

Physical Education and Learning

**Edited by
Gregory T. Papanikos**

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Physical Education and Learning: An Introduction

Gregory T. Papanikos, President, ATINER, Greece

Physical Education and Learning includes selected papers on special topics in fitness that were presented at the Conference organized by the Athens Institute for Education and Research in 2011.

This annual conference provides a singular opportunity for presenters from all over the world to meet and share ideas with the aim of furthering their knowledge of their discipline. The twelve papers in this volume were selected for inclusion after a process of blind-review by at least two of the editors and reviewers. The volume is organized roughly along traditional lines. This should not, however, mislead a reader into supposing that the topics or approaches to problems fall neatly into traditional categories.

The selection of papers chosen for inclusion gives some idea of the variety of topics addressed at the conference. However, it would be impossible in an edited volume to ensure coverage of the full extent of diversity of the subject matter and approaches brought to the conference itself by the participants.

The first chapter, by Vassilios G. Vardaxis and Laura Covill addresses Pain Effect and Physical Activity Profiles of Hip Osteoarthritis Patients. The authors show that patients with hip osteoarthritis (OA) limit their activity levels, secondary to pain. After total hip arthroplasty (THA), since pain is decreased activity levels should most likely increase. Yet, activity levels may be related to daily habits and patients may self-limit secondary to their previous longstanding physical impairments. Pain and activity profiles of patients with hip OA (pre and three months post THA) were compared to healthy cohorts.

Trends in Physical Activity in the U.S. before and during the Current Financial Crisis is the contribution of Peter T. Baltrus, Elvan C. Daniels, Dominick H. Mack and Rakale Collins Quarells. Low socioeconomic status is associated with lower levels of leisure time physical activity. A financial crisis began in the U.S. in 2007, but trends in leisure-time physical activity before and during the crisis have not been reported. They examine trends in physical activity levels before and during the crisis in the general U.S. population and in the population stratified by age groups, gender, poverty and employment status and race/ethnicity. They hypothesize that there will be an observable decrease in physical activity in the general population and among vulnerable groups in particular.

The next chapter of Fabiana Pomin, Milagro Ezquerro García-Noblejas and Itziar de Ozámiz focuses on the differences in body image perception and

cardiovascular/skin conductance reactivities in athletes, in men and women alike, by applying a questionnaire to evaluate the corporal image and silhouette rating scale. The heart rate (HR) and skin conductance response (SCR) was measured in the sample (n = 122, age M = 21.89, SD = 2.13) during a task of body parts assessment and a range of silhouettes. They found that both men and women have a perception of their body image according to reality, even though women desire a thinner image to feel attractive. Additionally, the image that women consider more attractive to the opposite sex is the same as men and vice versa. In particular, women focus their concerns on the lower body, weight and height, whereas men focus on their hair. No significant differences in HR and SCR reactivity was found regarding gender. However, there appeared to be a tendency in which women have greater changes in SCR. The results highlight the importance of the sex differences in response to a body image evaluation: women seem to be physiologically more vulnerable to changes in the physical appearance domain, independently from the influence of sports practice.

The purpose of the study, by Verda Akbal, Bergün Meriç Bingül, Mine Gökkaya, Menşure Aydın and Çiğdem Bulgan was to determine the effects of pilates exercises on the improvement of balance and flexibility, which are among the most important parameters of figure skating. 12 figure skaters (age: $7,83 \pm 8,0$) participated in the study as volunteers who have been members in sport clubs. As the control group, 6 of them were applied routine figure skating trainings without any pilates exercises, and as the experimental group, the rest of them were applied routine figure skating trainings with pilates exercises. Figure skaters were trained within 8 weeks, twice each week. The balance parameters of the subjects were measured with flamingo testing and the flexibility values of the subjects were measured with sit and reach tests before and after the exercises. All data was analyzed by using SPSS 18.0 program by the Wilcoxon test. As a result, statistically significant differences were found for experimental group values of each sit and reach test and flamingo balance test ($p < 0,05$). According to the results pilates exercises have positive effects on flexibility and balance abilities of figure skaters.

The next chapter by Rajasekhar Kali Venkata, focuses on both anaerobic and aerobic metabolic systems for ATP synthesis. They are activated at the initiation of exercise, but the dominating system depends on the intensity. Phosphocreatine (PCr) hydrolysis and Anaerobic Glycolysis leading to the formation of lactate make a major contribution in ATP synthesis, while oxidative phosphorylation at mitochondria contributes a minor role in ATP synthesis during the first five seconds of sustained sprinting. For sustained sprinting lasting more than 15 seconds the dynamics of ATP synthesis changes markedly. The PCr system contribution progressively decreases while the oxidative phosphorylation contribution progressively increases along with anaerobic glycolysis and becomes the highly dominant system of ATP synthesis especially after 12 to 15 seconds.

In the following contribution, the authors Abdollah Ghasemi, Maryam Momeni, Alireza Elahi and Mahdi Falahati investigate the effect of the sports

and social programs of the SO on individuals with Down syndrome. Accordingly, 16 women and 24 men with Down syndrome, who were the members of Iran's SO teams, participated in the study. The control group consisted of 22 males and 15 females with Down syndrome who were randomly selected from the Down syndrome associations. The training protocol of the experimental group was defined as a 6 month participation in the SO programs. The instrument included the Wheeler and Ladd's Children's Self-Efficacy for Peer Interactions Scale (1982). The independent t-test results showed a significant increase in the self-efficacy of the experimental group after 6 months of training compared with the control group. It seems that participation in social and SO sports activities may enhance the sense of self-efficacy in these people due to the improvement of their physical fitness, self-worth and self-confidence, which may result in their less dependence on parents in their social interaction.

The main purpose of the following study was to determine the injury incidence and severity among Australian amateur taekwondo athletes. Reidar P. Lystad, Petra L. Graham and Rod Bonello collected data prospectively at the New South Wales (Australia) State Taekwondo Championships during 2010 and 2011. Injuries were diagnosed by tournament sports medicine personnel and recorded according to the Orchard Sports Injury Classification System (Version 10). Injury severity was recorded by conducting post-tournament follow-up of injured athletes to determine the actual number of days lost from full participation. Incidence rates and rate ratios with 95% confidence intervals (CIs) were calculated using standard methods.

Following, is a study addressing the health Factors in Qatar and the Sport Science Program at Qatar University. The author, Ruben Tobias Goebel, shows that Qatar is confronted with serious health problems, specifically obesity, diabetes, and resulting diseases More than 9% of 15-18 years old are obese (Bener et al., 2011). Among adults 30-60 years old, the overweight and obesity rates lie at 70-88% (Ng et al., 2011); an extrapolation of diabetes rates suggests 17% with an increased tendency (Baner et al., 2009). The GCC countries have the highest prevalence of diabetes mellitus in the world (IDF, 2009).

In the next chapter "Boxenomics": How do Effort and Efficiency Vary during Amateur Boxing Tournaments?, David Chaplin addresses the conventional wisdom which purports that the semifinals always produce the most hotly-contested (i.e., "best") bouts in amateur boxing tournaments. This is tested using the difference of means analysis. Two metrics are used to assess boxers' quality of performance: "effort" and "efficiency". Effort is measured by raw punch count (the aggregated number of times a judge indicated a scoring blow). Efficiency is measured as the ratio of accepted score to raw punch count. The evidence neither supports boxers pacing themselves by expending less effort early in the tournament and then maximizing their effort in the semifinals nor "learning by doing", whereby they steadily increase their efficiency throughout the tournament.

The article, by Jean-François Desbiens, Carlo Spallanzani, Martin Roy, Sylvain Turcotte, S everine Lanoue and Jean-S ebastien Tourigny, aims

to describe a Health and Physical Education (HPE) learning climate, and to examine students' perceptions of the interaction behaviours of the student teachers. Twenty-five student teachers at the completion of their fourth year of professional training and 565 high school students participated in this study. Data collection was completed with three observation systems (Academic learning time in PE, Learning Climate Observation System, Disciplinary Incident Observation System) and one high-inference questionnaire on student teachers' behaviours perception (Questionnaire for Teacher Interaction). Descriptive and multivariate nonparametric statistics were used to analyze data. Results show that student teachers gave much encouragement and were perceived as cooperative and supportive. However, appropriate motor engagement was low (Mean < 15%) while waiting time (Mean > 30%) and disruption levels were high. Disruptive behaviours' frequency closely corresponded to inadequate class and group organization, low to very low levels of perceived support and control, and to the student teacher "Ignore" behaviour. On the other hand, adequate motor engagement related to high occurrence of episodes of appropriate verbal expression, class organisation, and tasks difficulty and high to very high levels of perceived support and control. Even if students favourably perceived their student teachers' interaction behaviours, the learning climate that prevailed in student teachers' HPE classes studied was not likely to allow the attainment of high-order learning objectives. In addition, student teachers seemed to experience a dilemma: how to act supportively without falling into permissive pedagogy? These results raise a number of questions with regard to HPE professional training efficacy.

Maria Rosaria D'Acerno, shows the purpose of her study to be twofold: 1) to balance physical activity between men and women, since it seems that men are more active than women - the latter preferring to achieve good results at beauty farms or via cosmetic surgery -, and 2) to stimulate people in general to improve the standard of their lives by limiting, preventing or avoiding the damage caused by age, such as obesity, Alzheimer, deafness, high cholesterol and sugar level, etc. The combination of learning new languages, practising physical activities, playing a musical instrument or simply enjoying listening to music seems to favour a good attitude towards life and consequently it activates both the brain and the body.

The final paper, by Leslie J. McGrath, Erica A. Hinckson and Will G. Hopkins, demonstrates that playing during recess is an important opportunity for children to accrue moderate and vigorous activity. Actical accelerometers were used to determine the magnitude of additional daily activity accumulated during an extra play period before school. *Methods:* Actical accelerometer data were collected in 79 children a crossover play intervention over 6 months at two schools. The intervention provided children with a supervised play period before school (08:00-09:00) and free access to play equipment for use during playtimes. *Results:* Girls in the intervention groups had reductions in BMI but the effect was trivial (intervention; 17.74 to 17.57 kg/m² vs. control; 17.54 to 17.60 kg/m²) and overall BMI of boys receiving the intervention remained

constant. Children that provided accelerometer data for each repeated measure had small reductions in moderate to vigorous activity (girls; 49 to 37 min; boys; 59 to 44 min). The percentage of children with valid accelerometer data from measurement week one to four were 79%, 68%, 65% and 47%. Incomplete accelerometer data excluded 50% of children from analysis which limited accurate determination of the intervention effect. *Conclusions:* There was a trend towards reduction of BMI in girls but not for boys following an unstructured play intervention with primary school children. To increase the likelihood of detecting small intervention effects, increasing the sample sizes needs to be considered due to loss of activity data.