) to 67.4 steps (SD=22.6). The findings suggested that the standing stability and mobility in children with hypotonia could be significantly improved by foot orthosis and physical therapy intervention and provided an evidence to support clinical use.

Lindy Valdez

Professor, California State University, USA

The Attitudes of Middle School Students and Their Parents toward Physical Education

The attitudes that students have toward physical education can impact their participation levels in physical activity (Nelson, Benson, & Jensen, (2009). While the value of physical education has been clearly established through research (Bailey, et al, 2009), the public's attitude toward physical education does not reflect this critical importance. Since public opinion is indirectly responsible for policy and decisions, it is important to consistently monitor public attitude toward physical education.

Few studies have been conducted assessing student attitudes toward physical education in the critical years of middle school (Stewart, Green & Huelskamp, 1991) and no research could be found correlating these attitudes to their parents. Assessing parent attitudes toward physical education is important in determining whether students are projecting their own attitudes toward physical education or simply reflecting the views of their parents. The purpose of this study was to identify the attitudes of middle school students and their parents toward physical education and to examine the relationship between them. In addition students and parent's gender, ethnicity, and socioeconomic status were examined with relationship to their attitudes.

Subjects in this study were 207 parents and their seventh-grade students who were enrolled in physical education during the spring semester of 2012-2013, at an urban middle school. The Physical Education Activity Attitude Scale (PEAAS) was used to gain information attitudes toward physical education. The constructs of the questionnaire were related to general attitude, physical education attitude, and scientific basis attitude. Results indicated that students' and parents' attitude toward physical education were significantly different in the over-all category scores and in the general attitude and scientific basis construct areas. No significant differences were found between gender, ethnicity and socioeconomic status on attitudes toward physical education.

Artem Vetkasov

Ph.D. Student, Sport Charles University, Czech Republic

Special Breathing Exercises in Persons with SCL and Evaluation of their Effectiveness by using X-ray of Lungs and Other Tests

From clinical practice and research it is known that breathing exercises have a positive effect in people with spinal cord injury (SCI) . The purpose of this study was to perform special breathing exercises in persons with PM and evaluate their effectiveness by using X-ray of lungs and other tests. Sample consisted of 15 respondents with SCI, 8 men and 7 women, mostly middle-aged and elderly. Intervention program has lasted six months, with the frequency of exercise five times a week, in the range of 20-30 minutes. The study has included: 1) Chest X-Ray in a sitting position during inhalation and exhalation; 2) chest excursion; 3) determination of forced vital capacity (FVC) and forced expiratory volume during first second (FEV1); 4) measurement of respiratory rate. Pretest X-ray showed that the difference in the movement of the lower ribs during inhalation and exhalation was 2-35 mm. Measurement of chest circumference showed a limitation of chest expansion related to normal values corrected with age and sex. Tetraplegics FVC decreased by 30-50 % compared with the values of healthy population and paraplegics FVC reduced by about 80 %. Respiratory rate for all respondents with SCI was 13 to 22 breaths / min. After six months, we repeated the tests. X-ray examination showed that the difference in the movement of the lower ribs during inhalation and exhalation has increased by 49% (6 to 45 mm). Circumference of chest during inspiration increased by 3.5 % and chest circumference during exhalation decreased by 1.27%. One-second vital capacity increased by 5.68% and forced vital lung capacity by 7.61 %. Respiratory rate decreased on average by 16.22 %. In this study, by using X-ray and other tests, we have noted the objective influence of breathing exercises on the respiratory muscles in persons with SCI.

Minjung Woo

Assistant Professor, University of Ulsan, South Korea

Eunjin Kwon

Middle School Teacher, Kyungpook National University, South Korea

The Influence of Cardiovascular Fitness on the Relationship between Genotype and Neurocognitive Function during Executive Challenge in Adolescence

Cardiovascular fitness and physical activity have been positively associated with executive cognitive functioning (i.e., planning, scheduling, coordinating, response inhibition, and working memory), which rely on the frontal region of the brain. Recent studies suggest that the benefit is particularly strong in middle-aged individuals who carry the Apolipoprotein (APOE) e4 allele, a known genetic risk factor for Alzheimer's disease (AD). However, there have been no studies to determine this interactive relationship in adolescents. Therefore, the present study examined if cardiovascular fitness mediates the relationship between genotype and cerebral cortical responses in middle-age males during a frontally-mediated executive challenge. Thirty e4 carriers (N=30; 15 high-fit, 15 low-fit) and thirty non-carriers (N=30; 15 high-fit, 15 low-fit) were stratified by cardiovascular fitness. Cognitive function was assessed by neuroelectric response, event-related potentials (ERPs) recorded at 11 sites (F3, Fz, F4, C3, Cz, C4, P3, Pz, P4, O1 and O2) to both an auditory Go-no/go executive task (ECF) and a non-executive Oddball task (non-ECF). The P300 amplitude, which is indicative of the recruitment of attentional resources, exhibited by the high-fit e4 carriers was higher relative to that observed in the low-fit e4 carriers during both the ECF and non-ECF tasks. Importantly, the high-fit e4 carriers were also undifferentiated from both groups of the non-carriers. Furthermore, high-fit individuals, regardless of genotype, exhibited shorter P300 latency than did the low-fit individuals at sites Fz, Cz and Pz during ECF task and site Pz during non-ECF task. The current findings revealed genetic specificity in the relationship between cardiovascular fitness and the brain processes indexed by P300 amplitude function during late adolescence in response to both ECF and non-ECF challenge, with greater benefit incurred for the ECF task. The results suggest that cardiovascular fitness in e4 carriers is protective against the susceptibilities (i.e., hypometabolism and cortical thinning) associated with this allele.

Shi Zhou

Professor, Southern Cross University, Australia

Liping Huang

Professor & Head of Department, Department of Health and Exercise
Science, Tianjin University of Sport, China

Jiwen Qiu

M.A. Candidate, Tianjin University of Sport, China

Gaiqing Yang

M.A. Candidate, Tianjin University of Sport, China

&

Allan Davie

Associate Professor, Southern Cross University, Australia

Effects of Two Endurance Training Protocols with Different Exercise and Recovery Intervals on CaMKII, PGC-1 α , NRFs and mtTFA Proteins in the Mitochondrial Biogenesis Signalling Pathway in Rat Skeletal Muscle

The aim of this study was to compare the cumulative effects of two different training protocols on regulatory factors in the mitochondrial biogenesis pathway: 1) training weekly on continuous 4 days followed by 3 days recovery for 8 weeks; and 2) training on alternate days for 32 sessions. Seventy-two male SD rats were divided into nine groups: CA0 - control, C1-C4 - continuous-day training for 8, 16, 24 and 32 sessions, and A1-A4 - alternate-day training for 8, 16, 24 and 32 sessions, respectively. Each training session required running on treadmill at slope of 10° and speed of 19.3m/min (~76%VO₂max) for 60 min. Muscle samples were obtained 24 hours after the last training session, and Western Blotting was used to determine the expression of CaMKII, PGC-1 α , NRF-1, and mtTFA proteins. One-way ANOVA was used for comparisons of the mean values.

The results demonstrated that, within each training protocol, the PGC-1 α of C4 and A4 was significantly ($P < 0.05$) higher than that of C1 and A1; the upper stream factor CaMKII of C4 was higher than CA0, and A4 higher than CA0 and A1; the downstream factor NRF-1 did not show any significant changes; the mtTFA of C1 and C3 was higher than CA0, and A1 and A2 was higher than CA0; respectively. Comparisons between the two protocols showed that, for PGC-1 α and NRF-1, there were no significant differences between C and A; for CaMKII C1 and C3 were higher than A1 and A3; for mtTFA A1, A2 and A4 were higher than C1, C2 and C4; respectively.

In conclusion, the two training protocols with the same total exercise volume but different recovery intervals resulted in similar changes in the key regulator of mitochondrial biogenesis, PGC-1 α , but some differences in CaMKII and mtTFA. The information may be useful in optimization of training programs.