



THE ATHENS INSTITUTE FOR EDUCATION AND RESEARCH

Abstract Book

**15th Annual International Conference on
Sport & Exercise Science**

29-31 July & 1 August 2019, Athens, Greece

Edited by
Gregory T. Papanikos

2019

Abstracts
15th Annual International
Conference on Sport & Exercise
Science

29-31 July & 1 August 2019,
Athens, Greece

Edited by Gregory T. Papanikos

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

ISBN: 978-960-598-295-9

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Preface

This book includes the abstracts of all the papers presented at the 15th *Annual International Conference on Sport & Exercise Science (29-31 July & 1 August 2019)*, organized by the Athens Institute for Education and Research (ATINER).

In total 18 papers were submitted by 18 presenters, coming from 10 different countries (Australia, China, Italy, Japan, Macao, Mexico, South Africa, Spain, UK, and USA). The conference was organized into 8 sessions that included a variety of topic areas, such as Biomechanics & Skill Acquisition, Human Behaviour and Psychology, Exercise Physiology and Training Methods, Injury Rehabilitation and Movement Assessment and other. A full conference program can be found before the relevant abstracts. In accordance with ATINER's Publication Policy, the papers presented during this conference will be considered for inclusion in one of ATINER's many publications.

The purpose of this abstract book is to provide members of ATINER and other academics around the world with a resource through which to discover colleagues and additional research relevant to their own work. This purpose is in congruence with the overall mission of the association. ATINER 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 to exchange ideas on their research and consider the future developments of their fields of study.

It is our hope that through ATINER's conferences and publications, Athens will become a place where academics and researchers from all over the world regularly meet to discuss the developments of their discipline and present their work. Since 1995, ATINER has organized more than 400 international conferences and has published nearly 200 books. Academically, the institute is organized into 6 divisions and 37 units. Each unit organizes at least one annual conference and undertakes various small and large research projects.

For each of these events, the involvement of multiple parties is crucial. I would like to thank all the participants, the members of the organizing and academic committees, and most importantly the administration staff of ATINER for putting this conference and its subsequent publications together. Specific individuals are listed on the following page.

Gregory T. Papanikos
President

**15th Annual International Conference on Sport & Exercise
Science
29-31 July & 1 August 2019, Athens, Greece**

Scientific Committee

All ATINER's conferences are organized by the [Academic Council](#). This conference has been organized with the assistance of the following academics, who contributed by a) setting up the program b) chairing the conference sessions, and/or c) reviewing the submitted abstracts and papers:

1. Gregory T. Papanikos, President, ATINER & Honorary Professor, University of Stirling, UK.
2. Maria Konstantaki, Head, Sport, Exercise, & Kinesiology Unit, ATINER & Senior Lecturer, Buckinghamshire New University, UK.
3. William Montelpare, Professor and Margaret & Wallace McCain Chair in Human Development and Health, Faculty of Applied Human Sciences, University of Prince Edward Island (UPEI), Canada.
4. Cleopatra Veloutsou, Professor of Brand Management, University of Glasgow, UK.
5. Konstantinos Gianikellis, Associate Professor, University of Extremadura, Spain.
6. Andreas Stamatis, Assistant Professor, State University of New York in Plattsburgh, USA.
7. Takshita Sookan, Lecturer / Researcher, University of KwaZulu-Natal, South Africa.
8. Utku Özer, Research Fellow, ATINER.
9. Julio Cesar Ortiz Enriquez, PhD Student, The University of Electro-Communications, Japan.

FINAL CONFERENCE PROGRAM
15th Annual International Conference on Sport & Exercise Science, 29-31
July & 1 August 2019, Athens, Greece
Conference Venue: Titania Hotel, 52 Panepistimiou Avenue, Athens, Greece
(close to metro station *Panepistimio*)

Monday 29 July 2019

07:50-08:40 Registration and Refreshments

08:45-09:15 (Room B - 10th Floor): Welcome and Opening Address by Gregory T. Papanikos, President, ATINER.

09:15-11:00 Session I (Room D - 10th Floor): Biomechanics & Skill Acquisition

Chair: Maria Konstantaki, Head, Sport, Exercise, & Kinesiology Unit, ATINER & Senior Lecturer, Buckinghamshire New University, UK.

1. Maria Kosma, Associate Professor, Louisiana State University, USA, Nick Erickson, Associate Professor, Louisiana State University, USA, Chase Savoie, Undergraduate Pre-medical Student, Louisiana State University, USA & Mark Gibson, LSU Alumni, MFA Graduate, Louisiana State University, USA. Skill Development vs. Performativity among Beginners in Aerial Practice.
2. Konstantinos Gianikellis, Associate Professor, University of Extremadura, Spain, Rafael Gutierrez-Horrillo, Researcher, University of Extremadura, Spain & Miguel Rodal Martinez, Researcher, University of Extremadura, Spain. Design of Technological Wheelchair System Applying Biomechanics Methodology in Paralympic Sports - DEPATech Experience.
3. Julio Cesar Ortiz Enriquez, PhD Student, The University of Electro-Communications, Japan, Masato Ando, MSc Student, The University of Electro-Communications, Japan & Takeshi Miyazaki, Professor, The University of Electro-Communications, Japan. Numerical Simulation of Wind Drift of Arrows on the Olympic Venue for Tokyo 2020.

11:00-12:30 Session II (Room D - 10th Floor): Human Behaviour and Psychology

Chair: Takshita Sookan, Lecturer / Researcher, University of KwaZulu-Natal, South Africa.

1. Andreas Stamatis, Assistant Professor, State University of New York in Plattsburgh, USA, Zacharias Papadakis, Assistant Professor, Barry University, USA, Courtney Moodie Graduate Research Assistant, Barry University, USA & Alexander Anderson, Graduate Research Assistant, Barry University, USA. The Moderation Effect of Sleep Quality on the Physical Activity - Mental Toughness Relationship: A Pilot Study.
2. Dianna Lepore, PhD Candidate, La Trobe University, Australia, Paul O'Halloran, Discipline Lead in Rehabilitation and Sports Counselling, La Trobe University, Australia & Maria-Irini Avgoulas, Lecturer, La Trobe University, Australia. The Influence of Player Integration: Perceptions and Experiences of Support Staff in Women's Football.

12:30-14:00 Session III (Room D - 10th Floor): Exercise Physiology and Training Methods

Chair: Andreas Stamatis, Assistant Professor, State University of New York in Plattsburgh, USA.

1. Teneille Venter, Senior Lecturer, Cape Peninsula University of Technology, South Africa. The Effects of a Carbohydrate Supplementation Protocol on Blood Glucose Levels in Type I Diabetic Subjects during a 60 Minute Bout on the Treadmill.
2. Takshita Sookan, Lecturer / Researcher, University of KwaZulu-Natal, South Africa, Yoshlin Naicker, Student, University of KwaZulu-Natal, South Africa, Robert Hickner, Professor, Florida State University, USA, Amrish Sookraj, Student, University of KwaZulu-Natal, South Africa & Andrew McKune, Professor, Canberra University, Australia. Maximal Aerobic Capacity and Ventilatory Threshold Predicts Microvascular Reactivity.
3. Junbei Bai, Research Assistant, Beijing Research Institute of Sports Science, China & Shuqiang Cui, Research Assistant, Beijing Research Institute of Sports Science, China. Effects Comparison of Four Cooling Methods on the Physiological Indexes in the Recovery Process after Exercise.

14:00-15:00 Lunch

15:00-16:30 Session IV (Room B - 10th Floor): Exercise and Health I

Chair: Julio Cesar Ortiz Enriquez, PhD Student, The University of Electro-Communications, Japan.

1. Francisco Javier Aceves Hernandez, Professor, Instituto Politécnico Nacional, Mexico. Epidemic of Overweight and Obesity in Mexico.
2. Spiro Doukas, Associate Professor, American Public University, USA & Kateryna Karnaushenko-Doukas, Executive Secretary, International Progressive Education Council, USA. Perceived University Students' Stress Levels in South Korea: How Much Does Alcohol Consumption and Exercise Matter?
3. Xin Wang, Associate Professor, Macao Polytechnic Institute, Macao. Knowledge, Attitude and Performance of Pelvic Floor Muscle Exercise of Nullipara and their Influencing Factors.
4. Dai Hong-Xia, Assistant Program Coordinator, Macao Polytechnic Institute, Macao. Application of Bundle Care to Reduce Perceived Stress Level of Lactation Women in China.

16:30-18:00 Session V (Room C - 10th Floor): Special Topics on Educational Issues

Chair: Cleopatra Veloutsou, Professor of Brand Management, University of Glasgow, UK.

1. Ken Roberts, Emeritus Professor, University of Liverpool, UK. Transitions from Education to Work and non-Work in Saudi Arabia.
2. Marco Mazzocca, PhD Student, University of Padua, Italy & Paolo Sommaggio, Associate Professor, University of Trento, Italy. The Importance of the Socratic Debate in the Academic Education. The Case of the University of Trento.
3. Mei Hua Kerry Hsu, Lecturer, Macao Polytechnic Institute, Macao. The Need of Disaster Preparedness in Nursing Education.

21:00-23:00 Greek Night and Dinner

Tuesday 30 July 2019

08:00-11:00 Session VI: An Educational Urban Walk in Modern and Ancient Athens

Group Discussion on Ancient and Modern Athens.
Visit to the Most Important Historical and Cultural Monuments of the City (be prepared to walk and talk as in the ancient peripatetic school of Aristotle)

11:30-13:00 Session VII (Room D - 10th Floor): Injury Rehabilitation and Movement Assessment

Chair: Konstantinos Gianikellis, Associate Professor, University of Extremadura, Spain.

1. Shuqiang Cui, Research Assistant, Beijing Research Institute of Sports Science, China & Junbei Bai, Research Assistant, Beijing Research Institute of Sports Science, China. Effect of Exhausted Treadmill Running in Rats on the Staining of Parvalbumin-Positive Neurons in the Corticostriatal Pathway.

13:00-14:30 Session VIII (Room D - 10th Floor): Exercise and Health II

Chair: Utku Özer, Research Fellow, ATINER.

1. Han Yang, Peking University, China & Zhonghui He, Professor, Peking University, China. Status of Sedentary Behavior of Adolescents and the Strategy of Exercise Intervention in China.
2. Dawid Majcherek, PhD Student, SGH Warsaw School of Economics, Poland, Elzbieta Biernat, Professor, SGH Warsaw School of Economics, Poland, Lukasz Skrok, SGH Warsaw School of Economics, Poland & Hanna Nalęcz, SGH Warsaw School of Economics, Poland. Are you Able to be a Member of Sports Clubs or Stay only with Sport Activity? A Health-Infrastructure Approach.

14:30-15:30 Lunch

20:30-22:00 Dinner

**Wednesday 31 July 2019
Mycenae and Island of Poros Visit
Educational Island Tour**

**Thursday 1 August 2019
Delphi Visit**

**Friday 2 August 2019
Ancient Corinth and Cape Sounion**

Francisco Javier Aceves Hernandez
Professor, Instituto Politécnico Nacional, Mexico

Epidemic of Overweight and Obesity in Mexico

Mexico has a growing epidemic of overweight and obesity which generates chronic degenerative diseases such as diabetes mellitus and high blood pressure, which are the leading causes of death, with around 100,000 deaths each in 2017, despite having been implemented governmental programs to control this epidemic.

This epidemic has begun to grow and become uncontrollable since the introduction of the neo-liberal socio-economic model in Mexico in the 1980s, because the population has become impoverished and has changed their eating habits, has stopped practicing physical exercises, and lives stressed by the socio-economic situation.

Fortunately, on December 1, 2018, there has been a change of government regime, which promises to make fundamental changes in the provision of health and social security services, seeking to centralize these services at the federal level, in order to be more efficient and to avoid corruption in the purchase of equipment and medicines.

The authors of this work propose that in addition to these administrative changes, other changes should be done in education, in order to train people to make better decisions regarding their eating habits, physical activation, relaxation and others, with the purpose of controlling the aforementioned epidemic of overweight and obesity.

Junbei Bai

Research Assistant, Beijing Research Institute of Sports Science, China
&

Shuqiang Cui

Research Assistant, Beijing Research Institute of Sports Science, China

Effects Comparison of Four Cooling Methods on the Physiological Indexes in the Recovery Process after Exercise

Background: Exercise in high temperature and humidity makes the dehydration and fatigue, and the movement performance will decrease significantly. The main reason for the decline of exercise ability in high temperature environment is the increase of core temperature. The second reason is that excessive sweating causes gradual dehydration, the decline of cardiovascular system function.

Objective: Four cooling methods were used to observe the changes of body temperature and other physiological indexes after exercise in high temperature and humidity. Based on the results, analysis of the application conditions of cooling methods in practice. Provides the basis for the selection of cooling methods.

Methods: This experiment included eight male college students. Volunteers were exercising on the treadmill for 20 minutes in high temperature and humidity (temperature $35\pm 0.5^{\circ}\text{C}$, relative humidity $50\pm 2\%$). After exercising, they were restored by four cooling methods (natural cooling, cooling vest, cooling glove and cold water immersion), and their blood lactate, heart rate, tympanic temperature and body surface temperature were observed respectively. Each index was tested by paired sample T test to compare the differences of the indicators.

Results: The heart rate of the four cooling methods was significantly lower than moment of stopping running ($P < 0.01$). During the cooling process, the blood lactate of the four groups decreased significantly, but the effect of the four methods on the decrease of lactate had no significant difference. The effects of chest skin temperature were as follows: cold water immersion decreased by 0.23%, glove cooling decreased by 0.6%. The cooling vest was better than other methods, decreased by 2.44%. During the 20-minute cooling process, cold water immersion had the best effect on the decrease of tympanic temperature, which was about 1.17%. Secondly, the natural cooling method was reduced by 0.67%. The method of cooling gloves dropped by 0.48%. The cooling vest had the worst effect on lowering the temperature of tympanic, which was about 0.24%. ASHRAE thermal sensation index decreased by 69.4% in cold water immersion, followed by 36.36% in the cooling vest method, 28.83% in the glove method and 20.9% in the natural cooling method.

Conclusion: 1. After exercising in high temperature and humidity, the cooling vest can reduce the chest skin temperature and thermal sensation index, but it has limited effect on reducing tympanic temperature. It is not recommended to use this method to reduce core temperature after exercising. 2. Cold water immersion is more effective than other methods in lowering core temperature after exercise in high temperature and humidity. It is helpful for cooling and functional recovery in competition and training. 3. Cooling gloves play a certain role in the recovery of heart rate and lactate after exercise in high temperature and humidity. There is no significant difference between this method and natural cooling method in lowering the temperature of tympanic.

Shuqiang Cui

Research Assistant, Beijing Research Institute of Sports Science, China
&

Junbei Bai

Research Assistant, Beijing Research Institute of Sports Science, China

Effect of Exhausted Treadmill Running in Rats on the Staining of Parvalbumin-Positive Neurons in the Corticostriatal Pathway

PURPOSE: To determine the PV⁺ interneurons expression in the Corticostriatal loops after the exhausted exercise. **METHODS:** All the 16 Wista rats were randomly divided into exhausted group (EG); and control group (CG), incremental load of treadmill exercise was employed. The initial treadmill speed was 8.2m/min, after 15min the speed increased to 15m/min, 15min later the speed improved up to 20m/min until fatigue. Record exercise time and movement distance. The immunofluorescence method was used to observe the expression of PV⁺ interneurons and GluN2B-NMDAR. **RESULTS:** The PV⁺ interneuron expression more prevalently distributed in the primary motor cortex and dorsolateral striatum of EG group. Compared to the control group, It was observed a higher number of PV-positive neurons in the primary motor cortex (M1) ($p<0.01$) and dorsolateral striatum (DLS) ($p<0.01$). Moreover, we found that the coexpression of PV⁺ interneuron and GluN2B-NMDAR in the dorsolateral striatum of EG group significantly increased ($P<0.01$). These regional distribution of PV⁺ interneuron indicate activity of M1-DLS loops was enhanced after exercised-induced fatigue. **CONCLUSIONS:** It revealed that the PV⁺ interneuron of the M1-DLS loops play an important role in neural modulation for the exercise-induced fatigue.

Spiro Doukas

Associate Professor, American Public University, USA

&

Kateryna Karناushenko-Doukas

Executive Secretary, International Progressive Education Council, USA

Perceived University Students' Stress Levels in South Korea: How Much Does Alcohol Consumption and Exercise Matter?

Suicide amongst university students in Asia is a distinct phenomenon when analyzed through a Western perspective. Suicide is the main cause of death for people between 15–34 year old young adults in China. While information is difficult to retrieve on this topic in Communist China as these statistics are not maintained, looking at a more transparent South Korea (hereafter Korea) allows these unfortunate incidents to be studied.

Japan and Korea have the highest suicide rates in the world. In Korea suicide mortality has increased since 1985 to reach over 30 per 100,000 person-years lived (PYL) in 2010, making Korea the country with the highest rate of suicide mortality amid all OECD countries.

Working in a Korean University, foreign professors discussed their perspective on stress levels of Korean university students and potential ways these students deal with stress. Korean students were also surveyed to analyze stress triggers, methods of release and how healthy the lifestyle of the average Korean student is.

Korea has launched policy implications towards suicide prevention, but students have a lack of university campus sports options that are popular in North America and the researcher looks at this gap of sports and recreation in university students' lives and how this may be a contributing factor to stress along with binge drinking.

Konstantinos Gianikellis

Associate Professor, University of Extremadura, Spain

Rafael Gutierrez-Horrillo

Researcher, University of Extremadura, Spain

&

Miguel Rodal Martinez

Researcher, University of Extremadura, Spain

Design of Technological Wheelchair System Applying Biomechanics Methodology in Paralympic Sports - DEPATech Experience

Introduction

Wheelchair is one of most important element, both for sport activities (which are part of rehabilitation process), and for daily life activities in people with reduced mobility. The characterization of it use is important for classification (fair play), technification, and technical aids design. The aim of this work is to develop a prototype of a wheelchair, which incorporates different sensors that record biomechanical and physiological data that are related with propulsion technique, safety, spinal column health, and with the balance and sport performance, answering usability criteria requirement, i.e., specific characteristics to specific user in conditions of specific use.

Methods

Workstation is composed by the following electronic systems:

Accelerometers that allow mobility characterization and wheelchair maneuverability in 3D.

Vibrations measurers according to ISO normative.

Measurers of force applied to the handrim.

Measurers of pressure distribution on the seat and the backrest.

EMG sensors for muscular intervention characterization and muscle fatigue analysis.

Complements: specific treadmill, anthropometer, cardiorespiratory evaluation system, IMU's sensors and MoCap system, which reliability has been tested.

Conclusions

Information obtained by aforementioned systems is used to establish wheelchair design criteria according to functional and morphological user characteristics, so that, this work answer to the necessity of the

development of a full system that allow to record all physiological and biomechanical parameters, that are necessary to wheelchair design and for training planning of each athlete.

This manuscript has been partially supported by the Government of the Community of Extremadura, Grant Ref. GR18191 and project Grant. Ref. IB16198; and the project "Centro de Tecnificación del Deporte Paralímpico - DEPATECH 2014-2015".

Dai Hong-Xia

Assistant Program Coordinator, Macao Polytechnic Institute, Macao

Application of Bundle Care to Reduce Perceived Stress Level of Lactation Women in China

Objectives: To evaluate the stress level after application of 'bundle care' among lactation women in China.

Methods: The study was a prospective clinical experimental research. 313 postnatal women were recruited from 3 hospitals in Guangzhou by using cluster sampling method. The control group received general care with verbal education about breastfeeding without handbook, standard breastfeeding instruction and telephone follow-up. The treatment group received 'bundle care', a series of comprehensive nursing intervention, which composed of a practical handbook on breastfeeding, instruction of breastfeeding skills through face-to-face and one-to-one methods at bedside within 24 hours postpartum. The participants accepted twice telephone follow-ups related to breastfeeding at 5 and 11 weeks postpartum. They completed 3 questionnaires on infant feeding and Chinese Perceived Stress Scale (CPSS) in the hospital, at 6 weeks and 3 months postpartum. The scale of CPSS is a validated instrument for measuring individual perceived stress. The Cronbach's alpha coefficient is 0.78 in the original research and 0.850 in this research. The scale includes 14 items, use Likert 5 rank for each item. The total score ranged from 14 to 70. The higher score means severe perceived stress level. The T test, X² test and analysis of variance (ANOVA) were used to evaluate the effects of intervention by using SPSS 22.0 software.

Results: At 3 days, 6 weeks and 3 months postpartum, the exclusive breastfeeding rates of the treatment group (31.5%, 52.7%, 59.4%) were higher than the control group respectively (20.9%, 29.7%, 29.1%), *p* values were 0.006, 0.034, <0.001 and <0.001 respectively; The mean total score of CPSS in the treatment group was 32.08±8.06, which was lower than that of the control group (37.51±7.19) at 6 weeks postpartum, *p*<0.001. However there was no statistical significance for 3 days and 3 months postpartum. The results of two-way ANOVA found significant effect on group, and interaction between group and time on PSS score (*p*<0.001).

Conclusions: Bundle care is a kind of comprehensive nursing intervention. It improved exclusive breastfeeding rates at 3 days, 6 weeks and 3 months postpartum, reduced lactation women's perceived stress and this effect could still be seen at 6 weeks postpartum.

Mei Hua Kerry Hsu
Lecturer, Macao Polytechnic Institute, Macao

The Need of Disaster Preparedness in Nursing Education

Introduction: Disaster could be happened everywhere and cause mass damage and casualties in affected area. Super Typhoon Hato hit Macao in 2017 which caused 16 people dead and at least 158 people injured. It is essential that nurses have knowledge and skills to respond to disaster in order to provide nursing care for any disaster situation. There is a need to include disaster preparedness course into nursing education in Macao.

Aim: The purpose of this study is 1) to explore the situation of disaster preparedness in nursing education including disaster management and resilience; 2) to summarize the disaster preparedness curriculum for nursing practice and education in Macao.

Method: A literature search was conducted on major electronic databases from 2007 to 2017: Ovid MEDLINE, SCOPUS and CINAHL using the keywords; Disaster Preparedness, Disaster and nursing education; disaster preparedness and nursing education.

Results: The number of disaster preparedness program in Macao nursing education is still limited. The WHO and ICN Framework of Disaster Nursing Competencies are suggested for the disaster preparedness course to underpin nursing curriculum content in nursing education. The preparation and training of the faculty for disaster preparedness are important in nursing education.

Discussion: Disaster preparedness curriculum is needed in Macao which follow The WHO and ICN Framework of Disaster Nursing Competencies. The simulations of disaster scenarios such as typhoon, earthquake should be involved into the programme. More, the disaster preparedness programme should include the regulations, actions, and contingency plans to disaster in Macao.

Maria Kosma

Associate Professor, Louisiana State University, USA

Nick Erickson

Associate Professor, Louisiana State University, USA

Chase Savoie

Undergraduate Pre-medical Student, Louisiana State University, USA

&

Mark Gibson

LSU Alumni, MFA Graduate, Louisiana State University, USA

Skill Development vs. Performativity among Beginners in Aerial Practice

In his prominent book the *Phenomenology of Perception*, Merleau-Ponty (1945) challenged the Cartesian dichotomy between body and mind, where the intelligent mind is supposed to control and guide the inferior body, which is typically viewed as a passive object like other objects in the world. Instead, he emphasized the interaction between mind and body in movement, where the body is an acting subject - the Lived body - that climbs, dances, and informs the mind. The body is lived as "one's own body" and not as an object, which is separable from one's being. Embodied action in aerial practice/silks encompasses cognitive and bodily sensory awareness, including enhanced analytical thinking in the initial stages of skill acquisition and the precedence of kinesthesia for mastered skills (Kosma et al., in press). Therefore, the purpose of this *phronetic*, qualitative study was to examine differences in skill development and performativity in aerial practice - as dance or physical theater - based on performativity or not. Study participants were 17 undergraduate students ($M_{\text{age}} = 20.59 \pm 1.37$ years old; females = 12; males = 5; European Americans = 14; other [Asian or of mixed-race] = 3), who enrolled in two semester-long undergraduate aerial practice classes for beginners at a major Southeastern US university. The emphasis in the treatment group/class ($n = 8$) was on both skill development and performativity, including choreography, storytelling, and expression; whereas in the control group/class ($n = 9$) the emphasis was only on skill development. Individual-based interview questions during pretest and posttest included exercise levels, aerial practice goals, and program experiences. Posttest sample videos of a sequence of aerial movements was also blindly evaluated by an independent expert at aerial silks. Most students in both groups were regularly active, participating mainly in strength training and aerobic activities. Based on the *phronetic*, thematic analysis, three themes emerged. Based on the first theme, *success in meeting aerial goals*, the emphasis in both groups at pretest and posttest was on developing skills; only a few students emphasized performativity. Five

students in the treatment/performative group highlighted at the posttest that the performativity aspect was the most challenging. Their overall emphasis on skill development was also confirmed by the second theme, *exercise changes due to aerial*, where many participants highlighted upper-body strength and fitness levels. Only a couple of students in each group referred to the performative/artistic aspect of aerial. Suggested *program changes* (3rd theme) included continuing emphasis on skill development for beginners and maintaining a small class size. Although all six student video performances (three for each group) were rated “satisfactory” or “complete” in technical skills, only one treatment-group student had the highest rating (complete) in all areas, including performativity. The results support the embodiment process in movement programs for aerial practice or dance, in that skill development should be emphasized among beginner aerialists before adding another cognitively demanding aspect of performativity like artistic expression and storytelling.

Dianna Lepore

PhD Candidate, La Trobe University, Australia

Paul O'Halloran

Discipline Lead in Rehabilitation and Sports Counselling, La Trobe
University, Australia

&

Maria-Irini Avgoulas

Lecturer, La Trobe University, Australia

The Influence of Player Integration: Perceptions and Experiences of Support Staff in Women's Football

Professional football clubs often seek new player transfers before the beginning of a season in the hope to achieve desired performance outcomes (i.e. winning matches). Although recruiting new players into a team is generally considered to be beneficial, the success of a player transfer is highly dependent upon whether the new player feels integrated (i.e. accepted and valued by existing team members) into their new team environment. Elucidating this, a player may progress throughout a whole football season without feeling integrated, thus potentially impacting on their ability to perform at their highest standard. In addition, team cohesion has also been linked with influencing team performance, thus, it is essential that new players are able to adjust quickly and smoothly into their new team. Drawing from an earlier qualitative study that explored the perceptions and experiences of W-League (i.e. professional Australian women's football league) players integrating into teams, this paper will expand on these findings by exploring the perceptions and experiences of the football club professional support staff members of how new players integrate into teams. Indeed, integrating newcomers into a new environment has been recognised as a shared process, indicating that staff members at a football club will likely influence a new players' feelings of integration. The current study was conducted using semi-structured in-depth interviews with the support staff of a professional W-League club (i.e. welfare coach, strength and conditioning coach, physiotherapist, assistant coach etc.) in Australia and analysed through thematic analysis. Comparisons with earlier work are made to illustrate the similarities and differences in perceptions and experiences between the W-League players and support staff members, in terms of how new players integrate into new teams. This research may be beneficial in assisting new players with positive feelings of integration, and a smooth adjustment process into their new team environment.

Dawid Majcherek

PhD Student, SGH Warsaw School of Economics, Poland

Elzbieta Biernat

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Are you Able to be a Member of Sports Clubs or Stay only with Sport Activity? A Health-Infrastructure Approach

It is widely known that sport became important social issue in last decades. The purpose of this research is to answer two main questions: 1) how membership in sports clubs and engagement in sport activity (SA) differ? 2) which health aspects and infrastructure factors play crucial role in engagement society in SA? In order to examine this issue the combination of Social Diagnosis dataset with Infrastructure data of the Central Statistical Office in Poland were used in logistic regression modelling. It allows to analyze different sport aspects related to health, cultural, social and labor characteristics. The results imply that in Poland the impact of public infrastructure on sports club membership is relatively high which is not visible in SA. Providing only facilities infrastructure seems to have low effectiveness in terms of engagement society in SA. Moreover, the findings suggest that minor health problems of women motivate them to be active, unlike the men population where such a case implies deactivation. The overall results point out significant difference in factors related to health and infrastructure which determine SA and membership in sports clubs.

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The Importance of the Socratic Debate in the Academic Education. The Case of the University of Trento

Debate has always been considered as a fundamental tool for developing knowledge and skills (curricular and extracurricular), as well as to represent a good way to educate into democratic coexistence and civic participation. This is because, since it embodies a sort of training strategy that “de-structures” and reassembles the traditional setting of a learners community in an innovative and participatory way, it builds a sort of "upside-down class" in which students are called to cooperate in order to manage access to different sources of information and to deal with them in a way that helps them to construct persuasive arguments and hypothesize counter-argumentations. In this sense, therefore, professors are called to assume a new role, leading but not directing students in this didactic experience.

Today, however, in Western societies the public debate seems to have in many ways deteriorated: the logic and the argumentative strategies are often designed or performed in a way that enables a delegitimization of the other party and a demotion of logical and argumentative tools into manipulative forms of persuasion, not immune to violent outcomes, as it is particularly evident in the daily use of social media (e.g. in hate speeches). In this context of post-democracy, it is a valuable tool for the formation of the new democratic citizens, as people willing to participate in a critical way, open to dialogue and confrontation, and so to non-violent interaction. Moreover, it is to be considered that, in the academic field, the practice of debate may lead to the development of ever greater integrity and ethics of scientific research which, today, seem to be undermined by monologist practices not based on a healthy professional relationship among peer.

The main purpose of this work is, therefore, to show how the introduction of this form of educational approach marked by the debate on university students can lead them to some indisputable academic and social benefits. In this regard, during the course of the presentation, the various steps undertaken in the last sixteen months by the University of Trento's strategic project called "NSF -Nuove Strategie per la Formazione" ("NTS -New Training Strategies") are presented. For this reason, after a short introduction regarding the idea of Socratic debate, the approach to the debate (academic and non-academic) followed by some volunteer

students of the University of Trento will be presented. A path that, as will be explained, despite having started in a top-down manner has subsequently developed to the establishment of a real student association open to citizens.

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Numerical Simulation of Wind Drift of Arrows on the Olympic Venue for Tokyo 2020

In the present work, the dynamics of archery arrows are studied by means of a mathematical model to evaluate their response to different wind characteristics and initial conditions. Numerical computations are performed to quantify the effect that the background wind has on the dynamics of the arrows during their flights. The aerodynamic and physical characteristics of two commercial arrows were obtained by tests in the Magnetic Suspension and Balance System from JAXA and free-flight tests carried out in the Japan Institute for Sports Sciences, JISS. The background wind information from the venue where the Olympic Archery Competition will be held in the Tokyo Olympic Games in 2020 was provided by JAMSTEC. In a simulated archery range of 70 m, the heavier arrow showed a lateral deviation from the center of the target of ~ 0.11 m, whereas the lighter arrow showed a final deviation in its trajectory of ~ 0.15 m. The ratio of the drag force to the gravitational force plays a key role in determining the deviation in the trajectory. By keeping the boundary layer laminar, a less deviated shot can be achieved. With increasing arrow's initial velocity, the deviation in the trajectory also reduces.

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Transitions from Education to Work and non-Work in Saudi Arabia

Saudi Arabia rarely features in any field of English language youth studies. This is despite the availability of considerable official data in English language on young people's education, employment, and links between them, routinely analysed by gender, province and nationality. However, this evidence has never been analysed using the 'transition paradigm' that has been developed and is now favoured in Western studies of youth education and employment. This paper reports a small-scale interview study among 23 Saudis all aged 25-35 which was designed to fill gaps and enable typical life stage transitions to be identified. The paper describes and justifies the research methods, sketches the Saudi context, then gives examples of the youth transitions that became normal during the latter decades of the 20th century. We then sketch the changed Saudi Arabia context of the 21st century, and give examples of 'difficult transitions' which, we suggest, will become more common. The paper continues with a discussion of how Saudi youth will respond to their new circumstances, concludes that the 'transition paradigm' can be applied and works well in an Arabic and Islamic context, and makes proposals for further research.

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Maximal Aerobic Capacity and Ventilator Threshold Predicts Microvascular Reactivity

Purpose: To determine the association between maximal and submaximal indices of cardiorespiratory fitness (CRF) and skin microvascular reactivity in physically active but untrained young adults.

Methods: Twenty-six physically active, but untrained, young adults (21.6 ±1.9 yrs, 73.3 ±10.5 kg, BMI 23.7 ±2.9 kg.m²) were recruited. An incremental bicycle ergometer test was then performed to determine VO₂ peak, ventilatory threshold (VT) and respiratory compensation point (RCP). One week later, a post-occlusive reactive hyperemia response (PORH) test was used to assess microvascular reactivity on the participants right palmer forearm using a moorVMS-Laser Doppler Fluxmeter (LDF). Defined flux and time parameters were calculated from the PORH test including PORHmax (maximum increase in hyperaemia perfusion above resting flux), PORHpeak (amplitude of peak perfusion), time-to-peak perfusion (Tp) and the ratio of PORHmax/ TP. Multiple linear regression (backward method) was used to determine the association between variables. Significance was set at P<0.05.

Results: The results for VO₂ peak (46.65 ± 7.48 ml.kg⁻¹.min⁻¹), VT (34.67 ± 12.62 % of VO₂ peak) and RCP (74.88 ± 19 % of VO₂ peak) indicated a moderate maximal aerobic capacity but low submaximal endurance capacity for the participants. Maximal and submaximal CRF indices were shown to be strongly associated with microvascular reactivity. Specifically, VO₂ peak was shown to be the best predictor of PORHmax (r² = 0.18; p=0.03). VT was shown to be the best predictor of PORHpeak (r² = 0.17; p=0.04), Tp (r² = 0.11; P=0.04) and PORHmax/ TP (r² = 0.18; P=0.02). RCP together with VT predicted 28% of the variance in PORHmax/ TP (r² = 0.28; P=0.02).

Conclusion: Maximal and submaximal indices of CRF, specifically VO₂ peak and VT are independent predictors of microvascular reactivity. The finding that VT, a submaximal marker of CRF, predicts most

microvascular reactivity parameters has implications for exercise interventions aimed at improving microvascular health and reducing cardiovascular disease risk.

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The Moderation Effect of Sleep Quality on the Physical Activity - Mental Toughness Relationship: A Pilot Study

Background: Research has reported conflicting findings regarding the relationship of *mental toughness* (MT) with *physical activity* (PA), while it indicates a bidirectional association between *sleep quality* (SQ) and MT. To date, there is no evidence regarding the interaction effect of PA and SQ on MT.

Purpose: To investigate the interrelationships and the interaction effect of PA and SQ on MT. We hypothesized that: (a) PA and MT are positively associated; (b) SQ and MT are positively associated; and (c) the moderating effect of SQ and PA on MT will be enhancing.

Methods: Thirty healthy individuals (age 26.5 ± 8.2 SD) participated. MTI was used to collect information about MT, PSQI about SQ, and ACSM guidelines about PA. Interaction effects of the responses were analyzed using factorial ANOVA. Statistical significance was set at $p < 0.05$. All analyses were performed using SPSS[®]. **Results:** Both PA ($r = .308$, $p = .049$) and SQ ($r = .514$, $p = .002$) were positively correlated with MT. The interaction of PA and SQ has an enhancing moderating effect on MT ($F_{3,1} = 5.807$, $p = .023$, $\eta^2 = .183$). Therefore, evidence for all hypotheses was found.

Conclusion: This study confirms the positive associations of both PA and SQ on MT. Higher levels of MT can be achieved in healthy individuals who are both physically active and have good quality of sleep. Limitations include self-reported data. Larger scale research efforts are recommended.

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The Effects of a Carbohydrate Supplementation Protocol on Blood Glucose Levels in Type I Diabetic Subjects during a 60 Minute Bout on the Treadmill

Introduction: Diabetes associated complications make management during exercise complex (Brugnara, Vinaixa, Murillo, Samino, Rodriguez, Beltran, Lerin, Davison, Correig & Novials, 2012). Research on the prevention of such challenges is of paramount importance.

Aims: The aim of the study was to determine effects of three different carbohydrate supplementation protocols on blood glucose levels after every 10 minutes of a 60 minute exercise bout on the treadmill as well as every half hour during a two hour post exercise recovery period.

Methods: Three protocols implemented were: control protocol (no carbohydrate supplementation), protocol 1 (one carbohydrate supplementation of 10 grams given at 30 minutes) and protocol 2 (two carbohydrate supplementation of 10 grams given at 30 minutes and 45 minutes). A total of 32 participants took part in the study. All participants were submitted to all three protocols.

Results: Statistical and practical significant differences were found between mean blood glucose levels of protocol 0 ($M_0=11.0\text{mmol.L}^{-1} \pm \text{SD } 4.88$) and protocol 1 ($M_1=9.07\text{mmol.L}^{-1} \pm \text{SD } 3.99$) at 20minutes of the exercise duration ($p=.24;d=0.42$). Statistical and practical significant differences in blood glucose levels were also found between protocols 0 and 2 at 10 minutes ($M_0=12.5\text{mmol.L}^{-1}$ and $M_2=9.1\text{mmol.L}^{-1} ; \pm \text{SD } 5.44 ; p=.001 ; d=0.62$), 20 minutes ($M_0=11.8\text{mmol.L}^{-1}$ and $M_2=8.5\text{mmol.L}^{-1} \pm \text{SD } 5.23; p=.001 ; d=0.63$) and 30 minutes of exercise ($M_0=11.1\text{mmol.L}^{-1}$ and $M_2=8.3\text{mmol.L}^{-1} ; \pm \text{SD } 5.40 ; p=.006 ; d=0.52$) as well as between the mean minimum ($M_0=9.49\text{mmol.L}^{-1} \pm \text{SD } 4.51$ and $M_2=7.28\text{mmol.L}^{-1} \pm \text{SD } 4.07 ; p=.013 ; d=0.46$), mean maximum ($M_0=12.73\text{mmol.L}^{-1} \pm \text{SD } 5.51$ and $M_2=10.07\text{mmol.L}^{-1} \pm \text{SD } 4.63; p=.015 ; d=0.46$) and overall mean ($M_0=9.07\text{mmol.L}^{-1} \pm \text{SD } 4.88$ and $M_2=8.53\text{mmol.L}^{-1} \pm \text{SD } 4.25 ; p=.011 ; d=0.48$).

Conclusion: It was concluded that carbohydrate supplementation during exercise seems to affect blood glucose levels positively. Whilst protocol 2 resulted in less fluctuations in the blood glucose levels during exercise and minimum, overall mean and maximum blood glucose values were closer to “normal/safe” range, there was no conclusive evidence that protocol 2 was better than protocol 1.

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Knowledge, Attitude and Performance of Pelvic Floor Muscle Exercise of Nullipara and their Influencing Factors

Objective: To understand the knowledge, attitude and performance of pelvic floor muscle exercise during pregnancy women of mainland of China and to analyze their influencing factors.

Methods: A sample of 610 nullipara were interviewed by a self - designed questionnaire of knowledge and performance of pelvic floor muscle exercise.

Results: 30.7% of the nullipara knew pelvic floor muscle exercise while only 11.3% knew the specific techniques of pelvic floor muscle exercise and 2.1% exercised daily. There was a positive relationship between the knowledge level and educational background of the nullipara ($P<0.05$). There was a significantly positive relationship between knowledge and frequency of exercise ($P<0.05$).

Conclusion: The knowledge of pelvic floor muscle exercise remains poor in nullipara, consequently, they lack related exercise. The performance is related to knowledge level. Corresponding measures should be taken to improve the knowledge and eventually to improve the performance of pelvic floor muscle exercise.

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Status of Sedentary Behavior of Adolescents and the Strategy of Exercise Intervention in China

Purpose: Sedentary behavior is the first independent risk factor for chronic non-communicable diseases and it has become the biggest public health problem in the 21st century. Based on the analysis of the status quo and harm of Chinese teenagers' sedentary behavior, this paper explores the strategies of exercise intervention.

Results: 1. Characteristics of the sedentary behavior. Recent national prevalence estimates from the 2016 Physical Activity and Fitness in China – The Youth Study (PAFCTYS) are presented. The survey revealed that 75.2% of young people reported at least 2 hours of sedentary behavior per weekday and 88.6% per weekend day ($P < 0.01$). Girls are more sedentary than boys on both weekdays (boys 74.9%, girls 75.5%) and on the weekend (boys 84.8%, girls 88.8%) ($P < 0.01$). At the same time, only about one-third (30%) of Chinese school-aged children met the recommended MVPA in 2016. Increasing screen-based time, particularly the use of the computer and internet and doing much homework are the main causes that contribute to the high levels of sedentary behavior.

2. Health hazards of sedentary behavior: (1) The “sedentary” lifestyle, the long use time of electronic products and the heavy tasks of classwork have led to the highest myopia rate among young people in China. The proportion of people with myopia was 45.7% for pupils, 74.4% for junior high school students, 83.3% for high school students and 87.7% for college students. (2) Long sedentary time and long-term bad sitting posture lead to the incidence of scoliosis among Chinese teenagers up to 20%. The overall ratio of male to female with scoliosis is about 1:3.

3. Doing Moderate-intensity exercise for 60-75 minutes per day reduces the risk of death from sedentary behaviour. However, even if the recommended moderate-to-high intensity physical activity for 60 minutes per day is achieved, the sedentary behavior will still have an adverse effect on health when sitting still for a long time

Conclusion: 1. Resistance exercises aimed at increasing muscle strength and improving the health condition of bone should be paid attention to in the stage of children and adolescents. 2. To reduce sedentary time, we encourage young people to take appropriate exercise during breaks, which can play the role of limiting screen time and alleviating visual fatigue.