

2013

Kinesiology & Exercise Sciences Abstracts

Ninth Annual International
Conference on Kinesiology and
Exercise Sciences, 29-31 July
& 1 August 2013, Athens, Greece

Edited by Gregory T. Papanikos

THE ATHENS INSTITUTE FOR EDUCATION AND RESEARCH



Kinesiology & Exercise
Sciences Abstracts

9th Annual International
Conference on Kinesiology
and Exercise Sciences, 29-31
July & 1 August 2013, Athens,
Greece

Edited by Gregory T. Papanikos

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Preface

This abstract book includes all the abstracts of the papers presented at the *9th Annual International Conference on Kinesiology and Exercise Sciences, 29-31 July & 1 August 2013*, organized by the Athens Institute for Education and Research. In total there were 21 papers and presenters, coming from 12 different countries (Canada, Japan, Italy, Latvia, Poland, Serbia, Slovenia, South Africa, South Korea, Spain, UK, USA). The conference was organized into 6 sessions that included areas Training and Performance, Physical Activity and Health across the Lifespan, Biomechanics & Kinanthropometry, Physiology & Nutrition, Socio-Cultural Topics in Physical Activity & Health 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

FINAL CONFERENCE PROGRAM
**9th Annual International Conference on Kinesiology and Exercise
Sciences, 29-31 July & 1 August 2013, Athens, Greece**

Conference Venue: [St George Lycabettus](#), 2 Kleomenous Street, 10675
Kolonaki, Athens, Greece.

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 Academics, ATINER & Professor, Sam Houston University, USA.
5. Dr. Chris Sakellariou, Vice-President of Finance, ATINER & Associate Professor, Nanyang Technological University, Singapore.
6. Dr. Panagiota (Nota) Klentrou, Professor and Associate Dean Research and Graduate Studies, Faculty of Applied Health Sciences, Brock University, Canada.
7. Dr. Maria Konstantaki, Senior Lecturer, Buckinghamshire New University, U.K.
8. Mr. Christos Anagnostopoulos, Head, Research Unit of Sports, ATINER & Lecturer, Coventry University, U.K.
9. Ms. Lila Skountridaki, Researcher, ATINER & Ph.D. Student, University of Strathclyde, U.K.
10. Mr. Vasilis Charalampopoulos, Researcher, ATINER & Ph.D. Student, University of Stirling, U.K.
11. Mr. Apostolos Kotsaspyrou, Researcher, ATINER.

Administration

Fani Balaska, Stavroula Kiritsi, Eirini Lentzou, Konstantinos Manolidis, Katerina Maraki & Celia Sakka.

CONFERENCE PROGRAM

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

Monday 29 July 2013

09:00 - 09:30 Registration

09:30 - 10:00 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.

10:00-11:30 Session I: Physical Activity & Behavior

Chair: George Poulos, Vice-President of Research, ATINER & Emeritus Professor, University of South Africa, South Africa.

1. Mildred Naquin, Professor, Southeastern Louisiana University, USA & Marie Zannis, Health Education Consultant, Nicholls State University, USA. Correlates of Health Behavior among School-based Employees.
2. Mark Broucek, Assistant Professor, North Central College, USA. Using Relaxation Techniques to Extend Pain Tolerance.
3. Belinda Bowd, Senior Lecturer, University of Wolverhampton, UK. Need Satisfaction, Behavioural Regulation and Exercise Identity Amongst Middle and Older Adults Using Self-Selected Health and Walking Goals in a University Work Site Twelve Week Walking Intervention.
4. Cilas Wilders, Head, Institute for Biokinetics North West University Potchefstroom, South Africa. Absenteeism, Stress and Depression related to Physical Inactivity in Employees of a Financial Institution.

11:30-13:00 Session II: Injury Prevention & Rehabilitation in High Performance Athletes

Chair: Mildred Naquin, Professor, Southeastern Louisiana University, USA.

1. Stevan Stojanovic, Professor, University in Belgrade, Serbia, Dolika Vasovic, University in Belgrade, Serbia, Mina Cobeljic, University in Belgrade, Serbia, Jelena Cuk, University in Belgrade, Serbia & Lazar Stijak, University in Belgrade, Serbia. Effect of Muscular Strength on Landing Error Scoring System Score amongst Track and Field Athletes.
2. Matjaz Sajovic, Assistant Professor, Deputy Head of Orthopaedics and Sports Trauma Surgery Department, General Teaching Hospital Celje, Oblakova 5, 3000 Celje, Slovenia, Katarina Skaza, Physiotherapist, UNIOR d.d. Unitur Spa and Rehabilitation Center Zreče, Cesta na Roglo 15, 3214 Zreče, Slovenia & Simona Pavlič Založnik, UNIOR d.d. Unitur Spa and Rehabilitation Center Zreče, Cesta na Roglo 15, 3214 Zreče, Slovenia. Isokinetic Evaluation and Objective Stability of the Knee after Anterior Cruciate Ligament Reconstruction.
3. Terry Jeremy Ellapen, Lecturer, University of Kwa-Zulu Natal, South Africa, Suvir Satyendra, PhD Student, University of Kwa-Zulu Natal, South Africa, Jessica-Lee Morris, PhD Student, University of Kwa-Zulu Natal, South Africa & Johan Van Heerden, Professor of Kinesiology and Sport Science, University of Kwa-Zulu Natal, South Africa. Common Running Musculoskeletal Injuries among Recreational Half Marathon Runners in Kwa Zulu Natal.
4. Senthil Narsigan, Lecturer, University of KwaZulu-Natal, South Africa, Terry Jeremy Ellapen, Lecturer, University of Kwa-Zulu Natal, South Africa, Sumaya Abrahams, University of KwaZulu-Natal, South Africa & Johan Van

Heerden, Professor of Kinesiology and Sport Science, University of Kwa-Zulu Natal, South Africa. Sport Profile of the Junior Male Kwa-Zulu Natal Provincial Soccer Team, South Africa.

13:00-14:00 Lunch

14:00-15:30 Session III: Biomechanics & Kinanthropometry

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

1. Willy Pieter, Professor, Keimyung University, South Korea & Luigi T. Bercades, Keimyung University, South Korea. Maturity of Young Taekwondo Athletes: Implications for Competition.
2. *S. Alan Lephart, Assistant Professor, Fort Lewis College, USA, John H. Bolte, IV, Associate Professor, The Ohio State University, USA & Christopher Alberty, Principal Scientist and Manager of Biodynamics CRADA, Infoscitex Corp. (Wright Patterson Air Force Base, Ohio), USA. The Effect of Variable and Uniform Densities on the Inertial Properties of Cadaver Segments, a Comparison of Frozen and Thawed Densities, and Segment Densities Related to Endomorphy and Ectomorphy.
3. Kristina Mayberry, PhD Candidate, University of Bologna, Italy, Lorenzo Chiari, Ass. Prof. Biomedical Engineering, University of Bologna, Italy, Laura Rocchi, Researcher, University of Bologna, Italy & Sabato Mellone, Post-Doctoral Fellow, University of Bologna, Italy. Evidence for Central Pattern Generators in Anti-phase Gait.

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

Tuesday 30 July 2013

9:00-10:30 Session IV: Physical Activity & Body Composition

Chair: *S. Alan Lephart, Assistant Professor, Fort Lewis College, USA.

1. Guillermo Oviedo, Research Assistant, Universitat Ramon Llull, Spain, Myriam Guerra, Professor, Universitat Ramon Llull, Spain & Silvia Barnet, Research Assistant, Universitat Ramon Llull, Spain. Relation between VO₂ peak, Energy Expenditure and Daily Steps in Adults with Intellectual Disabilities.
2. Elise Brown, PhD Student, University of the West of Scotland, UK, Jonathan Cavana, Child Healthy Weight Programme Manager, National Health Service, UK, Julien Baker, Director, Institute of Clinical Exercise and Health Science, Chair & Head of Health & Exercise Science, University of the West of Scotland, UK, Frank Wyatt, Professor, Exercise Physiology, Midwestern State University, USA & Lon Kilgore, Professor, University of the West of Scotland, UK. Fit for School: A School-based Child Healthy Weight Intervention Reduces BMI-SDS Scores in Primary School Students.
3. Danai Kapsokefalou, MA Student, Queen's University, Canada, Denita Dyck, Assistant Supervisor, City of Kingston, Canada & Lucie Levesque, Associate Professor, Queen's University, Canada. Understanding the Criteria for Success to Promote Participation in Outdoor Activity Programs.

10:30-12:30 Session V: Physiology & Nutrition

Chair: Kay Biscomb, Associate Dean, University of Wolverhampton, UK.

1. Beau Greer, Associate Professor, Sacred Heart University, USA. Reliability of Body Composition Measurement via BOD POD Following a Very Low-Carbohydrate Diet.
2. *Maria Konstantaki, Lecturer, Buckinghamshire New University, UK & Sherif Eltahaway, Researcher, Buckinghamshire New University, UK. Effects of a Nutritional Supplement on Maximum Strength in Resistance Trained Males.
3. Monica Lipinska, PhD Student, Jozef Pilsudski University of Physical Education in Warsaw, Poland, Marta Lipinska, Student, Josef Pilsudski University of Physical Education in Warsaw, Poland & Krzysztof Busko, Professor, Jozef Pilsudski University of Physical Education in Warsaw, Poland. Changes in Height of Countermovement Jump after Training on a Cycle Ergometer.
4. Junichi Tajino, PhD Student, Kyoto University, Japan & Hiroshi Kuroki, Professor, Kyoto University, Japan. Lower Body Positive Pressure (LBPP) Diminishes the Surface Blood Flow Agitation in Forehead during Walking on a Treadmill.

12:30-13:30 Lunch

13:30-15:00 Session VI: Socio-Cultural Topics in Physical Activity & Health

Chair: *Maria Konstantaki, Lecturer, Buckinghamshire New University, UK.

1. Kay Biscomb, Associate Dean, University of Wolverhampton, UK. The Qualitative Portrayal of Female Athletes Tennis and Cricket.
2. Anna Price, Assistant Professor, Sacred Heart University, USA & Julian Reed, Professor, Sacred Heart University, USA. Trail Use on, and Perceptions of a Newly Constructed Greenway Trail: Implications for Physical Activity Promotion.
3. Ilvis Abelkalns, Lecturer, University of Latvia, Latvia. High Performance Athletes Dual Career Formation at Different Stages of Youth Development.

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

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

Wednesday 31 July 2013

Cruise: (Details during registration)

Thursday 1 August 2013

Delphi Visit: (Details during registration)

Ilvis Abelkalns

Lecturer, University of Latvia, Latvia

High Performance Athletes Dual Career Formation at Different Stages of Youth Development

The transition from high school to university associate to people with major changes in their personal lives, but in the sport it is transition from a young age to the junior and adult sports. For athletes - students it is difficult to switch to adult society and successfully build a dual career. Young people often make premature decisions - to stop their studies or careers in the sport.

In Latvia young people from around 16-19 years study in high school and from 19-25 years study at university. At university biggest problem in the first two academic years (19-21 years), corresponding to the age group of the transitional period, so the author of the study examines young people - high performance athletes two age groups: youth (15-22 years) and early maturity (22-30 years) period.

At school, young people (athletes) do not have to think about the learning process, while at the university, young athletes should expect a lot more work to be done independently, to plan the amount of time and connect it with high performance sports trainings. Students come from different places with different knowledge, abilities, skills and interests.

To study and analyze the high performance athletes dual career formation among young age group.

The study uses a theoretical method - analysis of scientific literature and empirical - 250 Latvian high performance athletes questionnaire.

During the research, the author explores and analyzes how high performance athletes from their dual career in the young age group (16-25 years).

Theoretical recognition and practical research collection, as well as the author's analysis of the survey show that students - athletes directly in the first two years of study have problems carrying out the study plan. In assessment of various aspects of life, there are significant differences in views between different age groups of young people. Students, high performance athletes under the age of 21 years also as their peers significantly more (53.84%) choose to spend their free time with friends, but the young people older than 22 years spend more time for learning and self-improvement (43%), hence they more plan their time (82.22%).

In early maturity period young people more often (68.73%) communicate with teachers. But young people up to 22 years more

(43.23%) need a mentor (advisor) support to make it easier to overcome this crisis period.

This work has been supported by the European Social Fund within the project «Support for Doctoral Studies at University of Latvia».

Kay Biscomb

Associate Dean, University of Wolverhampton, UK

The Qualitative Portrayal of Female Athletes Tennis and Cricket

The research tradition of print media analysis has been well established since the mid-1990s and has been one of the empirical methods for demonstrating the ways in which female athletes have been marginalised as “other” within the sporting domain. The methods which have contributed to this include proportional representation, trivialisation, sexualisation and framing the athlete in an alternate role such as wife or daughter. The purpose of this study is to examine the changes in print media analysis over a longitudinal period, drawing upon data from 1984, 1994 and 2004. This paper is part of a wider project (Matheson and Flatten, 1996; Matheson and Biscomb, 1997) to document changes over three decades. While there are now more stories concerned with women’s sport (721 in 2004 against 390 in 1984), in percentage terms there seems to be little change, with male sport dominating by more than 6 to 1. The Olympic years of 1984 and 2004 show a somewhat higher proportion of stories covering women’s sport, however the coverage remains confined to a few sports, including athletics (49% of coverage in 2004) and tennis (43.2% in 2004). More recent research on cricket (Biscomb and Griggs, 2012) concludes that there are changes in the type of reporting but no change in how much is reported. This study examines the qualitative portrayal of female athletes in athletics, tennis and cricket across three decades and explores the changing patterns presented. It supports previous findings which demonstrate that although there are no changes in the amount of reporting, the style of reporting differs across decades.

Belinda Bowd

Senior Lecturer and Course Leader Physical Activity, Exercise and Health, Member of the British Association of Sport and Exercise Science, UK

Need Satisfaction, Behavioural Regulation and Exercise Identity Amongst Middle and Older Adults Using Self-Selected Health and Walking Goals in a University Work Site Twelve Week Walking Intervention

The aim of the study was to examine the motivational processes of need satisfaction, behaviour regulation and exercise identity when using self-selected health and walking goals in middle and older adults at a UK university work site twelve week walking intervention. **Methods:** 34 adults from the university (n=12 middle adults, mean age 34 and n = 22 older adults, mean age 49) enrolled on a twelve week work site walking programme of 30 minutes on three or more days per week and self-selected health and walking goals. Pre and post the walking programme participants completed the Basic Psychological Needs in Exercise Scale (BPNES) Viachopoulos and Michailidou, 2006, Behavioural Regulation in Exercise Questionnaire-2 (BREQ-2) Wilson et al 2003, and the Exercise Identity Scale (EIS) Anderson and Cychosz, 1994 inventory. Post intervention focus group interviews were carried out with 8 participants from the two participating groups. **Results** revealed pre intervention significant differences for middle introjected regulation (M = 2.30, SD = 1.18) and older introjected regulation (M = 2.60, SD = .79), $t(32) = -2.28, p < .02$. Post intervention results revealed a significant difference for middle exercise beliefs (M = 3.00, SD = 1.60) and older exercise beliefs (M = 4.10, SD = 1.34). $t(32) = -2.09, p < .04$. Both participating groups reported the use of health goals and not walking goals had facilitated continued participation with the walking programme alongside social interaction and guilt. Conversely, differences in exercise beliefs around the interest and value of walking had contributed towards non participation between the two participating groups. **Conclusions:** The results highlight the motivational processes between middle and older adults during the twelve week walking intervention and support the use of self-selected health goals as a facilitator for continued participation.

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Mark Broucek

Assistant Professor, North Central College, USA

Using Relaxation Techniques to Extend Pain Tolerance

This study was designed to investigate the effect of a warning cue on the pain tolerance of athletes trained in progressive muscle relaxation. Based on the theory that the relaxation response and the pain stimulus would compete for attention, it was thought that relaxation would be especially beneficial if begun before the initiation of the pain stimulus. It was therefore hypothesized that the presence of a warning cue would allow the trained athletes to more fully relax, relative to subjects who relaxed at the initiation of the pain stimulus. This greater relative relaxation was predicted to lead to increased pain tolerance. As a test of this theory, athletes trained in progressive muscle relaxation and a placebo control group of nonathletes, who listened to soothing music, were asked to relax either at a warning cue or at the initiation of the pain stimulus, the gross pressure device. A nonintervention control group of nonathletes was included in the experimental design. Results indicated that those athletes trained in progressive muscle relaxation and provided a warning cue displayed both significantly greater relaxation (lower heart rates) and pain tolerance than did all other groups.

Elise Brown

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Child Healthy Weight Programme Manager, National Health Service,
UK

Julien Baker

Director, Institute of Clinical Exercise and Health Science, Chair
&
Head of Health & Exercise Science, University of the West of Scotland,
UK

Frank Wyatt

Professor, Exercise Physiology, Midwestern State University, USA
&

Lon Kilgore

Professor, University of the West of Scotland, UK

Fit for School: A School-based Child Healthy Weight Intervention Reduces BMI-SDS Scores in Primary School Students

Because obesity is associated with increased healthcare costs, a high amount of adiposity in children is a major public health concern. BMI is a weight-for-height index that is used to assess fat levels, and BMI-SDS scores are used for children to ensure values across ages and gender are comparable. The purpose of this study was to evaluate the effectiveness of Fit for School, a Child Healthy Weight (CHW) intervention, in terms of BMI-SDS changes.

Primary school children in southwest Scotland participated in a school-based 10-week intervention. The programme consisted of parental engagement, healthy eating, physical activity, healthy lifestyle, and behaviour change components. Children's height and weight were measured during the first and last weeks of the programme. Raw data was converted to BMI-SDS scores.

Significant reductions in BMI-SDS occurred in the severely obese, combined severely obese and obese, combined severely obese, obese, and overweight, and the CHW target groups. No significant changes occurred in the underweight category. There were significantly more boys than girls in the CHW category before and after the intervention.

Fit for School is a short-term school-based intervention that has proven to significantly reduce BMI-SDS scores in primary school children with increased fat levels. Implementation of this programme in schools may help reduce excess adiposity in children which in turn may have a positive effect on healthcare costs associated with obesity.

Terry Jeremy Ellapen

Lecturer, University of Kwa-Zulu Natal, South Africa

Suvir Satyendra

PhD Student, University of Kwa-Zulu Natal, South Africa

Jessica-Lee Morris

PhD Student, University of Kwa-Zulu Natal, South Africa

&

Johan Van Heerden

Professor of Kinesiology and Sport Science, University of Kwa-Zulu
Natal, South Africa

Common Running Musculoskeletal Injuries among Recreational Half Marathon Runners in Kwa Zulu Natal

There have been many running epidemiology investigations published focusing on effects of poor nutrition, hydration and musculoskeletal injuries on running performance. Predisposing factors contributing to musculoskeletal running injuries are poor training habits, previous injuries not properly rehabilitated, high weekly run mileage, incorrect shoes, muscle imbalances. The study documented the prevalence and nature of running musculoskeletal injury among half marathon recreational runners over a 12 month period (July 2011-June 2012).

Data were collected from recreational runners (n= 200) who officially ran half marathon road races during February-June 2012. The two hundred runners aged 18-57 years were from the different athletic clubs affiliated to Kwa Zulu Natal Athletic Association (KZNAA) governed by Athletics South Africa. Runners' participation was dependent on voluntary informed consent. Runners were required to complete a self-report musculoskeletal injury questionnaire probing the prevalence and nature of running musculoskeletal injuries. In the self-report musculoskeletal injury questionnaire, the running related injuries were further divided into anatomical site of musculoskeletal injury, intensity/severity of running related musculoskeletal pain according to the Kee and Seo Pain Rating Scale and the type of running related musculoskeletal injury symptoms (dull aching, discomfort, sharp, pins and needles, numbness, burning and radiating). Descriptive statistics which included the mode, mean, frequency, percentages and inferential statistics comprising chi-square and T-tests were employed in the statistical analysis. The probability level was set at 0.05.

One hundred and eighty (90.00%) runners sustained musculoskeletal injuries ($p < 0.001$). The most vulnerable anatomical site to injury was the

knee (26.41%) followed by the tibia/fibula (21.74%) and the lower back/hip (15.76%) ($p < 0.001$). The comparative statistical analyses of the run training mileage of the non-injured versus injured runners revealed no statistical significance ($p > 0.05$).

Recreational runners sustained a high prevalence of knee, tibia/fibula and lower back/hip injuries.

Beau Greer

Associate Professor, Sacred Heart University, USA

Reliability of Body Composition Measurement via BOD POD Following a Very Low-Carbohydrate Diet

Air displacement plethysmography via BOD POD is a reliable measurement of body composition that is frequently used as a dependent variable in exercise studies. However, very low carbohydrate diets rapidly induce significant changes in fluid balance and therefore may disrupt the reliability of BOD POD measurement in regards to lean body mass and body fat percentage. Twenty four (n=24) subjects were recruited for this study. Subjects recorded their typical diets for three days prior to initial body composition analysis. Manufacturer recommendations for BOD POD analysis were followed for all procedures. Following the initial BOD POD trial, subjects were matched for lean body mass and placed into very low carbohydrate (VLC) and control (CON) groups. The VLC group was given instruction to prevent over 50 grams/day of carbohydrate consumption for 3 consecutive days. The CON group was instructed to replicate their previously recorded three day diet. A three day dietary manipulation was chosen as it is long enough in duration to induce significant alteration in fluid balance but short enough to avoid unintended significant alteration in lean body mass or body fat. Two CON subjects did not report their second trial of dietary recall and were therefore excluded from all analyses. Carbohydrate intake was significantly reduced (244.5 ± 96.2 g to 54.6 ± 26.4 g) and protein intake significantly increased (92.7 ± 30.8 g to 148.2 ± 69.0 g) in the VLC group between the first and second trial ($p < 0.05$) whereas fat intake did not significantly change (87.1 ± 47.7 g to 119.8 g). No significant dietary differences between trials occurred in the CON group ($p > 0.05$). There were significant differences between trials for body mass (72.9 ± 13.3 kg versus 72.1 ± 13.1 kg) and body volume (69.0 ± 12.7 L versus 68.1 ± 12.2 L) in the VLC group ($p < 0.05$). However, there were no differences ($p > 0.05$) in body fat percentage, lean body mass, or fat mass between the first and second trial in either group. Body fat percentage, lean body mass, and fat mass measured via BOD POD remain reliable after 3 days of a VLC diet.

Danai Kapsokfalou

MA Student, Queen's University, Canada

Denita Dyck

Assistant Supervisor, City of Kingston, Canada

&

Lucie Levesque

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Understanding the Criteria for Success to Promote Participation in Outdoor Activity Programs

Children's participation in outdoor activities in Canada has dropped by 14% over the last decade (PAM, CFLRI, 2010; AHKC, 2012). Outdoor activity is important for health and behaviour development of children while the decrease in childhood outdoor activity has been associated with the increase in overweight and obesity rates in young children. The city of Kingston, in Ontario offers a free outdoor activity recreational summer program for school aged children at 14 park locations. However, the participation rate in this summer program has been consistently reported to be below expectations. Purpose: The purpose of this study is to understand how the program's promotion and delivery should be modified to facilitate an improved participation rate.

This is a qualitative evaluation study. Through purposeful sampling we will recruit key informants and conduct focus groups, and interviews using a semi-structured interview scripts. Focus groups and interviews will be conducted until we reach saturation. Surveys will be used to collect demographic information on the key informants.

Data collection and Analysis: Key informant demographic data will be analysed using descriptive statistics. The focus groups and interviews will be audiotaped and transcribed verbatim. Thematic analysis will be conducted on the transcripts to identify suggestions for improvements in the program; promotional material, promotion activities, as well as on how the program should be delivered to facilitate an increase in the participation rate.

Data collection and analysis is in progress.

We anticipate that the qualitative finding of this study will facilitate informed modifications to the program promotion activities, promotional material and delivery of the program. We hypothesise that the program modifications suggested and implemented will positively impact the participation rate which will be evaluated in a follow-up mixed method evaluation study.

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Effects of a Nutritional Supplement on Maximum Strength in Resistance Trained Males

This study investigated the effects of a new nutritional supplement on maximum strength. Jack3d manufacturers claim it can boost energy levels, increase endurance, improve focus and enhance the ability to lift more weight however there have not been any published research studies investigating its effectiveness in athletic populations. Sixteen resistance trained males (mean \pm s; age: 23.88 ± 3.73 years, body mass: 74.06 ± 7.73 kg, stature: 174.63 ± 5.0 cm) signed an informed consent and participated in the study. Participants first performed a 1RM bench press test to establish upper body muscle strength and were randomly assigned to one of two groups; experimental group who would consume the supplement (Jack3d) and control group who would consume a placebo drink (PLA). Six days later, Jack3d consumed a drink containing 5.5 g of the Jack3d supplement diluted in 230 ml of water, whereas PLA consumed the same quantity of diluted peach juice. Both groups ingested the drink 40 minutes prior to testing to allow for gastric emptying. Following a standardised warm up, participants performed a re-test 1RM bench press test. Results showed that there was a $1.90 \pm 0.03\%$ improvement in the 1RM for Jack3d (82.18 ± 15.08 kg and 83.75 ± 14.07 kg, for first and second lift, respectively, $P=0.04$). There was no significant improvement ($0.3 \pm 0.03\%$) in PLA (85.31 ± 9.0 kg and 85.62 ± 9.13 kg, $P=0.11$). Participants in the Jack3d group reported increased alertness and competitive drive. These results indicate that Jack3d can be effective in increasing maximum strength of resistance trained males. Jack3d contains a number of ingredients such as creatine, caffeine, beta-alanine, arginine and dimethylamylamine (DMAA) that have been shown to improve muscular strength, increase alertness, buffer waste products or mobilise fatty acids. However, DMAA is currently a listed drug in New Zealand and is also a banned substance on the World Anti-Doping Agency list (WADA, 2011).

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The Effect of Variable and Uniform Densities on the Inertial Properties of Cadaver Segments, a Comparison of Frozen and Thawed Densities, and Segment Densities Related to Endomorphy and Ectomorphy

This study was designed to answer three questions. Is there a significant difference between the inertial properties of the segments, such as center of mass location and magnitude of principal moments of inertia, when variable density within the segment is compared to a comparable uniform density model? Is there a significant difference between frozen and thawed segment densities? Is there a significant difference in the density of ectomorphic and endomorphic body types?

Two cadavers of different body mass indices were segmented into 16 segments each and further cross-sectioned into horizontal slices 1 to 2 cm. thick. Densities of frozen and thawed segments and sections were measured by immersion, and variable and uniform density models were examined regarding inertial properties. A stacked ellipse model having identical geometries for both conditions was used to attempt to answer these questions.

Variable and uniform densities yielded results that differed by a maximum of about 0.3% for all segments and which did not approach significance in either center of mass location or magnitude of principal moments of inertia. It was concluded that models that include variable density (such as DEXA, MRI, CT) increase the expense of estimating inertial properties without any appreciable gain in accuracy over less expensive models based on topography alone.

There were significant density differences ($p < 0.01$) when comparing ectomorphy with endomorphy. It is suggested that it may be useful to consider density differences due to body somatotypes when performing motion analysis.

Comparison of frozen density and thawed density showed significant differences in both subjects ($p < 0.01$), and applied to all

segments. It is also suggested that since frozen density is significantly different from thawed density, that thawed density, being more comparable to analyses *in vivo*, should always be used in analysis of movement.

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Changes in Height of Countermovement Jump after Training on a Cycle Ergometer

Changes in the maximal muscle torques and the lower extremities power are indicative of the athlete's training level and effects of applied training loads. Jumping depends, to a large extent, on the lower extremities power.

The aim of this study was to follow the changes in height of countermovement jump after training on a cycle ergometer.

Thirteen male students not training professionally took part in this study. Their mean (\pm SD) age, body height and body mass were 21.5 ± 0.9 years, 182 ± 6.0 cm, 76.8 ± 7.8 kg, respectively. The height of rise of the body mass center during vertical jumps was measured on a force plate for counter-movement jumps (CMJ). The participants trained on a cycle ergometer four times a week for four weeks. The training encompassed 5 intermittent efforts parted with a 2-min pause with the power of 250 W and the work done in the first repeat equaling 100% of work predetermined in a 30-second maximal effort with a load of 7.5% of BW, and in each of the other four maximum efforts equaling 50% of the work and pedaling velocity of 45 rpm. Control measurements of the height of rise of the body mass centre were carried out each Monday before the start of the training (I), during 4 weeks of the experiment (II-V) and 2 weeks after (VI-VII). The results were statistically processed using analysis of variance (ANOVA) with repeated measures (post-hoc Fishera test).

The average values (\pm SD) of height of rise of the body's mass center (h) during countermovement jumps (CMJ) were changed from 0.428 ± 0.046 m (before start of the study) to 0.444 ± 0.04 m (measurement II), 0.458 ± 0.043 m (III), 0.457 ± 0.038 m (IV), 0.460 ± 0.042 m (V); 0.455 ± 0.037 m (one week after the training - VI), two weeks after the training - 0.466 ± 0.039 m (VII). We have observed that compare with the first measurement the training improved the results of CMJ height

jump performance by 3.7%, 7%, 6.8%, 7.5%, 6.3% and 8.9%, respectively. The measurements III-VII were significantly different than first measurement.

In conclusion, training on a cycle ergometer improves the height of rise of the body's mass centre during countermovement jumps.

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Evidence for Central Pattern Generators in Anti-phase Gait

Both gait and finger tapping are well-studied movements; however, syncopated or anti-phase movement, timed to occur midway between beats of a steady rhythm, has not previously been explored in gait. In this work we asked 18 healthy young subjects to walk in time with (IN), or in anti-phase to (ANTI), an audible metronome beat, delivered at their preferred, natural walking speed (Pref), -15% (Slow), or +15% (Fast). A portable accelerometer worn at mid-back provided the signal used to calculate measures of step speed, smoothness and variability. For IN and ANTI trials, we also calculated % Phase Shift (PS), the time difference between each beat and its associated step.

Subjects struggled during the ANTI trials: step speed was more variable, Harmonic Ratio (step self-similarity) was lower, and Jerk Index (jerkiness) was higher, compared to IN trials. Subjects successfully maintained anti-phase gait at non-preferred speeds: PS Slow ($48 \pm 7\%$) did not differ from PS Fast ($38 \pm 7\%$), while PS Pref ($-29 \pm 10\%$) differed from Slow and Fast ($p < .01$). (Perfect syncopation has a PS of $\pm 50\%$). Thus anti-phase gait is less successful at preferred than non-preferred speeds, in contrast with anti-phase finger tapping where performance deteriorates as speed increases.

We suggest that the reason for this difference is the central pattern generators (CPGs), the subcortical neural pathways responsible for partial control of gait timing and co-ordination. They reduce the complex role of gait control at the cortical level, so that less conscious attention is required. Since there is no corresponding mechanism for finger tapping, this movement simply becomes more difficult as speed increases. It appears that, at preferred speed, the CPGs interfere more strongly with anti-phase gait than at slower or faster speeds. Future studies of anti-phase gait may further clarify the role of CPGs, adding to our understanding of the control and execution of gait.

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Correlates of Health Behavior among School-based Employees

Employee health promotion programs increase work productivity, effectively reduce employer costs related to health care and absenteeism, and enhance worker productivity. Components of an effective worksite health program include stress management, physical fitness and exercise and nutrition and/or weight management classes or counseling.

Few studies have documented correlates of health behaviors in school-based employees. In this study, a multi-component survey was used to examine relationships among stress, physical activity and specific food choices among employees in a southeastern Louisiana school district in the United States of America.

Significant differences were found in coping styles by gender and employee status. Findings also indicated that employees who selected healthful foods were more likely to use task-oriented coping, considered an effective coping style. Those employees who engaged in vigorous physical activity on a regular basis reported less perceived stress as well as more effective coping strategies.

Since these behaviors appear to be interrelated, those conducting health promotion programs may consider a multi-dimensional approach when planning programs for employees. Additional intervention studies in a school-based population are needed to examine specific effects of different coping styles and healthy behaviors on employee productivity.

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Sport Profile of the Junior Male Kwa-Zulu Natal Provincial Soccer Team, South Africa

To document the prevalence of soccer related musculoskeletal pain and the exercise performance of the male KZN provincial junior male soccer team.

Eighteen players' underwent kinanthropometric, exercise physiological performance assessments and a musculoskeletal pain questionnaire appraisal. The kinanthropometric characteristics measured were body mass, stature and skinfold measurements. The exercise physiological performance profile constituents were resting heart rate, blood pressure, flexibility, muscle strength and endurance, explosive strength, agility and aerobic capacity. Plantar and dorsi-flexion, quadriceps angles and hip extension constituted the flexibility tests. The players abdominal and upper body muscle strength and endurance were measured by the one minute sit-up and one-minute press-up tests respectively. Explosive strength was measured using the vertical jump protocol. Subjects completed a 10m agility t-test and 20 multi-stage fitness test.

Out of the 18 players who answered the questionnaire, 72.22% experienced soccer related musculoskeletal pain indicating the knee (42.86%), ankle (28.57%), hip (21.43%), and vertebrae (7.14%) to be most prevalent ($p < 0.05$). The cohort's mean age, body mass, stature, body mass index and percent body fat were 14.33 ± 0.69 years, 53.28 ± 7.59 kg, 1.63 ± 0.08 m, 20.04 ± 1.48 kg/m² and $5.55 \pm 2.23\%$ respectively. The mean resting heart rate was 59.78 ± 12.74 bpm and the derived MAP and RPP were 90.88 ± 18.45 mmHg and 7651.84 respectively. The players' push-up (36.44 ± 7.53 rep/min.) and vertical jump (32.42 ± 0.27) scores were below the norm. The subjects' flexibility, abdominal strength and endurance, agility and aerobic capacity were within the normative ranges respectively.

The soccer players have sustained musculoskeletal pain over the last 12 months. The players need to adhere to a regular strength training regime to enhance their sport performance as well as to serve as a protective mechanism against musculoskeletal injury.

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Relation between VO₂ peak, Energy Expenditure and Daily Steps in Adults with Intellectual Disabilities

Individuals with intellectual disabilities (ID) have a lower energy expenditure (EE) and physical activity levels.

Purpose: To determine relations between VO₂ peak, total energy expenditure (TEE) and daily steps (DS) in adults with ID that participated in a physical activity program.

29 adults (12 women, 17 men), 42.1±9.8 year-old with moderate to severe ID (70.6±7.0 %) participated in this study. The adults with ID followed a physical activity (PA) program for 14 weeks, 1 hour 3 times per week. TEE and DS were obtained through triaxial accelerometry during 7 consecutive days. The accelerometers were placed on the right side of the hip. VO₂ peak was obtained during a metabolic treadmill test. A linear regression analysis was used to evaluate relationships between VO₂ peak, TEE and DS. A multivariate linear regression analysis was used to evaluate factors contributing to VO₂ peak.

Mean VO₂ peak was 2±0.59 ml/min, mean TEE was 2037.3±1160.2 kcal and mean DS were 7369,73±3211 steps. There were significant correlations between total VO₂ peak and TEE ($r=0.54$; $p=0.003$) and between total VO₂ peak and DS ($r=0.37$; $p=0.048$).

Multivariate linear regression showed that age, ID % and TEE contribute to VO₂ peak (2.0±0.6 L/min) in adults with ID ($R^2=0.32$).

Adults with ID have low VO₂ peak, TEE and they don't achieve the recommendations of 10000 daily steps. There are significant relations between VO₂ peak and TEE and between VO₂ peak and DS.

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Maturity of Young Taekwondo Athletes: Implications for Competition

Participation in junior taekwondo championships routinely number in the thousands, with the athletes varying in age between 6 and 17 years. Competitions are divided into those younger than 14 years and those between 14 and 17 years. However, issues pertaining to varying rates of growth and development of these children are never taken into account. The purpose of this study, then, was to assess and compare maturity in junior taekwondo athletes. Nationally competitive boys ($n=52$, 14.69 ± 1.49 years, 165.25 ± 10.68 cm, 54.57 ± 12.66 kg) and girls ($n=51$, 14.99 ± 1.68 years, 160.78 ± 7.04 cm, 52.35 ± 8.34 kg) participating in a training camp at the US Olympic Training Center in Colorado Springs, CO, USA, volunteered for the study. In addition to anthropometric measurements, maturity was self-assessed by the athletes using a protocol validated by Broekhoff, Pieter, Caine and Nadgir (1995) based on the Tanner stages. A rating of 3 was used to divide the boys into pre- and post-pubertal groups. Menarche was employed as the marker in girls. The Mann-Whitney U test was utilized to determine the differences between pre- and post-pubertal athletes in maturity characteristics within sex. The differences between maturity groups within gender were assessed by a 1-way MANOVA. An effect size of 0.20 was used for all analyses. The pre-pubertal boys were shorter: 156.75 ± 10.16 cm vs. 169.03 ± 8.62 cm ($\eta^2=0.287$). Their female counterparts showed a similar pattern: 155.25 ± 4.74 cm vs. 161.81 ± 1.06 cm for pre- and post-pubertal athletes, respectively, although the difference was not significant ($\eta^2=0.117$). The age at which menarche occurred was 12.24 ± 1.22 years. Sitting height for pre-pubertal girls was not shorter than that of their older colleagues: 81.30 ± 3.17 cm vs. 86.51 ± 4.36 cm ($\eta^2=0.174$), but it was for the boys: 81.76 ± 6.93 cm vs. 89.62 ± 5.42 cm ($\eta^2=0.281$). Although junior taekwondo athletes compete in their own weight categories, the difference in height may put pre-pubertal boys at a disadvantage, since it is positively related to strength in children. The difference in sitting height will translate to a reach advantage for the post-pubertal taekwondo athletes when kicking.

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Trail Use on, and Perceptions of a Newly Constructed Greenway Trail: Implications for Physical Activity Promotion

The majority of adults in the U.S. are not meeting physical activity recommendations. The creation and promotion of built environmental supports for physical activity have been recommended to increase physical activity in communities. METHODS: To better promote physical activity on a newly constructed trail, we used a valid and reliable intercept survey to examine: 1) the demographic characteristics and physical activity behaviors of trail users; 2) trail users' purpose for using the trail; 3) channels through which trail users learned about the trail; and 4) trail characteristics liked by trail users.

Trail users (n=1148) were mostly white (93.1%), male (59.1%) adults (84.2%) who reported using the trail for exercise (91%). Most trail users (54.2%) reported liking that the trail is free. A greater proportion of whites compared to other races reported liking that distances were marked ($p<.001$) and liking the location of the trail ($p=.003$). Trail users most often learned about the trail through word of mouth (54.2%) followed by the newspaper (13.8%), or driving by the trail (10.5%). A greater proportion of older adults than adults reported learning about the trail through the convention bureau ($p=.015$). A greater proportion of whites than persons of other races reported learning about the trail through word of mouth ($p=.027$) and the newspaper ($p=.043$). A greater proportion of persons of other races compared to whites reported learning about the trail when they drove by it ($p<.001$). Finally, a greater proportion of females than males learned about the trail through word of mouth ($p<.001$) and signs for the trail ($p=.022$).

It is clear from the present study findings that older adults and ethnic minorities use trails less often than younger age groups and whites. It may be that older adults and minorities are using other locations for physical activity. Research shows that persons who use trails for physical activity are more likely to meet the national physical activity recommendations than those who rarely or never use trails for physical activity. Further, there are documented benefits to spending time in the natural environment. Thus, efforts to promote trail use, particularly among those groups that less often using trails, may lead to

increases in trail use which could have significant public health impacts. Persons promoting trail use among specific genders, age groups, or ethnicities may want to tailor communication materials to highlight activities preferred by the groups they are targeting. For example, walking groups could be developed and promoted for females and older adults. Those developing promotion materials for the trail should consider highlighting that the trail is free and that the distances are marked. They may also want to consider including pictures of the trail design and scenery in promotion materials. The findings from this study suggest word of mouth and newspaper may be the most effective communication channels when promoting trail use but that additional channels should be considered when working with specific ethnic and racial groups. Effective strategies for promotion are important as successful promotion of physical activity on trails may lead to long-term health benefits for trail users.

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Isokinetic Evaluation and Objective Stability of the Knee after Anterior Cruciate Ligament Reconstruction

Background: The most frequently used grafts for intra-articular anterior cruciate ligament reconstruction are the autologous patellar tendon or doubled semitendinosus and gracilis tendons autografts. There are still controversies about graft selection for primary anterior cruciate ligament reconstruction. Prospective, comparative studies are needed to determine the differences between the graft materials.

Methods: A prospective, comparative study was conducted on 80 consecutive patients who underwent arthroscopically assisted anterior cruciate ligament reconstruction between January 2010 and October 2011. All procedures were performed by the first author (M.S.). In 40 patients ACL reconstruction was performed with hamstring tendon autograft (STG group), and in the other 40 patients the reconstruction was performed with patellar tendon autograft (PT group). At 6 months follow-up, all patients have performed the isokinetic extensor and flexor muscles strength and KT-1000 measurements.

Results: In the STG group, the average deficit of peak extensor torque at angular velocity of 60°/s was 13.1%. The average peak flexor torque of the involved leg in the STG group was almost 95 % of peak flexor torque of the uninvolved leg. In the PT group, the average deficit of peak extensor torque was 25.2 %, and the average deficit of peak flexor torque was minimal (1.9 %). We found a statistical significant difference between the two groups in the extensor muscles power, while we did not find any statistical significant difference in flexor muscles power. There was no significant difference between the groups with respect to the objective stability of the reconstructed knee. At 6 months' follow-up, the manual maximum KT-1000 arthrometer side-to-side difference

was 0.9 ± 1.3 mm for the PT group and 1.2 ± 1.2 mm for the STG group ($P = .398$).

Conclusion: At 6 months after surgery, we found significantly lower isokinetic quadriceps peak torque in the PT group compared with the STG group at angular velocity of $60^\circ/\text{s}$ (Power test). We did not find significant differences in knee laxity measurements between the two study groups. The patients may return to sports 4 to 6 months postoperatively, but with the risk of reinjuring the knee.

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Effect of Muscular Strength on Landing Error Scoring System Score amongst Track and Field Athletes

Landing error scoring system (LESS) is a clinical screening test used to evaluate the success of a certain athletic program designed to prevent ACL rupture, often used to identify subjects with an increased risk of ACL injury. It is consisted of 17 items depicting control over lower extremities' positioning during jumping and subsequent landing.

The purpose of this study is to determine if the strength of certain muscle groups has an effect on LESS score.

For the purposes of this study, two study groups had been formed. The examined group consisted of 41 subjects (29 male and 12 female) who had a confirmed ACL rupture. The control group, consisted of subjects with a knee injury not related to ACL, was paired according to 4 factors: gender, age, type of sport activity and side of the injury. All subjects practiced a sport at least two times per a week. Apart from LESS score during jumping and subsequent landing, measurements were made to determine the strength of knee joint flexors and extensors, as well as thigh abductors and adductors. The correlation was examined using Pearson's correlation coefficient. Significance level was set at 0.05.

A significant indirect statistical correlation ($p < 0.05$) has been confirmed between knee joint extensor strength and the LESS score within the mixed population, kept amongst the examined group ($p < 0.05$), but this statistically significant correlation was not present within the control group ($p > 0.05$). A similar trend is present with abductor and adductor strength, showing high statistically significant indirect correlation with LESS within the entire population ($p < 0.01$, both movements) and examined group ($p < 0.01$, both movements), but is not present within the control group ($p > 0.05$, both movements).

A low LESS score present with subjects with ACL rupture can be caused by low muscle strength of the extensors of the knee, as well as the abductors and adductors of the thigh. Muscle strength amongst patients with intact ACL does not appear to have an effect on LESS score.

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Lower Body Positive Pressure (LBPP) Diminishes the Surface Blood Flow Agitation in Forehead during Walking on a Treadmill

Although walking on a treadmill in a chamber that can reduce weight bearing by air pressure (Lower Body Positive Pressure: LBPP) could be an effective countermeasures against the immobilization after injuries, the evaluation of this equipment is still under way. To confirm that the LBPP is not harmful to cardiovascular system, we investigated whether the application of pressure to the lower body over the ambient level affects the blood flows in human during walking on a treadmill. We measured surface blood flows during walking in the LBPP conditions at the body parts as follows: forehead, thigh, cuff, and top of the foot.

Thirteen healthy adult volunteers have participated in this study (mean age, \pm SD: 26.4, 5.6 yo). Subject walked on a treadmill inside the chamber connected to an air compressor that can apply the air pressure to reduce the body weight bearing. Blood flow speeds at four different parts of the body (forehead, thigh, cuff, and the top of the foot) were recorded during ambulation in the pressure applied at 0.0, 5.0, and 6.7 kPa (approximately equivalent to 0, 37, and 50 mmHg) over the atmosphere level respectively, following the measurement of the baselines in ambient pressure with standing still. Further, we explored the extent of the blood flow increase at the onset of the ambulation under each pressure condition.

The weight bearing was successfully reduced down to approximately 15% of those under the ambient pressure. The blood flow linearly decreased according to the pressure in thigh (0 kPa: 82.55 ± 24.77 , 5 kPa: 73.16 ± 27.16 , 6.7 kPa: 63.60 ± 21.15); however, we did not find such a tendency in forehead (0 kPa: 23.16 ± 12.02 , 5 kPa: 20.80 ± 11.75 , 6.7 kPa: 20.65 ± 12.03). Further intriguingly, blood flow increase in forehead at the onset of the ambulation was decreased as the pressure increased (0 kPa: 11.93 ± 6.71 , 5 kPa: 6.25 ± 3.93 , 6.7 kPa: 5.81 ± 4.10).

These findings imply the actuality of the buffer mechanism, which prevents the precipitous change in surface blood flow under the LBPP condition. Further, those results could suggest that the LBPP

diminished the vacillation of the blood flow regulation. Taken together, the LBPP could be assumed that it does not have adverse effect on the blood perfusion. Because the prospective subjects could exercise with less weight bearing as well as avoiding the steep fluctuation in cardiovascular system such as hypo tension, if the LBPP would be utilized, it could be one of the effective measures for the gait rehabilitation for various situations including lower body injuries, strokes, and spinal cord injuries.

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Absenteeism, Stress and Depression related to Physical Inactivity in Employees of a Financial Institution

The aim of the study is to determine the relationship between stress and depression as well as the role physical activity play, in a South African corporate environment. Secondly, the study aims to determine the relationship between physical activity, stress and days absent from work (absenteeism) in a South African financial institute workforce.

A total of 9 860 employees of the same financial institution in South Africa, between the ages 18 and 64 ($\bar{x} = 35.3 \pm 10.7$) years, voluntary participated in the study. No differentiation was made between race groups. The assessment of selected health risk factors and physical activity was done by using the Health Risk Assessment (HRA) methodology developed by the company, Monitored Health Risk (MHM). Assessment included physical activity, stress, depression score and days absent from work questionnaire. Physical activity participation was categorised in three groups - low, moderate and high physical activity participation.

The majority of the study group is shown to be in the high stress category (55.48%). This prevalence of high stress is more prone in women than in men (57.11% vs. 52.31%). Women also show higher depression scores than men. The results show that increased stress scores are associated with increased depression scores. With regards to physical activity, both men and women show high physical activity levels which are associated with lower stress and depression levels. The data also shows that the majority of women and men are inactive or participate in low levels of physical activity. Absenteeism rates for women in the study group are relatively higher than absenteeism for men. With regards to the relationship between stress, physical activity and days absent, no moderate or high practically significant difference was found between the groups. In the women's groups a statistically significant difference with regards to days absent from work was found between low physical active groups, in the various stress score category groups.

Physical activity should be considered when designing a health promotion programme due to its advances with regards to psychological health.