

3rd FIEP ASIA CONFERENCE

Physical Education and Sports
(ACPES 2018)

BOOK OF ABSTRACTS

**'Physical Education and Sports
help build a Healthy Society'**

1 - 3 June 2018

**Tunku Abdul Rahman University College,
Kuala Lumpur, Malaysia**

Partner Universities :



Organized by :

Tunku Abdul Rahman University College in collaboration with FIEP Europe

ACPES 2018

3rd FIEP ASIA CONFERENCE

Physical Education and Sports

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ISBN 978-967-0115-03-0
<https://www.tarc.edu.my/fiep/>

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ABSTRACT

Health and Physical Education among Children and Youth – Among European Perspective

**Prof. Dr. Branislav Antala**

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In the beginning of presentation, sedentary lifestyle and physical inactivity of people, all with related health, economic and social consequences, as a one of principal global problems in today's world will be presented. First main part of presentation will be oriented to the basic results of different comparative studies focused on actual situation and trends of European young population in obesity, in eating behaviours, in physical inactivity, in sedentary behaviours and in socioeconomic characteristics of younger generation obesity. This part of presentation will be completed also by information on situation of PE in different European countries, on changes of selected PE indicators during the last 25 years and on changes of curriculum aims in many European countries to health and healthy active lifestyle of children and youths. Last part of presentation will be focused on perspectives and recommendations for better PE for future in European changing society together with examples of the best PE practices not only from European but also from different countries. This part of presentation will be completed by short video clips.

ABSTRACT

Motivation in Sport and Physical Activity: How Can We Get People to be More Active?

**Prof. Dr. John Wang Chee Keng**

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Motivation is one of the most important constructs studied in psychology as it represents the 'why' question of behaviour. Although numerous motivational theories have been proposed, with accompanying assumptions about the nature of humans and factors that motivate behaviour, no single theory has yet to claim the ability to explain motivated behaviour in its entirety (Roberts, 1992). Modern approaches are beginning to pull together different aspects of motivational research in order to understand motivated behaviour. The purpose of this presentation is to draw together recent studies on achievement motivation of young people in PE using a social cognitive approach. Specifically, I will make use of three theories: self-theories of ability (Dweck, 1999; Dweck & Leggett, 1988), achievement goal theory (Dweck & Leggett, 1988; Nicholls, 1984, 1989), and self-determination theory (Deci & Ryan, 1985), as the underpinning framework for understanding motivation in PE context. First the definition of motivation will be outlined. Next, an overview of the three theoretical frameworks self-theories of ability, achievement goal theory, and self-determination theory will be presented. Finally, the presentation will focus on research findings related to the synthesis of theories and statistical methods in physical activity settings.

ABSTRACT

Sport Training and Youth Health: Taking a Sociocultural Perspective



Assoc. Prof. Dr. Tania Cassidy,
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This presentation makes a case for sociocultural inspired frameworks, definitions and concepts to be used in the professional development of practitioners working in the sport training and youth health fields. The presentation is divided into three parts. First, it highlights the way in which many working in the sport training and youth health fields are preoccupied with 'problem-solving' at the expense of examining how the problems are 'set' (Lawson, 1984, 1993). This is followed by a discussion as to possible consequences a focus on problem solving has on, and for, the experiences of young people. Second, the presentation illustrates the potential value of using Quinn et al.'s (1996) 'professional intellect' framework. This framework not only recommends a focus on 'knowing what' and 'knowing how', but also promotes turning the focus onto 'knowing why' and 'caring why'. The potential value of focusing on 'knowing why' and 'caring why' is that it enables practitioners and organisations to: place an emphasis on the process rather than content; explore and examine the status quo, as well as; discuss the moral, ethical and political aspect of practice. Third, by drawing on Côté & Gilbert's (2009) integrative definition of coaching effectiveness, it is possible for practitioners working in the fields of sport training and youth health to see the benefits of developing their professional, inter- and intra-personal knowledge, adopting a broad view of health and considering the contexts in which they are working.

ABSTRACT

Consideration during Competitive Activities, Promoting a Positive Experience in Physical Education Class



Assoc. Prof. Dr. Eve R. Bernstein
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Competitive activities may comprise the majority of activities in physical education (PE) class. Structured through various curricular models, competitive activities are not only used in United States but also worldwide. As PE class may be the first time students have the opportunity to participate in various activities, it is important that the experiences they have are successful. During middle school, however, physical activity declines. In order to create a positive experience for students, it is necessary to start to understand how students are experiencing these competitive activities. In addition, how do teachers' beliefs affect the way they structure and instruct these offered competitive activities? Examination of both these aspects of participation and interaction will be discussed in order to uncover considerations when presenting these various activities.

**Prof. Dr. Kim C. Graber**

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More than 30 percent of children in the United States are classified as obese or overweight (Ogden, 2015). In addition to an increased risk for type II diabetes, hypertension, heart disease, and high cholesterol, there are social and psychological implications such as depression and discrimination that overweight and obese individuals encounter. Although school-based physical activity and physical education are associated with obesity reduction and prevention, few schools in the United States meet the nationally recommended guidelines that specify the amount of time that children should be active during the school day (SHAPE America, 2016). Furthermore, overweight and obese children avoid opportunities during the school day to be active for fear of being bullied, teased, and intimidated by their peers. The purpose of this presentation is to highlight concerns expressed by obese and overweight students in relation to engaging in physical activity and to highlight aspects of programs that have proven to be successful in reducing children's weight and increasing their desire to be physically active (Trout and Graber, 2009). Although federal and state policies have been developed to address the obesity epidemic, few have proven to be effective. Instead, the most effective form of prevention may need to occur in schools at the local level. Therefore, understanding elements of school-based programs that have proven to be effective can provide physical education teachers with powerful new weapons for addressing the obesity epidemic in their classes.

**Professor Ian Culpan**

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Physical education, globally, has had a rich history, typified by the creation of new knowledges, diverse understandings of the human condition, economic imperatives, wide-spread sociocultural obligations, the scientisation of movement and, of course, the political economy of sport. In New Zealand, like in many other Western democracies, some of these global influences have had a profound effect. In physical education's case, some significant curriculum re-alignments and reconceptualisation's need to occur. This presents immense future potentialities for physical education and is worthy of thorough investigation. There is a call for radical reform to be led by academics collaborating and working with and alongside practitioners. This reform will necessitate changes to physical education curriculum, pedagogies used, teacher education programmes and community service initiatives. This presentation will highlight possible potentialities and international researched based initiatives that may contribute to the reconceptualization and re-alignment of physical education in order to capture its educative and social worth. The presentation will argue that capitalising on such potentials and initiatives may assist the future legitimacy of this important learning area. The presentation will also provide arguments for pedagogical shifts in suggesting change and align itself with a criticality that takes physical education beyond traditional humanistic conceptualisations of the subject.

ABSTRACT

Awareness of Normal Weight Obesity and Model Minority Myths of Asian Americans

**Prof. Dr. Anita N. Lee, D.P.E.**

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This presentation will review normal weight obesity phenomenon, and its impact to Asian Americans in the United States. Obesity is prevalence in many developed countries, and also emerging in some developing countries. While body weight—a contributor of body-mass-index—is the most common and convenient, but less accurate measures to obesity and overweight; normal weight obesity cannot be detected by it. Traditionally, many societies judge individuals in obesity or overweight based on their physical appearance through media influence. This leads to a substantial misconception that Asian Americans are skinny and do not have health problems resulted from obesity and overweight, such as metabolic syndrome. This phenomenon is particularly serious in suburb and rural areas with low Asian populations in the United States where even healthcare providers and physical activity specialists are unaware of. Individuals with normal weight obesity has the equal risk levels to type 2 diabetes, hypertension, heart disease, and stroke (Wong et al., 2014), which are always overlooked by the healthcare system and they do not receive appropriate health attention and care. Although World Health Organization has issued the appropriate BMI for Asian populations in 2004, it did not arise common awareness to physical and health educators, and physical activity specialists. Approximately, 45.1% of Asian American adults at 18 years old or above did not meet full guidelines for either aerobic activity or muscular strengthening (CDC, 2015), including those who are in normal weight obesity. When practitioners are unaware about normal weight obesity prevalence, public are uninformed and misled by inaccurate information, with a misconception that they have no risk to metabolic syndrome due to their normal weight. This presentation will provide evidence and suggestions to advocate the awareness of normal weight obesity and to promote physical activity among native Asians and Asian Americans.

ABSTRACT

Physical Literacy – Just another trend or a new insight into effective strategies for increasing physical activity across the lifespan?



Assoc. Prof. John Saunders

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Physical Literacy is a term that was first identified in academic literature in 1993. It has since then steadily captured the interest and imagination of a growing number of academics and professionals worldwide. Its impact has moved beyond its origins in school based physical education to embrace community programs for all ages and a wide range of target populations. Its concepts and principles have become a part of the university preparation of professionals in Nursing, Child Studies and Social Work. This presentation reviews the current international literature concerning the concept of physical literacy, its operationalisation and measurement. It then focuses on the implications of the concept for the adoption of a consistent lifespan based approach to enhancing the well-being of the community through enriched movement experiences. It concludes with a report of some recent and current studies focused on exploring the value of physical literacy as a means to better understanding and more effectively managing some of the lifespan transitions which have frequently proved to be problematic in retaining desirable levels of physical activity involvement.

ABSTRACT

Physical Activity Promotion – New Approaches and Interventions



Asst. Prof. Ida Ludańska-Krzemińska, Ph.D.

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Nowadays, many countries are facing the epidemic of obesity and lack of physical activity problem. Therefore, there is a need to create necessary skills and competency for responsible care for health, especially among children. In this context, physical activity and health promotion should be an important part of school-based activities. There are some recommendations on how to implement the physical activity and diet in school settings (WHO 2009, CDC 2011). The most important one is to use multi-component approach, which means e.g. to involve family members in such intervention. There are also models concerning “causes of causes” strategy which allow to explain people’s health behaviour. The purpose of this study is to show: (1) recommendations and strategies for effective programmes promoting physical activity at school setting (“what works”), (2) proposals of implementing those strategies prepared within 3 projects. The first one is the European project called *DEDIPAC - Determinants of Diet and Physical Activity*. This 15-week intervention is called *Juniors for Seniors* and covers children and their parents. The second one is *Active not only on-line* – where we used electronics bands to motivate schoolchildren for collecting more daily steps. The third one is the *Brain-Break project*, where children participated in active break during school routine every day.

ABSTRACT

Practical implication for Long-Term Athletic Development to assist coaches with a “best practices” model to develop a movement, physical and sports literacy that improve athleticism.”



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This article will offer a framework for practical, functional, and sequential skill development to assist coaches with a “best practices” model to develop a movement, physical literacy, and movement skills that improve athleticism. The LTAD must start at the youth level. This article will focus on ages 3 to 14 years. To date, little has been done to provide youth coaches with knowledge of how to teach and develop proper movement techniques. Coaches are left often with an excessive number of competitions, incomplete athlete development, and an emphasis on sports-specific skills only. Many athletes suffer systemic overuse injuries caused by improper training and repeated sub-maximal repetition stress, followed by inadequate recovery.

ABSTRACT

Does Health and Physical Education Fail in Sri Lanka? A Recent Perspective.



Dr. Walter Senevirathne,

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In recent years, the increase in the prevalence of obesity has led this condition to the forefront of the public health in Sri Lanka, especially among children. The overweight and obesity prevalence among children in Sri Lanka shows different ranges with provincial and gender variations; among boys and girls between 8 and 10 years, this was 4.3% and 3.1% respectively and obesity prevalence among primary schoolchildren in Colombo district was 5.1% in 2008. Furthermore, the prevalence of overweight, obesity and central obesity among Sri Lankan adults were 25.2%, 9.2% and 26.2%, respectively in 2005–2006, as defined by Asian Body Mass Index (BMI) cutoffs and there is a clear upward trend. The age-adjusted prevalence of Metabolic Syndrome among Sri Lankan adults was 24.3% (95% CI: 23.0–25.60). The prevalence of obesity related metabolic problems such as diabetes and hypertension among Sri Lankan adults were 13–14% and 18–19% respectively. Many of these young people would prefer to be sitting passively in front of the television rather than to do something physically active. Most Sri Lankan school students believe they do not have sufficient time, opportunity or guidance to participate in physical activities. The ideal place in which students would be able to find adequate time, opportunity and guidance are in the schools themselves. Inactivity of people badly affected national and international level sports performance too. Meanwhile, Health and Physical has been implemented in the school curriculum from grade 6 up to 11 in Sri Lanka, as one of the “Media of Education”. Meanwhile sports activities carried out in schools vary, depending on the social, cultural and economical context of the particular schools. Awareness made on the aims and objectives of sports and Physical Education by the Ministry of Education is not sufficient. The main problems occurred when explaining Health and Physical Education that are unique to each school such as: student participating in sports, allocated time for sports and Physical Education, problems in coaching and teaching Physical Education, lack of materials, financial and human resources, recognition given to sports and Physical Education in the school curriculum is not adequate, poverty and malnutrition, ethnic conflict and displacement, and efficiencies of the professionalism of Physical Education teachers.



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Free radicals are atoms or molecules with an unpaired electron. Once formed, they are highly reactive and can cause cellular damage in our body. Antioxidants, on the other hand, are substances that scavenge free radicals and offer protection from the damaging effects of free radicals. Oxidative stress occurs when the rate of production of free radicals exceeds the body's antioxidant capacity to detoxify them. Free-radical mechanisms have been associated with cellular differentiation, ageing, mutagenesis, pathophysiology of numerous diseases including cancer, atherosclerosis, rheumatoid arthritis and neurodegenerative disease. Epidemiological studies have established a positive correlation between the intake of antioxidants such as fruits and vegetables on the prevention of diseases like atherosclerosis, cancer, diabetes, arthritis and also ageing. Exercise-induced oxidative stress has also been demonstrated in numerous studies. For instance, significant increases in F2 isoprostanes and lipid hydroperoxides following exhaustive exercise demonstrates that exhaustive exercise induces free radical production. Some investigators have postulated that free radicals might damage the sarcoplasmic reticulum resulting in reduced calcium release during depolarisation of the muscle and consequently lead to muscular fatigue. Studies that have shown positive effects of antioxidants on skeletal muscle endurance performance were continuous administration of N-acetylcysteine via venous infusion during exercise. In addition, other antioxidants such as pycnogenol, quercetin, beetroot juice, cashew apple juice, resveratrol and Montmorency powdered tart cherries have also been shown to improve endurance performance. My co-investigators and I have also carried out several studies on the effects of various nutritional supplements with antioxidant properties on endurance performance in our sports science laboratory, School of Medical Sciences, Universiti Sains Malaysia. These supplements include palm vitamin E, caffeine, panax ginseng, *Eurycoma Longifolia Jack*, honey and bee bread. The main findings of these studies will be discussed during my talk.

**Associate Professor Dr Hairul Anuar Hashim**

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Cognitive ability is an essential contributor to academic performance. When cognitive skills are strengthened, students' overall learning ability improves, and overall academic achievement is often associated with superior cognitive functioning. Growing evidence indicates that cognitive abilities can be enhanced through regular participation in exercise. Just as enhanced cognitive functioning contributes to academic achievement in school settings, emotional distress tends to be a critical barrier to learning and is often associated with poorer cognitive functioning and academic performance. Importantly, exercise habits have been shown to play a significant moderating role in the relationship between emotional distress and academic performance. Indeed, scores of studies support the positive effects of exercise on cognitive functioning. For adolescents, schools have been identified as a major source of stress. This presentation explores the literature on the relationship between exercise habit strength, emotional distress and academic indicators in adolescents.

**Ngien Siong Chin, Ph.D.**

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This paper examined gender, age groups, ethnicity and relationship among students' perceptions of motivational climate and cost value within the expectancy-value model in Physical Education (PE). The participants were 203 secondary school students ($18.39 \pm .62$ years). The Motivational Climate in PE Questionnaire and Cost Scale were utilised to measure task-and-ego involving climate, task effort cost, outside effort cost, loss of valued alternatives and emotional cost. The independent t-test showed that there was a significant difference in outside effort cost between male (4.61 ± 1.61) and female (4.05 ± 1.47); $t(201) = 2.33, p = .02$. An analysis of variance (ANOVA) yielded a statistically effect on emotional cost, $F(2,200) = 4.16, p = .02$. A post hoc Tukey test showed that there was a significant difference between 18 and 19 years old participants ($p = 0.030$). However, an analysis of variance (ANOVA) revealed no significant differences in ethnicity except for emotional cost, loss of valued alternatives, and cost value. Post hoc multiple comparisons using Tukey indicated that there were significant differences between Malay and Chinese ($p = 0.002$) and Chinese and Bumiputera ($p = 0.048$) on loss of value alternatives. There were also significant differences between Malay and Chinese ($p = 0.007$), Chinese and Bumiputera ($p = 0.034$) on cost value. There were also significant differences between Malay and Chinese ($p = 0.004$), Chinese and Bumiputera ($p = 0.002$) on emotional cost. Pearson's correlation revealed significant correlation between task climate with outside effort cost, loss of valued alternatives and emotional cost. There were also significant correlation between task effort cost with outside effort cost, loss of valued alternatives and emotional cost. There were also significant correlation between loss of valued alternatives with emotional cost. The present physical education system needs to focus on a positive and supportive task-oriented motivational climate that can motivate the students to engage in sports and physical education.

**Prof. Dr. Wah Yun Low**

Head of Research Management Centre, Faculty of Medicine,
University of Malaya, Kuala Lumpur.

There is an alarming trend in the shift of changing lifestyle changes due to rapid urbanization and modernization. The socio-behavioral risk factors e.g., unhealthy diet, tobacco use, sedentary lifestyles are common characteristics of developing countries facing the economic transition and these are affecting the health of its nation. Based on the Malaysian National Health and Morbidity Study 2011, prevalence of overweight and obesity (over 18 years old) increased from 29.2% (2006) to 29.4% and from 14.0% (2006) to 15.1% respectively. Prevalence of abdominal obesity is 54.1% (females) and 34.1% (males). Based on WHO data, insufficient physical activity contributes to 3.2 million deaths and 69.3 million DALYs each year. People who are insufficiently inactive have a 20% to 30% risk of all-cause mortality. Physical inactivity will lead to poor health outcomes and can cause non-communicable diseases, such as heart disease and stroke, diabetes, cancers, other chronic diseases and depression. More behavioral change activities are warranted to increase recreational physical activity. The community can play a great role in promoting physical activities via community participation and inclusion, a holistic physical education program, diversity, responsiveness and sustainability. Advocating a healthy lifestyle through physical education and health promotion campaigns, mass media and support groups are deemed necessary and further research is needed to develop more innovative preventive health strategies in building healthy communities.

**Prof. Dr. Gıyasettin Demirhan**

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The aim of this paper is to explain relationships between physical activity (PA) and cognitive functions (CF), academic performance (AP) and positive attitude (PA). Physical activity refers to all forms of activity that requires physical effort, from simple house tasks to performance sports. This paper focuses on basic and specific movement skills, exercises, and sport skills. According to many research results, physical activity has important roles on improving cognitive functions, raising academic performance and developing positive attitude. For instance, physical activity promotes children's and young people's health and well-being in many ways. It has also been noted to have a positive effect on learning and cognitive functions, such as memory and executive functions and, as a result, possibly on academic performance (Hilman et al., 2009; Kwak et al., 2009; Tomprowski et al., 2008). This is because physical activity is an important medium of learning offered by the growth environment, and physical activity increases brain volume and activity, particularly in regions associated with memory and executive functions (FNBE, 2012). Furthermore, many previously conducted studies have demonstrated that all forms of physical activity – from physical education to passive exercise – have a positive effect on the academic performance of children, and on the development of their cognitive characteristics. Reliable results from other studies have also indicated that physical activity has no negative effect on the academic performance of the children (Tomprowski et al., 2008). Physical activity also affects development of positive attitude. According to the results of the study conducted by Koca and Demirhan (2004), Hünük and Demirhan (2010) and Cairney et al. (2012), the attitude points of the children who do sports regularly for Physical Education and Sports are higher than those of the other children. As a result, it can be said that there are associations among PA, CF, AP and PA.



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Physical activity has been known to influence health status, not just during childhood and adolescence, but also later health during adulthood. Rapid development, modernisation and urbanisation have affected physical activity pattern and lifestyles, which subsequently influence physical fitness and obesity rates. Physical inactivity, sedentary lifestyle, and lack of physical fitness have been linked to overweight and obesity. Moreover, physical activity levels in many Asian countries has been reported to be declining in recent years, and these changes may be a threat to future health, as low physical activity levels is an important risk factor for non-communicable chronic diseases. This presentation will investigate the levels of physical activity and sedentariness among Asian children and adolescents. It will also cover factors that influence physical activity, as well as its benefits and consequences. Lastly, interventions that focus on improving physical activity levels among children and adolescents will also be reviewed to examine factors that could lead to successful outcomes (or otherwise). It is hoped that this presentation will provide a deeper insight into the physical activity patterns and its related factors among children and adolescents of Asian origins.

ABSTRACT**The molecular background of exercise-induced brain function.**

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Regular exercise has systemic beneficial effects, including the promotion of brain function. The adaptive response to regular exercise involves the up-regulation of the enzymatic antioxidant system and modulation of oxidative damage. Reactive oxygen species (ROS) are important regulators of cell signaling. Exercise, via intensity- dependent modulation of metabolism and/or directly activated ROS generating enzymes, modulates the cellular redox state of the brain. ROS are also involved in the self-renewal and differentiation of neuronal stem cells and the exercise-mediated neurogenesis could be partly associated with ROS production. Regular physical exercise and nutritional intervention decrease both the incidence and symptom intensity of Alzheimer's Disease (AD) and modulate microbiome. When APP/PS1 mice were subjected to exercise and probiotics they significantly outperformed controls, whereas exercise, prebiotics alone and the two together resulted in decreases in beta-amyloid plaques, and increased microglia numbers around the plaques. Moreover, data also showed that exercise training increased the levels of anti-inflammatory microorganisms, such as bacteria that are involved in butyrogenesis. Overall, it is clear that physical exercise neuroprotective effects on brain via complex mechanisms.

ABSTRACT**Ergogenic Aids and Sport Performance**

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This presentation will examine several types of ergogenic aid for sport performance enhancement. The first part of presentation will explore the usage of sodium bicarbonate supplementation in terms of dosage and time of ingestion in both anaerobic and aerobic sports. In the second part of this presentation, single and combined effects nitrate supplementation during prolonged exercise in the heat will be explored. Lastly, the presentation will discover the usage of music as an ergogenic aid to improve exercise performance.



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Non-Communicable Diseases (NCD) are major cause of death. The main types of NCD are cardiovascular diseases and diabetes. Overweight person, who have abnormally high level of triglycerides (TG), Cholesterol (CHOL), and C-Reactive Protein (CRP), may predispose to cardiovascular disease and diabetes mellitus. In addition, immune and neuro-endocrine dysregulation from aging also lead to chronic inflammation. This degenerative inflammation induces CVD, DM and obese. There is evidence that obesity may also increase risk of osteoporosis. It is because obese children, who have low level of high density lipoprotein cholesterol (HDL-C), have low bone mineral content and low bone mineral density (BMD) compared to normal weight children. In addition, reciprocal relationship exists between osteoblast (bone formation cell) and adipocyte differentiation. It is because mechanical loading applied to the bone regulates the differentiation of mesenchymal stem cell (MSC), in bone marrow, into either adipocytes or osteoblast depending on characteristic of mechanical loading. Engaging in exercise regularly could reduce the inflammation process which helps prevent NCD and also osteoporosis. We found that high-intensity intermittent exercise (HIIE) increased serum adiponectin of overweight women after engaging exercise for 4 months. Since adiponectin increases sensitivity of insulin receptor, then HIIE could prevent type II DM. Moreover, HIIE also increased bone formation activity which reduced the decrease in bone density.



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The Relative Age Effects (RAE) phenomenon refers to the overrepresentation of athletes born in the early part of the year in sports. This study examined the prevalence of the RAE among all the sports competed in the 2017 Malaysian Schools Sports Council (MSSM). The birthdates of all 24 sports participants from three age categories, comprising 6301 boys (U12=2067; U15=1670; U18=2564) and 4061 girls (U12=1428; U15=1162; U18=1426) were examined. Birth dates were analysed according to four quarters (Jan-March; Apr-June; Jul-Sept; Oct-Dec) plus one 'below age' division with the cut-off date set on 1st January. Separate chi-square goodness-of-fit tests were conducted according to age group, gender and sports. Results showed significant relative age effects in both genders for all age groups. Athletes born in the first three months were significantly over represented than those born in the last quarter of the year. However, further analyses on individual-event sports participated by the girls (i.e., tenpin bowling, artistic gymnastic, rhythmic gymnastics, chess, golf, sailing, squash, and tennis) and three sports (i.e., artistic gymnastic, sailing and squash) in the boys category did not reveal significant unequal distributions. It is speculated that physical maturity characteristics of the athletes influenced their selection instead of sport specific skills. The implications and suggestions are discussed subsequently.



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Despite being recognized as a broad-based value subject by governments and agencies globally, Physical Education (PE) policy implementation still remains inconsistent. This study examined the implementation of primary school PE in terms of human resource factor (teachers' ability), administration factor (class distribution, administration of PE), and non-human resource factor (facilities and reference resources). A total of 1276 classroom PE teachers from 248 schools were randomly surveyed using a specially designed questionnaire. The findings revealed that only 6.2% of PE teachers was PE majors. Even though majority of PE teachers acknowledged that they could manage their students, only 56-65% agreed that they had the knowledge to teach PE: *teach sport skills, manage fitness class, detect and correct students' weaknesses*. In terms of class distribution, most PE teachers revealed that school administrators did not practice consensus in allocating PE classes as they had no prior knowledge about being assigned to teach PE. On the administration of PE, only 54% of administrators assumed PE was important, 36% discussed PE teaching workload with teachers, 73% did not discuss factors affecting the teaching and learning of PE, and 85% did not organize staff development programme. In terms of non-human factor, 36% of teachers agreed that library PE books were suitable and adequate. However only 42% agreed that financial allocation for PE was adequate. It is recommended that more attention to be given to staff training programme, monitoring of PE teaching as well as better planning of financial allocation.

ABSTRACT

Examining Public Acceptance of Physical Activity Involvement of People with Disabilities (PWD) – A SEM Approach



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Regular involvement in physical activity for PWD has been shown to positively contribute to physical fitness, psychological health, personal development and quality of life. However, social acceptance by people without disabilities has been identified as one of the prominent obstacles faced by people with disabilities in their involvement in physical activity. To further understand this issue, this presentation will discuss the outcomes of an investigation on the factors that influence public acceptance towards people with disabilities involvement in physical activity. An exploratory model of public acceptance was developed using key antecedents identified from previous literature. Structural Equation Modeling (SEM) approach was used to analyse the data collected. The findings revealed the importance of five prominent antecedents, which are personality, attitudes, exposure, ethnicity and subjective norms, in explaining public acceptance towards physical activity participation of the disabled. Subjective norms were identified as the most important factor in influencing public acceptance. Additionally, public attitude also depicts a mediating role in the relationship between external factors (ethnicity, exposure) and public acceptance. A pertinent contribution of the study is the introduction of the extended model of public acceptance developed from integrated framework from theory of reasoned action (TRA), social learning theory, and big five model (BFM), which contributed better understanding of public acceptance towards disabled people. Further understanding of these factors towards PWD involvement in physical activity is essential to promote social inclusion in building a better community for the PWD. Implications of the result for future practices and directions of research will be discussed.

ABSTRACT

Physical Literacy from Childhood to Adulthood.



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The presentation will explore the concept of physical literacy as widely accepted by many, and evaluate its factual foundations based on publications of original research done so far. Based on the studies identified, discussions will be made on their methods, instruments and approaches used. The presentation will also discuss the relationship of physical literacy status and its effect on physical activity level among Asian populations, and current available data of physical literacy among Asian. Issues on practicality of physical literacy assessment method will be discussed at the end. Finally, a more simplified method and instrument to determine physical literacy will be introduced and suggested.

TRACK 1

PHYSICAL EDUCATION AND HEALTH

1

Physical Literacy: The Rise of Low Skilled StudentsUlana Lysniak ^{a*}^{a*}Bronx Community College, Health, Physical Education, and Recreation Department, United States of America

Abstract: The purpose of this review is to examine the importance of physical literacy and link this idea as a way to combat inequity of skill. This review was guided by attribution theory. Physical literacy that contributes to skill equity allows for a stable factor that may create a positive emotional response that contributes to positive behavioral motivation. This behavioral motivation could lead to continuous participation in physical education. Physical skill literacy and skill equity were reviewed to connect the concepts and show that both can aid in the development of physical competency in low skill students, an important part of their continued future participation. Databases in both education and physical education were used. Low skilled students often exhibit avoidance behavior of motor skills during physical education class. As they exhibit these behaviors they are not able to practice appropriately, and thus they become relatively even lower skilled. When students in physical education become knowledgeable, understand the motor skills they are taught, and can perform these skills, they become physically literate. Typically, low skilled students do not demonstrate physical literacy, but as learning is an ongoing process, being physically literate can keep students motivated and willing to work on their motor skills to become higher skilled. Physical education can develop low skilled students' physical competence and their physical potential so that students may experience success. With these positive and successful experiences, students may want to continue with lifelong participation in sport and physical activities. Physical literacy provides the knowledge necessary for low skilled students' lifelong participation in physical activities and, thus, contributes to skill equity. Physical education and the activities that it provides are an important part of introducing youth to a lifetime of physical activity. As the physical education class may be the first experience that students may have with physical activities, these experiences need to be positive and successful, so that students may have both skill equity and participation in future physical activities.

2

The Impact of Formative Assessment to the Teaching of a Badminton UnitL. Chng^{a*}, J. Lund^a^{a*}Georgia State University, Department of Kinesiology and Health.

Abstract: Formative assessment can raise standards of achievement. In physical education, when formative assessment was incorporated into instruction, students performed better in terms of skills and were more on-task. This study aimed to find out how formative assessments impact response and success rates of students in a badminton unit in physical education. Sixteen students from two sixth grade classes took part in this study. One class served as the treatment group, where the teacher incorporated formative assessments (e.g. use of peer assessments) in her teaching in every lesson. The other class served as the control group where the teacher taught the unit as per how she would have done so, without formative assessment. The study was conducted during a 10-lesson badminton unit, where each lesson was 45 minutes. Participants in each class were divided into more-skilled, average-skilled and lower skilled. Data was collected on the number of successful hits and unsuccessful hits during game play situation throughout the lesson. The current study found that students in the treatment group were more on-task than the students in the control group. Students in the treatment group had higher response rate (total hits per minute of play), and this difference was statistically significant ($F(1, 13) = 6.578, p=.025$). Although the treatment group showed a 10% higher mean success rate, the results were statistically insignificant ($F(1, 13) = 0.245, p=.629$). The lower-skilled students showed the greatest growth in success rate. This study confirms that students were more on-task and had a higher response rate when formative assessments were incorporated into the lesson. Limitations of this study, including the small number of participants, would be discussed.

3

The use of teaching technology in possessing life skills during physical education classes

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Abstract: This study aimed to identify whether teaching via technology, namely data show, apps, video resources, and video games, is used by physical education teachers when teaching life skills during the physical education classes. In addition, this study aimed to explore whether significant differences would exist within teachers' responses according to the following variables: gender, academic qualification, and teaching experience. For the purposes of this study a questionnaire was developed as a data collection method. The questionnaire consisted of (32) items distributed over (5) domains: problem solving skills, safety skills, communication skills, time management skills, and taking decision skills. Reliability was examined using Cronbach's alpha which results ranged between 0.84 and 0.88 across domains and 0.86 for the tool as a whole. Study sample consisted of (35) initially selected male (n= 16) and female (n=19) physical education teachers (out of maximal (n=45) physical education teachers) from Al-Ramtha District (Jordan) in the school year 2015-2016. 31 teachers had at least bachelor degree whereas (4) teachers had only diploma. 15 participants had a teaching experience of 10 years and over, 12 participants an experience of 5-10 years, and 8 participants an experience of less than 5 years. Within the SPSS (version 20), means, standard deviations, Pearson correlation, Cronbach alphas, and three-way MANOVA were used for data analysis. Study results showed that communication skills and taking decision achieved the highest score (3.45), safety skills (3.44), problem solving skills (3.39), and time management skills (3.2). All of the five life skills were evaluated at the medium level. The second research question that aimed to explore whether teachers' responses would vary according to gender, academic qualification, and experiences showed no significant differences across any of these three variables ($p \geq 0.05$). According to the sum of squares results, gender differences achieved the highest score of 2.00 followed by academic qualification and teaching experience with 0.77 and 0.11 respectively. According to the results of this study it is clear that male and female physical education teachers use data show, apps, video resources, and video games for possessing life skills at the medium level.

4

Effect of Technology Based Programme on the Attitudes towards Physical Activity in Secondary Schools

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Abstract: This study examines the effects of a "HOPSports Brain Breaks" video-exercise intervention program on the attitudes of primary school pupils towards physical activity. A number of 229 Grade 6 pupils (115 boys, 114 girls) from 6 schools in Bratislava participated in the study (Mean age = 11.18 ± 0.77). The experimental group completed a 3-month intervention of a 3-5 min physical activity break during a random lesson every school day. A standardized questionnaire (Sivak et al. 2000) was used to collect the data on a cognitive, emotional and behavioural dimension of pupils' attitudes before and after the intervention. The questionnaire consisted of 51 questions, 17 for each dimension. The control group only filled in the survey without taking part in the physical activity program. A parametric t-test was applied to identify the differences between the pre-test and post-test data as well as between the experimental and the control group. As a result, significant differences between the pre-test and post-test were found in overall attitudes of the experimental group in both boys ($p = 0.025$) and girls ($p = 0.039$), and additionally, in the emotional dimension in boys ($p = 0.009$) and girls ($p = 0.002$). No significant differences between the pre- and the post-test were confirmed in the control group. Moreover, significant differences between the experimental and the control group were found in pupils' overall attitudes (boys $p = 0.001$; girls $p = 0.007$), in the emotional dimension in boys ($p = 0.000$), and in the emotional ($p = 0.003$) and behavioural ($p = 0.024$) dimension in girls. To conclude, such intervention programs might serve as a valuable tool to enhance pupils' attitudes towards physical activity what may lead to their greater active participation in physical activity, and consequently, an improved overall health.

5

The Effects of the Physical and Health Education Program on Cardiorespiratory Fitness at the Engineering University : A Study Regarding the Evaluation through Shuttle Stamina Test

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Abstract: This study investigated the cardiorespiratory fitness of 127 students (112 men and 15 women) through the shuttle stamina test (SST) in response to the physical and health education program at K university. The program consisted of various types of exercise sessions for 14 weeks per semester (once per week, 105 minutes duration per session). The SST consisted of the self-paced running for 3 minutes on a 10m shuttle course. The heart rates at rest and immediately after SST were measured through the palpations. In addition, the rate of perceived exertion (RPE) was examined in response to SST (1=hard, 2=somewhat hard, 3=fairly light, 4=light). The SST had been conducted in May (First semester) and November (Second semester) in 2016. The total 16 exercise program sessions had been instructed between the first and second SST tests. For both men and women, there were no significant difference between the first and second semesters in the total running distance. However, the total running distance in the second semester tended to be lower than the one at the first semester. Similarly, the heart rate after SST and the percentage of the estimated maximal heart rate at the second semester tended to be lower as compared to the first semester. No significant difference existed in RPE between the semesters. These results may suggest that the physical fatigue tended to decrease in response to the physical and health education program although the RPE was not altered. Thus, this research provides the significant knowledge regarding the physical education program and the cardiorespiratory fitness of the students at the university.

6

Learning what in Physical Education and Health (PEH)? – a nine year follow-up study

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Abstract: Physical education and health (PEH) have been under debate in several countries. Reports claim that students learn sport but not health. Changes in society show new scenarios around health, wellbeing and illness among young people, and a growing uneven distribution of access to physical activity and knowledge in health. Questions are raised about students' learning experiences from school PEH. The aim of the presentation is to, through a nine year follow-up study, describe and analyze students' attitudes to participation and learning in PEH over the school years. The initial study was made 2001, with randomly selected schools in Sweden, students born 1991. Follow up studies were made six and nine years after the initial study. 75% of the original population (1290) answered in 2010. A self-developed and adapted questionnaire was used with closed and open answers. Frequency of data was analysed by descriptive statistics and cross tabulations. Chi-square was used for examining group differences. The results show significant differences in participation pattern between male and female students. 18% of the female students in relation to 8% of the male students never or very seldom participated in PEH in their older ages. From 15 to 18 years of age, one third of those who experienced that they 'learned nothing' remained in this category. When leaving school, only 21% of the students at the age of 18 thought that they knew well how to train and be physically active by their own. Over one third were uncertain of relationships between health, life style and environment. Open answers about general attitudes towards PEH contained mainly of two groups: the wish to engage in PA during school time, and the need to restructure how PEH is organised and taught. One conclusion from the study is the need for defined learning tasks with described learning outcomes possible to be shared and assessed by both teachers and students. Pedagogical models will be discussed with the help of health literacy and curriculum theory.

Keywords: learner, Physical Education, health literacy, longitudinal study

7

A Disrupted Landscape for Participating in Youth Club Sport and PE in Sweden

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Abstract: Societal and technological changes have an impact on habits related to youth sport and leisure time. The internet-based character of leisure time has created new practices. Young people have to navigate within a disrupted landscape of time, place and space. The aim of this study is to explore views of leisure time, sport activities and PE participation among students aged 15. The results will be discussed from a critical sociocultural perspective with focus on how culture, structure and agency intersect. The findings will also be discussed in relation to a similar study conducted in 2007. The project is a follow-up, cross-sectional study based on a longitudinal research project named School – Sport – Health, initiated in 2001. Eight semi-structured focus group interviews were conducted in 2016 (30 boys, 18 girls), based on a strategic sample of four schools that participated in 2001. Two of the schools reported high levels of physical activity among the students, and two schools reported low levels of physical activity. An inductive qualitative content analysis guided the procedure for analyzing the empirical material. The results show that school and friends are central to the way students handle leisure time involving physical activities. The students strive to be independent, to experience development and belonging, all of which challenge the way organized sports are planned. For a number of students, club sports are still a dominant part of their leisure time, however not uncontested. Internet-based activities allow flexibility, where one can choose to interact across time, place and space, as well as across gender and age. The value of school PE is highlighted in terms of health and wellbeing. The results indicate tension between physical activities in a school setting and leisure time physical activities. Content and quality are related to experienced agency and structure. Schoolwork, experienced lack of time and development, play a more central role in students' experiences of everyday life physical activities in 2016 compared to results from 2007.

Keywords: learner, Physical Education, health literacy, longitudinal study

8

Fun Game Learning Project: Curbing Obesity Among Primary School Students'

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Abstract: The prevalence of obesity among school students has increased significantly. The National Health and Morbidity Survey Malaysia (NHMS2015) showed that the number of school students approaching the overweight category is alarming. BMI testing in physical education subject during school hours is a challenge for physical educators. The purpose of this study is to investigate the effects of School Base Intervention Program to curb obesity among primary school students during physical education lesson. A span of 12 weeks intervention program was conducted in a selected school as a case study. The study collected quantitative and qualitative data. In phase one, Pretest was administrated to collect BMI data of Year Four (10 years old) students. In phase two, Intervention of Fun Game Project was administrated using the proposed program. 5 A Model was used as a guide to record student's calorie intake and physical activity level. BMI Age chart was used as a measurement tool to monitor student's progress for 12 weeks. The Fun Game Learning Module was developed in systematic manner as School Base Intervention Program. The module was given to five experts for validation. The module was also given to primary physical education teacher for validity assessment. A total of 510 students (275 boys and 235 girls) participated in this study. 34.18 percent's of boys and 27.23 percent's of girls showed overweight and obese category at post-test result. There were significant differences in the BMI scores for boys ($M = 19.56$, $SD = 4.86$) and girls ($M = 18.34$, $SD = 4.14$), conditions; $t = 3.074$, $p = 0.002$. Qualitative data from 5A model showed some behavioral change among the overweight and obese students. The methodology used in this study can be modified and adopted to other settings as a guideline in future researches. Fun Game Learning Project as School Base Intervention can be proposed to help curb obesity among primary school students.

Physical Education Classes with Different Durations, and their Contribution to Daily Physical Activity Recommendations

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Abstract. For many youngsters, physical education classes (PE) provides the most relevant opportunity to be engaged in physical activity (PA). Although the evidences suggested low levels of PA in PE, few studies have focused their investigation on the contribution of PA performed during PE to daily PA. The purpose of this study was to analyze differences between PA during daily school hours when they attended PE (PED) with 45 min of duration (PED45), PE with 90 min of duration (PED90), school days without PE (NPED) and weekend days (WD): Further we also aim to assess the relative contribution of PE classes, to daily PA. PA was assessed using an Actigraph accelerometer (ACL - wGT3X-BT, Actigraph Corporation) during 7 consecutive days. Data were analyzed with specific software (actilife software, v6.12) and using age-specific counts-per-minute cut-off points. A minimum recording of 480 minutes per day was established to accept the data as a valid daily PA, and only removed ACL for showering and swimming. The PE classes observed form part of the regular school curriculum, and are carried out twice a week, by a specialized physical education teacher, and all PE were evaluated by a researcher and ACL used during class. Independent and general linear model repeated measures were used to assess differences between PA according to NPED, PED45, PED90 and WD, taking into account gender and weight status. A logistic regression was used to investigate the contribution of PE for the compliance of youngsters' daily PA recommendations. This study was conducted in four Portuguese public schools with 441 students (188 boys and 253 girls) volunteers, aged between 10 to 18 years (14.31 ± 2.70). On average they presented a BMI of 22.04 ± 3.96 . PED45 contribute, on average, 16.9% for the daily MVPA and PED90 accounted for 32.2%. All students engaged in more MVPA on PED than NPED or WD ($P < 0.05$). Boys engaged more in MVPA than girls during all week ($P < 0.05$) and no differences were found for weight status. PE classes were associated with higher odds to accomplished the recommended 60 min of daily MVPA (OR = 2.66, 95% CI = 2.01-3.53). This study suggested that PE increased the daily MVPA levels and played a considerable role in providing PA to accomplish PA guidelines.

1 Effect of exercise on forearm blood flow during postprandial hyperglycemia in normotensive offspring of the hypertensive parent

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Abstract: Acute hyperglycemia can cause vascular impairment and exercise training improves it. It is unknown whether exercise can improve blood flow impairment induced by high blood sugar in genetically predisposed hypertensive individuals. Purpose: to study the effects of high-intensity interval aerobic exercise (HIIE) on forearm blood flow (FBF) during postprandial hyperglycemia (PPH) in healthy young men with a parental history of hypertension. Subjects were recruited by local advertising. Ten normotensive young men (aged 21.3 ± 1.4 yr., BMI 21.3 ± 2.1 kg/m²), who were offspring of hypertensive parents, participated in 2 experimental conditions: oral glucose loading (OGL) without exercise and OGL with exercise (OGL+EXS), in a randomized crossover fashion. Glucose solution was ingested at 10 minutes after high-intensity interval aerobic exercise which was performed for thirty-eight minutes. In both occasions, peak FBF (FBF_{peak}) during reactive hyperemia using venous occlusion plethysmography were determined at baseline and thirty minutes after OGL. Significant differences in FBF_{peak} were found between the two occasions. FBF_{peak} increased from 23.9 ± 1.5 ml/100ml/min. at baseline to 26.9 ± 2.0 ml/100ml/min ($p=0.001$) after OGL+EXS and decreased from 24.0 ± 1.2 ml/100ml/min at baseline to 20.3 ± 1.6 ml/100ml/min ($p=0.001$) after OGL without exercise. The FBF_{peak} in response to OGL with exercise was significantly higher than that without exercise ($p=0.001$). HIIE can increase blood flow that is decreased due to high blood glucose in OHT. Such exercise may play an important role in preventing impaired vascular function and the development and progression of atherosclerosis in healthy young men at risk of developing hypertension.

2

2 Effects of 12-week Progressive Strength Training on Strength and Metabolic Biomarkers in Healthy Older Women: Morning Versus Evening Training

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Abstract: The purpose of this study was to compare effects of a 12-week strength training (ST) program performed in the morning vs. evening on strength and metabolic biomarkers in older women. Thirty-one healthy older women (68 ± 3 years, 170 ± 5.1 cm, 75 ± 12 kg, 29.1 ± 5.1 BMI) who had not undergone regular exercise within 6 months were randomly allocated to a morning (M) (7.30AM, $n=10$), an evening (E) (18.00PM, $n=10$) ST group, and a control group (C) ($n=11$). Both experimental groups performed whole-body strength training with 4 sets and 10–12 repetitions and 2–3 minutes rest time between sets. Dynamic leg press and seated-row 6-repetition maximum (6-RM), as well as bioelectrical impedance (BIA) assessed skeletal muscle mass (SMM) (kg) and fat mass (FM%) were measured in all groups. Blood samples (in the interventions group only) underwent analysis of total cholesterol (TC), low-density lipoprotein (LDL-C), high-density lipoprotein (HDL-C), blood glucose (GLU), serum levels of C-reactive protein (CRP) and total antioxidant status (TAS) after 12h fasting. While C showed no changes in any variable, both M and E significantly improved leg press (46% and 21%; $p<0.001$) and seated-row (48% and 42%; $p<0.001$) 6-RM. A significant time ($p<0.05$) and group \times time interaction (M: -4% vs. E: -8%; $p<0.05$) for GLU was observed in favor of E, but a group \times time interaction ($p<0.001$) was observed for SMM favoring M compared to E and C. No main effects were observed for FM, TC, LDL-C, HDL-C, CRP or TAS. These results suggest that short-term “hypertrophic” ST alone mainly improves strength performance but not the metabolic profile of healthy older women.

3

Role of Exercise for Healthy Aging of Indian Women

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Abstract: Like all other countries of the world lifespan of Indian population has increased; number of aged people has increased substantially over the last few decades. There were about 119 million Indians above the age of 60 years (2015), which was about 9.56% of the total population. Men and women age differently; women are more susceptible to factors speeding up the aging process. Apart from physiological factors, aging depends on many socio-economic and cultural factors including economic condition, nutrition, lifestyle and location of living. Due to ill health, lack of participation in daily activities, increased physical and economic dependence on others, the respect of the elder women in the society and family decreases, making them burden for the family. The purpose of the present study was to observe the role of exercise for ensuring the delayed and graceful aging, supporting the community towards a better physical condition. Twelve sedentary women aged between 55-65 years underwent a 10-week planned exercise program that consists of walking, jogging, free hand and resistance exercise, and recreational activities of 50-60 minutes' duration for four days a week. Standardized pre and post tests were conducted on selected physical fitness parameters viz., grip strength, trunk flexibility, hand-eye coordination and dynamic balance. For analysis of data, t-test was conducted. Obtained results indicate there were significant improvement in all physical fitness parameters after completion of the 10-week intervention program. Based on the result it may be concluded that, exercise can be considered as an effective modality to develop physical capabilities of Indian aged women. Micro to national level planning for easy, cost-effective exercise strategy that match the life style of Indian women, and regular awareness building programs would be beneficial in maintaining the community health and fitness.

4

Relationship between Personality Traits and Physical Activity Participation

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The purpose of study was to examine the relationship between the Personality Traits and physical activity participation based on Faculty, Education Level (program level and program year) and Mode of Physical Activity (Group and Individual Activities). A total of 205 participants (117 males and 88 females; M age = 20.69; SD = 1.465) from Tunku Abdul Rahman University College participated in this study. Participants completed two inventories which were the Godin-Shepard Leisure-Time Exercise Questionnaire by Godin & Shepard (1985) consisting of 4-items ($\alpha = 0.97$) and the Big-Five Inventory (BFI) by John & Srivastava (1999) were used for data collection. The BFI consisted of 44-items ($\alpha = 0.57 - 0.85$) across 5 sub-dimension: Extraversion (N = 8; $\alpha = 0.77$), Agreeableness (N = 9; $\alpha = 0.90$), Conscientiousness (N = 9; $\alpha = 0.88$), Neuroticism (N = 8; $\alpha = 0.73$) and Openness (N = 10; $\alpha = 0.80$). Descriptive statistics, Pearson product-moment correlation, Independent T-test and One-way ANOVA were used to analyse the data. Results obtained indicated that Extraversion ($r = 0.160$, $p = 0.022$) and Openness ($r = 0.148$, $p = 0.034$) were positively correlated with physical activity participation. Extraversion based on Faculty was also significant at ($F(5,199) = 2.750$; $p = 0.020$). Neuroticism was significantly different based on gender ($M = 23.92$, $SD = 5.864$, $p = 0.035$), mode of physical activity ($M = 23.92$, $SD = 5.864$, $p = 0.047$) was also significant comparing between individual and group activities, and faculty ($F(5,199) = 5.454$, $p = 0.000$) based on 6 different faculties. Openness was also significant based on age-group at ($M = 23.92$, $SD = 5.864$, $p = 0.005$) between age groups 17 – 20 and 21 – 24 years old. No significant differences were found for Conscientiousness and Agreeableness. This study indicated that personality traits is one of the contributing factors that attributes towards physical activity participation on an individual. Further studies are required to identify the relationship between the personality traits and the mass population physical activity participation and prolonged involvement.

Keywords: Big Five Personality Traits, Physical Activity Participation, University Students

5

Examination of Life Event Stress (Positive and Negative) of Injured Athletes

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Stress is an internal psychological risk factor for athletic injury that received limited scientific or clinical attention relative to other risk factors. Hence, the aim of this study was to identify the life event related stress (positive and negative) among the injured athletes in Tunku Abdul Rahman University College based on age, gender, year of experience, level of participation, types of injuries, severity of injury and duration of absent from sport. A total of 62 injured participants volunteered in this study and completed the Life Events Survey for Collegiate Athletes (LESCA) questionnaire. It was found that there was a trend of higher scores in negative life stress throughout variables in comparison to positive life stress. 80.6% athletes were male however female (23.33 ± 14.52) reported higher compare to male (16 ± 15.24). and 53.2% were of the age 21-22 years old age (17.42 ± 15.27). Total of 77.4% having lower body injuries with lower body injuries (17.46 ± 17.29) and upper body injuries (17.29 ± 13.22) scoring higher in the negative life stress and about half of participants with moderate severity of injury. Negative life stress was reported highest in participants being absent from sport for 2 to 4 weeks (23.27 ± 19.59). In conclusion, the results in this study indicates that negative life stress elevates higher risk of injury in comparison to positive life stress among athletes. This implies that stress management interventions should be introduced to coaches and athletes to reduce and prevent from injuries to occur.

Keywords: Life Event Survey for Collegiate Athletes (LESCA), injury, stress, life event stress

6

Effect of Preferred Music on Physio-psychological Responses to Aerobic Exercise in Recreational Runners

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Music has been said to elicit physiological and psychological changes during exercise. However, limited study has examined the effect of preferred music to exercise in recreational runners. Therefore, our study investigated the effects on preferred music on physio-psychological responses to aerobic exercise in recreational runners. Twenty subjects [(Male: $n=10$; age: 19.8 ± 1.5 yr; 60.7 ± 4.8 kg; 166.4 ± 7.3 cm, VO_{2max} : 54.9 ± 9.9 mL.kg⁻¹.min⁻¹); (Female: $n=10$; age: 20.5 ± 1.9 yr; 53.2 ± 8.0 kg; 160.3 ± 6.8 cm, VO_{2max} : 40.2 ± 3.5 mL.kg⁻¹.min⁻¹)] selected their preferred and non-preferred music, and undertook three 30-min trials of treadmill running at 70% VO_{2max} in randomised order. The three 30-min trials are follows: 1) No music (control); 2) Preferred music (**PM**) and 3) Non-preferred music (**NPM**). Expired air ($\dot{V}O_2$) was analysed throughout the experimental trials. Heart rate (HR) and rating of perceived exertion (RPE) measurements were collected every 5 and 10 min respectively. After the 30-min run, an Exercise-induced feeling inventory was used to determine four feeling states: positive engagement, revitalization, tranquillity, and physical exhaustion. Mean $\dot{V}O_2$ and HR were similar between all trials [(Male: **Control**: 40.2 ± 3.5 mL.kg⁻¹.min⁻¹, 152 ± 14 bpm; **PM**: 39.5 ± 6.6 mL.kg⁻¹.min⁻¹, 155 ± 11 bpm; **NPM**: 39.5 ± 7.0 mL.kg⁻¹.min⁻¹, 155 ± 14 bpm); (Female: **Control**: 26.3 ± 4.0 mL.kg⁻¹.min⁻¹, 139 ± 15 bpm; **PM**: 26.8 ± 3.2 mL.kg⁻¹.min⁻¹, 139 ± 18 bpm; **NPM**: 27.0 ± 3.9 mL.kg⁻¹.min⁻¹, 142 ± 14 bpm)]. RPE increased significantly throughout the 30-min run across all trials ($p<0.05$) but no significant difference was found between trials. No difference was found between trials from the exercise-induced feeling inventory. In conclusion, the selection of preferred music during running has limited influence on physio-psychological responses in recreational runners.

The Effect of Rest Interval Length on 1-RM Bench Press Test in Male and Female University Students

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Bench press 1-RM test is a common 1-RM test used to measure the strength level of upper body musculatures. Several protocols of 1-RM were recommended from different organization, and each are similar to each other. However, there are different resting intervals between 1-RM attempts recommended. The objective of this study is to find out which resting interval is the most suitable for the sedentary university students, as well as to investigate whether there is a difference in resting interval needed by males and females to be able to produce the highest strength during 1-RM test. The study included 30 (15 males and 15 females) sedentary participants, aged 18 to 24, all of whom are students in University of Malaya. The participants were divided into 3 groups by simple random sampling, where each group has a different sequence in performing 1-RM bench press test with different resting interval between 1-RM attempts (1-min, 3-min, 5-min). Participants were assigned to each weight type randomly on each session. Results obtained from each rest intervals were compared; and results between males and females were also compared. The participants lifted a significantly ($p < 0.05$) heavier weight when given 3-min rest for both machine weight test (47.16 ± 26.86 kg) and free weight test (40.73 ± 22.03 kg), as well as when given 5-min rest for both machine weight test (48.11 ± 26.91 kg) and free weight test (42.00 ± 24.67 kg), compared to results obtained when given 1-min rest for both machine weight test (41.30 ± 24.31 kg) and free weight test (37.11 ± 22.06 kg), for all gender. There were no significant differences ($p > 0.05$) between the results obtained from 3-min and 5-min rest interval for both type of weights. There were also no significant differences ($p > 0.05$) between the time needed for males and females to lift the heavier weight in both machine and free weight test. In conclusion, 3-min rest interval is enough for both male and female sedentary students when being prescribed bench press 1-RM test for both machine weight and free weight.

Keywords: Preferred music, physio-psychological responses, recreational runners

Effects of Barefoot Running Training on Running Performance among Recreational Runners

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Running phenomena has becoming popular over the past decades in Malaysia. However, running with shod or barefoot is still a debatable topic among the runners. As such this study investigated the effect of running with shod or barefoot on the predicted $VO_{2\max}$ and ground reaction force (GRF). Twenty subjects (7 males and 3 females in each of the group) with no barefoot experience (EG: 20.4 ± 2.5 yrs, 2.6 ± 1.2 years running experience and CG: 20.7 ± 2.1 yrs; 3.0 ± 1.3 years running experience) participated in this study. Predicted $VO_{2\max}$ was calculated from 2.4 km run test while GRF for left leg (LL) and right leg (RL) were obtained from force plate analysis. Subjects were then divided into 2 groups which were the experimental (EG-barefoot) and the control (CG-shod) groups based on the pre-test results. Both groups completed a 6-week intervention programme with twice a week of running training adopted from Scott et al. (2015) at outdoor running track. Results showed that EG improved significantly in the $VO_{2\max}$ during the post-test as compared to pre-test (42.9 ± 7.5 vs. 40.7 ± 7.4 ml.kg⁻¹.min⁻¹; $p=0.09$). However, no significant different was found in GRF between pre- and post- tests in EG (LL: 1380.3 ± 271.8 N vs. 1340.4 ± 177.0 N, $p = 0.59$ & RL: 1389.1 ± 313.2 N vs. 1326.3 ± 218.7 N, $p = 0.43$). In CG, no significant changes was found in $VO_{2\max}$ and GRF ($p>0.05$) between pre- and post- tests. Even though the results of GRF did not show significant improvement in both groups, ~ 3.5% of slight decrement in GRF was found in EG. We speculated that GRF could be reduced further with the increase of training volume. In conclusion, barefoot running training could be a tool to improve running performance in recreational runners.

Key words: *Barefoot Running, running performance*

Effects of 6 Weeks High Intensity Interval Training (HIIT) on Cardiovascular Endurance and Body Composition among TARUC Sedentary Students

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According to ASCM, HIIT is the most popular trend in the fitness industry since 2014. However, HIIT is not prescribed for general population although it has been commonly used by elite athletes to improve their performance. As such this study investigated the effect of HIIT on cardiovascular endurance (VO₂ max) and body composition (percentage of body fat) among the sedentary student. Fifteen students participated in this study. A pre-test (Bleep test?) was conducted and subjects were assigned into either control (CG; 4 males and 3 females, age of 20.7 ± 1.1 , body mass of 62.1 ± 10.5 kg) or (EG; 4 males and 4 females, age of 20.6 ± 0.9 , body mass of 61.7 ± 17.4 kg). EG went through intervention program with 3 times a week with about 30 min each session. Whereas the CG continued with their daily routine. EG performed 4 sets of speed run for the first 3 weeks followed by 5 sets for the remaining weeks at the intensity of 80% to 85% of their estimated maximum heart rate. Post-test was conducted after the intervention program. Results showed that there was a significant improvement during post-test ($p < 0.05$) in VO₂ max (46.41 ml/kg/min) in EG as compared to pre-test (38.42 ml/kg/min). No significant difference was found in percentage of body fat (PBF) in both groups. In CG, similar results were found between pre-test and post-test for both VO₂ max and PBF. As a conclusion, 6 weeks of HIIT can be an effective tool to improve an individual VO₂ max but not in reducing percentage of body fat.

Key words: High intensity interval training, cardiovascular endurance, body composition

1

The effects of a 4-week combined aerobic and resistance training on fitness and body composition on KFUPM students

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Abstract: The purpose of the present study was to observe the effects of an intensive four-week resistance (four workout programs) and aerobic training program on selected physical fitness variables of KFUPM students. For this purpose, fourteen non-physically active male students from the King Fahd University of Petroleum and Minerals were randomly chosen to act as subjects (single group) for the study ($n=14$; age, 20.5 ± 1.5 years; weight, 100.5 ± 26.42 kg; height, 177.8 ± 6.45 cm; BMI, 31.9 ± 8.68 kg/m²). The training period for the study was four days per week for four weeks without any food restriction (just recommendations). During our research we mainly used these methods for obtaining data: measurement-testing and content analysis. For obtaining and evaluation, we used these methods: mathematical, statistical and logical. Pre- and post-data were taken during the training period. The subjects were tested for different anthropometric abilities such as fat %, muscle mass, body weight, visceral fat and BMI as well as physical abilities such as standing long jump, sit and reach test, 5x10m shuttle run and sit-ups. During one training unit (50'), we applied three blocks (15'-aerobic runs together with coordination, 30'-strength and 5'-compensation exercises and stretching). The Wilcoxon-signed rank test was applied as statistical tool for interpretation of results. In all cases, $P \leq 0.05$ level was fixed as significance. It was concluded from the results of the study that the training group significantly improved in the following tests: sit ups (19.1 ± 4.81 vs 23.1 ± 4.39), sit and reach test (18.2 ± 8.15 vs 23.4 ± 9.95 cm), 5x10m shuttle run (16 ± 1.71 vs 14 ± 1.06 s), standing long jump (153.1 ± 20.69 vs 171.9 ± 23.92 cm), visceral fat rating (9.8 ± 7.27 vs 9.5 ± 7.09). Furthermore, the subjects had no significant improvement in body weight, BMI (31.9 ± 8.68 vs 31.8 ± 8.42 kg/m²), fat % (27.3 ± 9.90 vs 27.9 ± 9.42) and muscle mass (66.9 ± 10.23 vs 66.8 ± 10 kg). This research provides valuable information that can influence the level of motoric abilities even after applying a short, but very intensive, resistance and aerobic programme, but it was not effective for changing anthropometric abilities. Limitation of this 4 weeks program was mainly based on adaptation of individuals on the training stimulus.

2

Acute Chronic Workload Ratio and Severe Injury Risk in Elite Male Rugby Players.

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Abstract: The acute chronic workload ratio (ACWR) is a value derived from a combination of external and internal workloads. The objective of the present study was to assess if there was any relationship between increases in the ACWR and exposure to serious injury risk, specifically concussion, amongst elite male rugby players. Data for eleven elite male rugby players were retrospectively analyzed for the 2016-2017 season to quantify and compare ACWRs between two groups of players; Group A: players who had experienced a concussion ($n=5$) during the previous season and Group B: players who did not experience a concussion ($n=6$) in the previous season. The control group (Group B) were comparable positionally with Group A. All data were accumulated on athlete performance software (Kitman Labs, Dublin). For the purposes of this study, acute workload was defined as the players' state of fatigue, and the chronic workload was defined as the players' state of fitness. The acute workload was calculated on a 7 day basis, and the chronic workload was calculated on a rolling 28 day basis.. The mean (\pm SD) ACWR for the concussed cohort of players (1.05 ± 0.07) was significantly ($P<0.05$) higher than the mean for the non-concussed group of players was (0.65 ± 0.09). Cohen's d (1.953) indicated a large effect size between the concussed ($n=5$) and non-concussed ($n=6$) group of players. There was a moderately strong correlation ($R^2 = 0.71$) between ACWR and injury risk in the current cohort. This study highlights that higher ACWR in elite male rugby players may increase risk of serious injury. Considering the implications of concussion on overall player welfare and, for the management of injury prevention programmes, regular monitoring of ACWR and optimization of cut off points prior to field play is recommended. However, caution of over-interpretation must be exercised based on the number of participants who took part in this study ($n = 11$).

3 Building a quality higher education elite student-athlete support program from the inside out

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Abstract: This study evaluated the effectiveness of an elite student-athlete support program implemented within an Australian university as part of a whole-of-university strategy to become an international leader in high performance sport teaching, research and engagement. The program was developed by embedding contemporary guidelines for dual career education into the University's student engagement framework. A mixed methods approach incorporating a survey, interrogation of university data sets and narrative inquiry was used. The total elite student athlete population (n=92) participated comprising 51 males and 41 females competing in 24 different sports and studying 31 undergraduate degree programs. Notable findings include: Elite student athletes were found to have a higher percentage of passing grades (93%) than mainstream students (82%) and a significantly higher grade point average $M=4.98$, $SD = 1.17$, $t(91) = 2.103$; $p=0.039$; Female student athletes had a higher percentage of passing grades (97%) than males (87%); There was no relationship between type of sport and grade point average, $F(23, 71) = 0.96$, $p=0.53$ or degree studied and grade point average $F(30, 62) = 0.90$, $p = 0.58$. The data also confirmed that 97% of program participants were very satisfied or satisfied with their ability to balance sport and study and their development of employability skills; and 100% with their overall experience within the program. 86% of student-athletes confirmed personalised support as the most valued benefit, which is consistent with current research. The analysis of the qualitative research found that prevalent themes in the program's success were: A high level of student-athlete engagement, evident from comments like, 'being amongst likeminded people' and 'having a strong sense of community'; The importance of cultivating internal institutional relationships in facilitating a cultural shift towards elite sport; and ensuring the support program was embedded within whole-of-university student engagement policies, and aligned with Australian Institute of Sport guidelines. The findings provide valuable feedback for the future development of the program and for higher education institutions developing and implementing dual career education pathways.

4 Developmental Pathways of Malaysian National Sports School Athletes

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Abstract: Substantial research compared between specializing and diversifying in a particular sport but few scrutinised across multiple sports. This study examined the developmental pathways taken by individual sport (IS) and team sport (TS) athletes from two Malaysian national sports schools. Student athletes (n = 117) aged 16 and above completed the Participation History Questionnaire. Information pertaining to the participant's main sport and other sports engaged in was obtained. In comparison with TS athletes, the IS athletes were found to have a significant later start for most of their sport-related milestones ($p < .05$). However, the IS athletes ($M = 14.3$ years old, $SD = 1.7$) started competing in international competitions significantly earlier than the TS athletes ($M = 15.3$ years old, $SD = 1.1$; $p = .004$, $d = -0.72$) and only the IS athletes reported competing in the Commonwealth, World and Olympic championships. Interestingly, the IS athletes ($M = 2.5$ sports, $SD = 1.3$) participated in significantly more other team sports compared to TS athletes ($M = 1.7$ sports, $SD = 0.7$), $t(95) = 4.03$, $p < .001$, $d = 0.80$, 95% CI [0.40, 1.19]. The results suggest that athletes who started specializing later and participated in more diverse sports attained higher performance level.

Effects of Six Weeks Swiss Ball Training on Balance and Agility of College Soccer Players

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The aim of this study was to determine the effects of six weeks of Swiss Ball training on balance and agility of college soccer players. A total of 19 male soccer players (AGE = 20±1.73, BW = 63.42±9.95, H = 172.11±4.45) participated in this study. They were randomly assigned into the control group [CG] (n = 10) and experimental group [EG] (n = 9). Both groups had similar 6-week soccer training programme while additional Swiss Ball training was given to the EG twice a week, 60 minutes per session. The subjects were tested on static balance using the Standing Stork Test (Reliability = .969), dynamic balance using the Four Step Square Test (Reliability = .818), and agility using the Illinois Agility Test (Reliability = .965). The two groups started equal as the pre-test for the 4 research variables revealed insignificant results. Post-tests showed no significant difference in the mean scores in static balance, dynamic balance, and agility test between CG and EG. However, pre-test and post-test comparison revealed that there was significant improvement in static balance and dynamic balance and induced improvement in agility of the EG. In conclusion, there is no sufficient evidence to support that the Swiss Ball training could enhance performance in four variables.

Keywords: sport science, swiss ball, balance, agility, strength and conditioning

Effects of breathing rhythm on the endurance of weight-lifters

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Weight lifting has created numerous physical possibility in developing endurance among military cadets under training. The research was conducted in the military engineering school (2012-2017). A total of 67 Cadet-weightlifters with different qualifications, aged 17-22 years old, participated in this research. The subjects were assigned into Experimental Group (EG) and Control Group (CG). The training for EG included respiratory exercises to develop individual rhythm during weight lifting training. The exercises to develop coordination and the development of respiratory muscles were selected to provide gradual improvement in endurance among the EG subjects. The implementation of the breathing rhythm and the refinement of the breathing techniques took place in the preparatory period of the whole training period. The rhythm of breathing and diaphragmatic breathing were developed with the help of complex exercises, directed towards the formation of respiratory rhythm and the development of diaphragmatic breathing. Results indicated that EG subjects were physically ready and the improvement in their endurance levels had resulted in the improvement in their performance during competition.

Keywords: Weight-lifting, endurance, breathing rhythm, diaphragmatic breathing.

7 Sports Nutrition Needs Assessment of Adolescent Irish Elite Development Rugby Players.

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Adolescent rugby players may be at risk of poor nutrition due to intense training loads on top of school and travel, and a lack of cooking skills and financial independence. The primary objective of the sports nutrition needs assessment was to identify nutritional challenges of elite development rugby players in Ireland. Adolescent male rugby players (n=45), from the Irish National Talent Squad, provided information via an online questionnaire, on cooking skills, social support, training schedule, nutrition behaviours, and sports nutrition services they had availed of. Themes were identified using qualitative analysis techniques. Of the 45 rugby players in the National Talent Squad (17.2 ±0.58 years), 100% completed the needs assessment questionnaire on acceptance to the programme. 58% (n=25) of players reported travelling >30 minutes to training sessions with an average of 9.7 training sessions or matches per week reported. 9% of players resided at boarding school, rather than at home with family members. Mothers were solely responsible for food purchasing in 64% of households, compared to those where both parents contributed (24%). Rugby players were mainly responsible for preparing their own breakfasts (86%), lunches (60%) and snacks (91%), while parents (84%) were responsible for cooking dinners. The most consistently reported nutrition behaviours (>90% subjects reporting 'mostly' or 'always') were: bringing a water bottle to training sessions, eating breakfast every day, and eating dairy foods daily. 22% (n=10) of players reported taking a sports supplement product, despite having received advice against taking supplements under the age of 18. Nutrition interventions for elite development rugby players, should be mindful of the impact of parents in nutrition provision, and ensure that nutrition education resources are provided to families. Rugby players report responsibility over food preparation at 75-80% of feeding opportunities and thus nutrition support should be focussed on the developing athlete. These data can help inform future nutrition support services to adolescent rugby players in Ireland.

8 Perceptual and Cardiorespiratory Responses to High-intensity Interval Exercise in Adolescents: Does Work Intensity Matter?

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High-intensity interval exercise (HIIE) is proposed to elicit unpleasant feelings due to elevated perceived exertion and physiological stress. However, a recent adolescent study indicates that HIIE may not elicit prominent unpleasant feelings, but the influence of different HIIE work intensities on the affective experience is unknown. This study examined the acute affective, enjoyment, perceived exertion and cardiorespiratory responses to HIIE with different work intensities in adolescents. Participants (N=16; 8 boys; age 12.0±0.3 years) performed, on separate days, HIIE conditions consisting of 8 x 1-minute work-intervals at 70%, 85%, or 100% peak power separated by 75 seconds recovery at 20 W. Affect, enjoyment and rating of perceived exertion (RPE) were recorded before, during, and after HIIE. Heart rate (HR) and oxygen uptake were collected during HIIE. Affect declined in all conditions ($P<0.01$) but 100%HIIE elicited significantly lower affect than 70%HIIE and 85%HIIE at work interval 8 (all $P<0.02$, $ES>1.74$; 70%HIIE= 2.50±0.82; 85%HIIE= 1.06±1.53; 100%HIIE= -1.50±1.41 on feeling scale). Similar enjoyment was evident during and after all HIIE conditions (all $P>0.44$). RPE was significantly higher during 100%HIIE than 70%HIIE and 85%HIIE across all work-intervals (all $P<0.01$, $ES>1.56$). The majority of the participants attained $\geq 90\%HR_{max}$ during 85%HIIE (87%) and 100%HIIE (100%), but not during 70%HIIE (6%). HIIE may elicit displeasure feeling depending on the work-intensity. Despite similar enjoyment, positive affect responses evoked during 70%HIIE and 85%HIIE could serve as a strategy to encourage exercise adoption and adherence in adolescents, but only 85%HIIE elicits sufficient HR stimulus ($\geq 90\%HR_{max}$) to facilitate efficient health benefits.

9 Skeletal Muscle Response to High Intensity Interval Training (HIIT) in Older Adult Wistar Rats

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Various types of physical activity, including high intensity exercise, are known potential to reduce cardiometabolic risk factors. However, high intensity physical exercise is constraint to older adults because of pain and slow recovery. This can be achieved by high intensity interval training (HIIT) which is considered to be useful. Although HIIT is assessed as beneficial, its safety and feasibility in older adults should be carefully assessed. This study aims to determine the skeletal muscle response to HIIT in older adult rats, through measurement of blood lactate, Troponin-T and PGC-1 α in skeletal muscles. This study used male Wistar rats age 12 months which underwent HIIT treatment for 8 weeks (O group). HIIT treatment was done with 4 minutes high intensity active running on treadmill with 1 minute interval, with 4 times repetition. As the controls 12 and 14 months old rats were used which are not given HIIT treatment (C1 and C2). At the end of the 8th weeks rats were sacrificed, blood and gastrocnemius muscles were taken for analysis. The results showed that HIIT treatment insignificantly increase of blood lactate concentration compared to C2, but showed significantly increase between C1 and C2 ($p=0.032$), even less than 4 mmol/l. The HIIT treatment increase PGC-1 α in O group compared to C2 ($p=0.024$) and significant difference between C1 vs C2 ($p=0.022$). The Troponin-T of O group increase significantly compared to C2 ($p=0.002$). Our results indicated that response of skeletal muscle tissue to HIIT treatment for 8 weeks provides benefits and is feasible for older adults which are shown from the increased of PGC-1 α and Troponin-T content in skeletal muscle and proved to be safety which is shown by the blood lactate concentration.

10 Combine Strength Training on Throwing Ball Velocity in Softball

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Strength training on throwing ball velocity has been develop for century in order to maximize the throwing performance. Therefore, various method of training has been tested to identify which type of training produces the best result for throwing ball velocity. Combined training is one of the methods that recently gain the attention among the sport's practitioners. However, most of the training only focused on the major muscles and they neglected the assisted muscles such as hand grip and trunk rotation muscles that also important in the throwing execution. Therefore, the purpose of this study is to identify the effect of hand grip strength training, trunk rotation strength training and combination of both training towards the throwing ball velocity among female collegiate softball players. 54 female collegiate softball players were equally divided into three strength training groups which are hand grip (HG), trunk rotation (TR), and combination training group (CB). All the groups performing the same basic strength training program (training on major muscle) with different additional strength training (training on hand grip and trunk rotation strength) according to the group's treatment. Each group trained 3 days per week for 6 weeks. Throwing ball velocity was assessed before (pretest) and after (posttest) the 6 weeks training program and one-way between groups analysis of variance (ANOVA) was conducted to compare the mean gained score in throwing ball velocity between each group. After 6 weeks of training, the result shows that throwing ball velocity significantly increased in HG (1.45 m/s), TR (1.62 m/s) and CB (2.08 m/s) groups. The post-hoc test indicates that CB group significantly differences compare to HG and TR groups, however, HG group shows no different compared to TR group. This study demonstrates that the throwing ball velocity can efficiently increase by combining both type of training (CB) meanwhile HG and TR provide a similar impact on throwing ball velocity performance.

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Comparison of Major Muscles Activation during Different Phases in Softball Batting

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Muscles activation in baseball swing has extensively been studied as compared to softball swing. However, muscle activation found in baseball swing should not be generalized for softball as the ball size, speed and the angle of pitch is different. The purpose of this study was to identify the activation of major muscles during the different phases in softball batting - loading, contact, and follow through. Ten female softball players participated in twenty trials of hitting a stationary ball. Peak normalized sEMG for all muscles during swing phases was analysed and reported as percentage of maximum voluntary contraction (% of MVC). The results showed that left pectoralis major had the highest muscle activity (9.08% of MVC) and right rectus abdominus had the least muscle activity (1.43% of MVC) during stance. While the right pectoralis major had the highest muscle activity (22.8% of MVC) and right middle deltoid had the least muscle activity (7.03% of MVC) during loading phase. This was opposite to the baseball swing where pectoralis major was reported to have highest muscle activity during loading, contact and follow through phase. Highest muscle activity was displayed by right external oblique (23.93% of MVC) and least muscle activity (7.98% of MVC) was shown in right biceps femoris during contact phase. Left gastrocnemius had the highest muscle activity (18.09% of MVC) and right posterior deltoid has least muscle activity (4.49% of MVC) during follow through. Overall, although near similar muscles were involved in softball and baseball swing, there were a number of muscles that had rather different activation patterns in the softball swing. These findings would be able to help coaches to develop training program to specifically improve softball batting performance.

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Effects of a 6-Week Plyometric Training on Muscular Strength Performance in Silat Olahraga Athletes

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The effectiveness of plyometric training towards achieving certain goals in sport achievements is the reason why it was applied in the exercise training program in all sports. The effectiveness of plyometric training to improve muscular strength have to be prove as a demand exercise training in combat sports, instead of normal conventional combat sports training alone. The aim of the present study was to investigate the effect the 6-week of plyometric training on muscular strength in *silat olahraga*. Thirty-four ($n=34$) male *silat olahraga* athletes who have less than 2-years experience (mean age 14 ± 3.22), mean weights (42 ± 10.89 kg), mean heights (148 ± 8.792 cm) were randomly assigned into two group after underwent a pre-intervention test. Seventeen athletes ($n=17$) in the experimental group were participated in the conventional *silat* workout routine and the plyometric training. The conventional *silat* workout routine for the experimental group were set up for 3 times a week for 1-hour session and the plyometric training were set up for 2 times a week for 1-hour session. The control group ($n=17$) was only performed the conventional *silat* workout routine for 3 sessions per week, for 1 to 2-hours session. The muscular strength was measured by the one repetition maximum test (1RM). The 1RM squat test was a tool to measure the maximum strength performance. The squat test was accomplished by the Smith machine type device. A pre-warm-up was administered on every piece of equipment, included of 2 sequences of 12 to 15 repetitions at 50% of the value credited by the participants as 1RM rate. The total of athletes 1 RM final weights lifted were recorded. The subjects were required to attend the pre-test on a week before the intervention for pre-test session, mid-test on the third week of the intervention training, and post-test session on the end of intervention week. The repeated measure mixed between-within ANOVA was utilized to analyze the results. End of the 6-week intervention, the results revealed that muscular strength performance were statistically changed across the observation ($p<0.05$) in the experimental group. The mean score was reported at 77.06 ($SD = 24.94$) on the pre-test, 84.12 ($SD = 25.99$) on the mid-test and at 100.0 ($SD = 25.49$) on the post-test. The improvement on the total of weight lifted was reported at 9.16% between PRE-MID session, 18.81% between MID- POST and 29.7 % between PRE-POST. Based on the results of the present study, plyometric training program was determined very effective to enhance the muscular strength performance in *silat olahraga*. This positive finding proved the efficacy of plyometric training on the muscular strength on the *silat* athletes.

13 Effects of Aerobic Exercise, Dehydration and *Ad Libitum* Fluid Consumption on Choice Reaction Time in Trained Females: A Distributional Analysis

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This study investigated the effect of acute aerobic exercise, dehydration and fluid intake on choice reaction time (CRT) and the ex-Gaussian CRT distribution. On 4 separate occasions, 8 trained females (body mass [BM]: 61.8±10.7 kg; VO₂ max: 46.3±7.5 mL·kg⁻¹·min⁻¹) lost 2.0±0.3% BM cycling at ~75% VO_{2max} (~60 min, 24.2±0.9°C) before commencing a 1 h recovery period with ad libitum access to one of 4 commercial beverages (Water, Powerade® Isotonic [SD], Up&Go Energize™ [HP-MILK] and Up&Go Sugar Free™ [SF-MILK]) and food (1 × 15 min eating occasion). CRT and mood-state (concentration and alertness) were assessed 'Pre-Exercise', ~5 min 'Post-Exercise' and 'Post-Recovery'. Median CRT was decreased Post-Exercise (401±48 ms) compared to both Pre-Exercise (420±48 ms, p=0.025) and Post-Recovery (427±49 ms, p=0.050). This improvement was localized to the μ-component of the CRT distribution (Pre-Exercise: 393±40 ms; Post-Exercise: 366±47 ms; Post-Recovery: 395±52 ms, p=0.018); the spread and skew of the curve (i.e. σ- and τ-parameters) were unchanged throughout trials (p's>0.05). The effect on μ was relatively consistent across each exercise occasion (Hedges' g range: 0.32–0.63). No changes in mood ratings were identified across time (p's>0.05). While beverage intake was similar across treatments (p=0.351), differences in total (i.e. food plus fluid) energy (p=0.014) and carbohydrate (CHO) (p<0.001) consumption were observed. Still, the type of beverage consumed did not affect mood, CRT or the ex-Gaussian CRT distribution (p's>0.05). Acute aerobic exercise provides a cognitive performance benefit, which appears to outweigh any adverse effects imposed by dehydration in the immediate post-exercise period in trained females.

14

Coaching Strategies to Manage Athlete Behaviour

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One of the most important objectives of sport coaching is the creation of a positive learning environment in which athletes can develop the technical skills required for success as individuals and as a team. Problems relating to athlete misbehaviour during practice sessions can impact upon the quality of the learning environment. The purpose of this study was to observe sport coaches in order to determine the effectiveness of strategies used to manage athlete behaviour. The findings demonstrated that coaches incorporated a limited number of behaviour management strategies. Results from observations indicated that coaches used consequent strategies to control athlete behaviour with an over-reliance on verbal, as opposed to non-verbal strategies. Furthermore, the data demonstrated that coaches utilized more intrinsic rather than extrinsic behaviour management strategies. The study suggests that coaches need to utilize a wider range of strategies to manage athlete behaviour to allow athletes opportunities to optimize their sporting potential.

Keywords: Coaching, positive environment, sport, athlete behaviour

15

Effect of An Eight-week Plyometric and Resistance Band Training On Badminton Overhead Clear Stroke Among Year 6 Students

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This study aimed to improve the badminton overhead clear stroke (attacking clear and defensive clear) of year six students (12 years old) via an 8-week intervention comprising of plyometric and resistance band training sessions. The plyometric and resistance training were squat jump, medicine ball throw, internal rotation and external rotation exercise. Ninety students were randomly divided into 3 groups; plyometric training (n=30), resistance band training (n=30) and control group (n=30). The students (stature: 1.4m-1.5m, mass 30-40 kg) completed the plyometric and resistance band training sessions. The badminton overhead attacking clear stroke and defensive overhead clear stroke performance test (Onn, 1993) were conducted on the 3 groups before and after the 8-weeks training. Paired samples *t* test was utilised to determine the differences between the measurements. The results revealed statistically significant differences after the 8-week plyometric training and resistance band training on badminton overhead clear stroke in favor of the experimental group ($p < 0.05$). The findings suggests that a combination of plyometric and resistance band training program were effective in improving the performance of badminton overhead clear stroke.

Keywords: Badminton overhead clear stroke, plyometric, resistance training

16

Adolescent Athletes' Expectancy Beliefs, Task Values and Motivation in Sports

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Abstract: This study examined adolescent athletes' expectancy-beliefs, subjective task values, intrinsic motivation, extrinsic motivation and amotivation in sports. Two hundred and five athletes (131 males and 74 females) from the age groups of under 15 and 21 years old (15.53 ± 2.37 years) completed the expectancy beliefs, subjective task values measures and Sports Motivation Scale questionnaire. The two-way ANOVA results indicated a significant interaction effect between age group [$F(1, 197) = 6.47, p < 0.05$ and gender [$F(1, 197) = 12.97, p < 0.05$] for expectancy beliefs, and age group [$F(1, 197) = 7.33, p < 0.05$] for subjective task values in the expectancy-related beliefs and task values measures. Whereas for the Sports Motivation Scale, the ANOVA also showed significant interaction effect between age group [$F(1, 197) = 9.15, p < 0.05$] and gender [$F(1, 197) = 10.56, p < 0.05$] for intrinsic motivation as well as age group [$F(1, 197) = 6.96, p < 0.05$] and gender [$F(1, 197) = 11.52, p < 0.05$] for extrinsic motivation. However, no significant interaction effect between age, gender and locality was found for amotivation. Expectancy-related beliefs were found to be related with subjective task values ($r = 0.78$) and intrinsic motivation ($r = 0.58$). Whereas, subjective task values were moderately correlated with intrinsic motivation ($r = 0.65$) and extrinsic motivation ($r = 0.54$). Intrinsic motivation was related to extrinsic motivation ($r = 0.83$) but weakly with amotivation ($r = 0.20$). The results concluded that adolescent athletes (young generation) showed a trend of higher self-beliefs and values were also more likely to be intrinsically and extrinsically motivated, a combination of both types of motivation as opposed to earlier literature of single motivation type. In addition, our results support the link in integrating Eccles et. al. Expectancy Theory and Self-Determination Theory to improve understanding of motivation in sports from the Malaysian perspective.

1

Value Orientations of Malaysian Chinese Independent Secondary School Physical Education Teachers

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The purpose of this study was to describe Physical Education (PE) teachers' value orientations for curricular decision making in Malaysian Chinese Independent (MCI) secondary school teaching settings. The five-point Likert scale of the second version of the PE Value Orientation Inventory (VOI-2) by Ennis and Chen (1993) was used. VOI-2 consisted of 90 items paper-and-pencil inventory across the 18 sets with each items in the set representing one of the five value orientations: disciplinary mastery (DM), learning process (LP), self-actualization (SA), social responsibility (SR), and ecological integration (EI). The items unlabeled were randomly arranged in each set. The participants ranked items in each set from 5 = 'most important' to 1= 'least important'. The composite scores from each value orientation ranged between 18 and 90. The reliability of the Chinese version VOI-2 from Taiwan study (Wang, 2002) was estimated using Cronbach's alpha. Alpha coefficients representing each orientation were DM: .89; LP: .78; SA: .74; SR: .85; EI: .71. A total of 127 questionnaires were issued in 56 MCI secondary schools, and 84 PE teachers responded with a recovery rate of 66.14%. Seventy-five (55 Male; 20 Female) returned questionnaires were valid (89.29%) with 46 in 1-10 years, 14 in 11-20 years, 11 in 21-30 years and 4 in 31 or more years of experience. Descriptive statistics and one-way ANOVA were used to analyze the data. The significant level was set at $\alpha = .05$. Results indicated that: (1) The mean score for each value orientation of MCI secondary school PE teacher in sequence was SR (56.45), DM (55.28), LP (54.68), EI (53.54) and SA (50.04) respectively; (2) Five (3 Male; 2 Female) PE teachers had two value orientations of curriculum; (3) No significantly difference was found in the value orientations of PE curriculum by year of teaching experience. The PE teachers placed high priority on SR which advocated students learning social rules and norms for personal conduct. The findings implied that MCI secondary school PE teachers emphasized on student actively involved in learning social responsibility and acquiring knowledge of performance.

Keywords: Value orientation, physical education, curriculum, social responsibility

2

Effects of a Strength and Stretching Program, Combined or Isolated, on Active Flexibility in Physical Education Setting

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The purpose of this study was to examine the effects of a two-session-per-week strength and stretching program on sit and reach score among high-school students in the physical education setting. A sample of 46 high-school students (16 girls and 30 boys) aged 12-14 years from four classes were clustered and randomly assigned to a strength group (n=8), a stretching group (n=12), a strength + stretching group (n=16) or a control group (n=10). During physical education classes, the experimental students performed a 1-minute stretching, a 1-minute strength or a 2-minutes strength + stretching program twice a week a total of 20 weeks. Control students performed the same physical education classes, but they did not follow any strength and/or stretching program. Active flexibility (estimated by the classic sit-and-reach test) was assessed at the beginning and at the end of the intervention program. The Wilcoxon test results showed that students that performed a combined strength and stretching program increased statistically significantly their active flexibility levels from pre-intervention to post-intervention ($\Delta = 1.8 \pm 3.2$ cm; $p < 0.05$). However, for students that performed an isolated program and control group students statistically significant differences were not found (strength group, $\Delta = 0.6 \pm 0.7$ cm; stretching group, $\Delta = 0.3 \pm 2.3$ cm; control group, $\Delta = 0.7 \pm 1.5$ cm; $p > 0.05$). Since in physical education many curricular contents need to be developed each academic year and the subject is also restricted by its limited curriculum time allocation, teachers could improve students' flexibility combining stretching and strength workout. Therefore, in addition to the improvement of students' flexibility levels, this intervention program might permit regular development of other physical education curricular contents. This knowledge could help and guide teachers to design programs that guarantee a feasible and effective development of flexibility in the physical education setting.

Keywords: physical education, sit and reach, active flexibility, strength, stretching.

3

Measuring Teacher RISE Support in Physical Education

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A measure of student perceived teacher relation-inferred self-efficacy (RISE) support in physical education was developed in 2 studies. In Study 1, interviews were conducted to determine perceived sources of RISE with secondary school students (N = 13; ages 13–16), as well as producing an item bank for use in the Teacher RISE-support Scale (TRSS). In Study 2, an initial measure was tested with 608 students (males = 317, females = 291, Mage = 14.63 years, SD = 0.97) from 10 secondary schools. Confirmatory factor analysis (CFA) confirmed the 3-factor, second-order structure for the final 12-item measure. Results from Study 2 supported the construct validity of the TRSS, providing evidence for the factorial, convergent, and discriminant validity. The current study furthered our understanding of RISE in at important ways. First, students identified several teacher RISE-supporting behaviors in PE in terms of positive recognition, task assignment, and relationship establishment. Second, by adopting both qualitative and quantitative approaches, this study provides preliminary evidence of the reliability and validity of a teacher RISE support measurement in physical education. Researchers or practitioners may use the TRSS to evaluate student-perceived teacher RISE-supporting behaviors after experimental interventions or RISE implementation in physical education lessons. In addition, the model developed in this study proposes three dimensions that can be scored individually or combined as an overall “teacher RISE support” construct in future research.

Keywords: confirmatory factor analysis, interview, self-efficacy, teacher support

4

Snow-shoeing in frost minus forty-five: experience of physical activity and Siberia from Central European point of view

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Childhood and youth have been radically changed by technologies over the last two decades. A lot of young people all around the world play PC games for ten or even more hours per day and they do not have time for other activities, such as reading, writing, meeting friends, going out into the open air, exercising, or eating with their parents. Sedentary behavior and obesity, preferences of virtuality to reality, incompetence to establish interpersonal relationships have been the most visible features of contemporary adolescent. The course in experiential education framework, it means non-formal and informal education, can help people to go back into reality, nature and health. This paper deals with one of them, example of snow-shoeing and camping in winter nature in Siberia (Altay and Sayan mountains). Such programme based on unusual physical activity and effort is connected to an opposition of PC games. Our purpose is an analysis of participants' experiences from the expedition in extreme conditions of winter nature. The course being examined was organized by the Vacation School of Lipnice – Outward Bound Czech Republic in January 2018, and the participants in this course made up the research sample. The research applied a qualitative approach to the analysis of unstructured interviews and an analysis of chosen pairs of mind maps capturing the experiences of the expedition's participants. A qualitative review of the visual and symbolic levels of information found a significant impetus occurring in the participants' views. The data obtained in the interviews and visible in mind maps may be structured into the following main semantic fields connected with the participants' experience: nature (mountains and forest), the element of fire, people and community (friendship and love), frosty weather, and strong experiencing (release). We can see deep developmental and educational outputs visible in interviews and at participants' mind maps. Thanks to demanding physical activity in winter nature there are personal changes reaching the entire personality, including physical, mental, social, and spiritual dimensions.

Keywords: Snow-shoeing, extreme sport.

5

Comparison of the Effect of a Physical Education-Based Stretching Program Applied during the Warm-Up, Cold-Down and Both Periods on Hamstring Extensibility in Primary Schoolchildren

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The purpose of the present study was to compare the effects of a physical education-based stretching program applied during the warm-up, cold-down and both periods on hamstring extensibility in primary schoolchildren. A sample of 237 schoolchildren aged 7-12 years old (128 girls and 109 boys) from two primary school centres participated in the present study and met satisfactorily the inclusion and exclusion criteria. A cluster randomized controlled trial design was used. The classes balanced by grade were randomly assigned to the warm-up ($n = 57$), cold-down ($n = 55$), both periods ($n = 61$) or control groups ($n = 64$). During the physical education sessions, the students from the interventional groups performed a four-minute stretching program twice a week for eight weeks. The intervention program was applied during the warm-up (4 minutes), cold-down (4 minutes) and warm-up (2 minutes)-cold-down (2 minutes) for the warm-up, cold-down and both periods groups, respectively. Hamstring extensibility (estimated by the back-saver sit-and-reach test) was assessed at the beginning and at the end of the intervention program. The results of the one-way ANOVA ($p < 0.001$) on the average obtained in the back-saver sit-and-reach change scores (post-intervention – pre-intervention), followed by the Bonferroni adjustment, showed that the students that performed the stretching program during the cold-down period significantly improved their hamstring extensibility levels compared to the control group ($p < 0.001$). However, statistically significant differences between the warm-up/ both periods groups and the control group were not found ($p > 0.05$). In order to develop students' flexibility, physical education teachers should apply stretching programs during the cold-down period. This knowledge could help and guide teachers to design programs that allow a feasible and effective development of students' flexibility in the physical education setting.

Keywords: physical education-based planning, intervention, flexibility, back-saver sit-and-reach test, primary education, students.

6

**ACUTE EFFECT OF DYNAMIC STRETCHING VERSUS COMBINED STATIC
DYNAMIC STRETCHING ON SPEED PERFORMANCE
AMONG UPSI SPRINTERS**

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The purpose of the study was to compare dynamic stretching and combined static-dynamic stretching on speed performance among UPSI male sprinters. Ten male sprinters (age=18-25 years old) were tested under two different stretching protocols which were dynamic stretching alone and combined static-dynamic stretching. Participants underwent the dynamic stretching alone and combined static- dynamic stretching in counterbalanced order with 1-week wash-out period between both stretching protocols. Participants were tested using 30-meter sprint test after each intervention. Result showed that there was significant difference between both treatment ($p=0.007$). Dynamic stretching alone (Mean=4.46±0.090) showed faster time to complete 30-meter sprint test compared to combined static dynamic stretching (Mean+4.69±0.239). In conclusion, dynamic stretching alone is better than combined static-dynamic stretching prior to speed performance. Combining static and dynamic stretching activities prior to speed performance is not recommended.

Keywords: static stretching, dynamic stretching, sprinting, speed.

7

**Coaching Experience Diversify Epistemological Beliefs of Prospective Physical
Education Teachers and Coaches**

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Coaches engage in both formal learning and informal activities to construct knowledge. Coaches' perceptions about nature of knowledge and learning as important as the knowledge itself. Epistemology is a key component of philosophy, concerned with the nature and scope of knowledge, and explicated as "individuals' personal beliefs toward how learning occurs and what is knowledge. The purpose of this study was to examine epistemological differences between prospective physical education teachers (PPET) and coaching education students (CES) with and without coaching experience. Total of 128 PPET and 119 CES were participated in this study. Data were collected after the regular classes. 5-Likert type, Turkish version of Epistemological Belief Questionnaire was used to collect data. A questionnaire composed of 35 item and subscales were "learning depends on effort" (LDE-e.g. The most successful people have discovered how to improve their ability to learn) "learning depends on ability" (LDA-e.g. Working hard on a difficult problem for an extended period of time only pays off for really smart students), "there is only one unchanging truth" (OOUT- e.g. Truth is unchanging). Cronbach's Alpha values were .79 for LDE, .66 for LDA, .74 for OOUT. Participants were grouped as 1) PPETs, 2) PPETs with coaching experience, 3) CES and 4) CES with coaching experience. One-way ANOVA results indicated that there were differences between groups in LDE [$F(3,244)=3.54$], LDA [$F(3,244)=2.58$] and OOUT [$F(3,244)=2.71$], $p<0.05$. Tukey post-hoc test revealed that CES (35.11±5.73) had significantly higher score than PPETs with coaching experience (31.32±7.49) in LDA subscale. CES (31.50±4.92) had significantly higher score than PPETs (28.57±5.11) in LDE. Lastly, CES (25.61±5.56) had significantly higher score than PPETs with coaching experience (22.36±5.89) in OOUT subscale. Thereby, epistemological perspectives of PPETs and CES approximate through coaching experience. Coaching experience might lead CES to familiar with pedagogical aspects of their profession, which in turn can change epistemological perceptions. Scholars in these programs should also focus on the epistemological aspect of the sport sciences for better development of PPET and CES.

Keywords: Coaching, PETE, Epistemology

8

Active commuting to school is related to children's oxygen uptake capacity and physical fitness

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We are currently still experiencing the increase in overweight and obesity-related non-communicable diseases (cardiovascular disease, type II diabetes, respiratory diseases, gastrointestinal diseases, and cancer), which caused almost 60% of all mortalities in the world (WHO, 2004). In Slovenia the share was even higher with 70% mortality rate (National Program on Diet and Physical Activity Resolution, 2015). It was believed that active commuting to and from school could play a part in raising physical activity levels among children thus could help reduced the pre-valence of overweight and obesity in children. The purpose of this study was to assess whether different types of commuting are related to children's oxygen uptake capacity and physical fitness. A total of 1102 children participated in this study. Physical fitness index was calculated from 8 different fitness tests. Peak VO₂ was calculated from the 20-m multi-stage shuttle run test. The distance from home to school was obtained based on school and home addresses. Children were classified into 5 different groups of transportation: (1) car group, (2) motorized group, (3) motorized-walking group, (4) walking group, (5) mixed active group. Parents educational levels, economic status and type of transport were assessed through SHAPES questionnaire. Analysis of variance showed that uses of different types of transportation were related to children's aerobic capacity and physical fitness. There were statistically significant differences in physical fitness index between different groups of transportation. Parental education and family economic status affected the choice of the type of transportation between home and school.

Keywords: physical fitness, roaming space, children, youth, active transportation, peak VO₂, physical fitness index

9

Rowing in Bratislava: What is Rowing to me?

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Origins of rowing dated back to Ancient Egyptian times. However, the modern sport was born around the 18th Century in England. The first rowing club in Bratislava was officially established on the 5th of February 1862 and was called "Bratislavský veslársky spolok". In comparison with other sports existing in Slovakia, that was quiet early. Despite that fact, rowing never became a very popular sport and not a lot of people was involved doing it. Rowing was a strenuous and exhausting activity for a human body; rowers used all muscles in the body compared to other sports which used only certain part of the body. I started rowing when I was 14 years-old, which was less than two years ago. One of my motivations to start was my older brother who was already rowing for a few years at that time. He really liked it and I wanted to understand why it was so. It didn't take much time for me to understand the love of my brother to the sport because I started liking it only weeks into it and I knew that I want to continue. Nowadays, this sport means a lot to me and I am motivated to improve more and more. I know there was always room for improvement.

Keywords: Rowing, sport, Bratislava, body, motivation, improvement

Cholesterol-lowering Effect of Probiotic Lactic Acid Bacteria Isolated from Tapai

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Cardiovascular disease has become a serious public health issue. An estimated 17.7 million people died from cardiovascular disease in 2015, representing 31% of all global deaths. The World Health Organization has predicted that by 2030, cardiovascular disease is projected to remain the leading cause of death. Hypercholesterolemia, an elevated serum cholesterol level is a major risk factor for cardiovascular disease. It has been reported that a 1% reduction in serum cholesterol reduces the risk by 2-3%. Lifestyle factor such as diet could contribute to the risk of cardiovascular disease. Current approach to achieve reduced serum cholesterol includes the use of pharmacological agents such as statins. However, statin is associated with some severe side effects. Therefore, lactic acid bacteria have been recommended as a favourable dietary approach to reduce serum cholesterol due to its broad health benefits to human. Studies have shown that several strains of lactic acid bacteria, including *Lactobacillus sp.* strain is associated with cholesterol-lowering properties. *Tapai*, a popular traditional fermented food in Asian countries such as Indonesia and Malaysia, was an excellent source of these beneficial lactic acid bacteria. Hence, the objectives of this study were to isolate the probiotic *Lactobacillus sp.* strains from *tapai* and to investigate the effects of isolates on the cholesterol levels in rats fed with high cholesterol diet. The results from *in vivo* experiment revealed that the rats fed with 2% high cholesterol diet supplemented with *Lactobacillus plantarum* TAR4 showed significant reduction ($P < 0.05$) in serum total cholesterol ($24.8\text{mg/dL} \pm 5.1$) as compared to control (2% cholesterol diet group), $36.6\text{mg/dL} \pm 8.9$. In conclusion, *Lactobacillus plantarum* TAR4 could be a potential treatment for hypocholesterolemia. Further studies are required to reveal the molecular mechanism underlying the hypocholesterolemic effect of the isolated *Lactobacillus plantarum* TAR4.

Keywords: cholesterol, lactic acid bacteria, probiotic, tapai

Effect of Fluid Balance on Thermoregulatory Responses in Obese Individuals during Exercise in the Heat

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Hot and humid weather in Malaysia seemed to discourage obese individuals to exercise in the outdoor. The purpose of this study was to examine the effects of fluid balance on thermoregulatory responses in obese individuals during exercise in the heat. A total of 10 obese (23.0 ± 5.2 years; 92.2 ± 9.2 kg; BMI: 32 ± 2.5 m^2/kg ; 32.4 ± 2.6 %BF) and 10 normal weight individuals (21.0 ± 1.8 years; 65.6 ± 4.2 kg; BMI: 23.0 ± 1.2 m^2/kg ; 11.1 ± 1.1 %BF) were recruited in this study. Subjects underwent 50 min of cycling at 50% $\text{VO}_{2\text{max}}$ under 4 conditions: (i) euhydrated in thermoneutral condition (24.5°C ; 53.8 rh) (EUT); (ii) hypohydrated in thermoneutral condition (HYT); (iii) euhydrated in hot condition (34.7°C ; 54% rh) (EUH) and (iv) hypohydrated in hot condition (HYH). Subjects were instructed not to ingest fluid for 8 hours prior to the hypohydrated condition trials. No significance difference was found between obese and normal weight groups in heart rate (HR), VO_2 , core temperature, skin temperature in all 4 trials. Sweat loss in normal weight group was greater than obese group ($1.21\% \Delta\text{BW}$ vs. $0.75\% \Delta\text{BW}$) in EUT trial ($p=0.035$). HR in EUH trials were significantly higher than EUT trials at 10 min in normal weight group and at 20 min of exercise onwards in obese group ($p<0.05$). HR in HYH trials were significantly higher than HYT trials at 0 min in normal weight group and at 10 min in obese group ($p<0.05$). Obese individuals have similar physiological responses as normal weight individuals when exercising in the heat. With 1 % of BW loss prior to exercise it would impose greater physiological strain to both normal weight and obese individuals during exercise in the heat.

Keywords: hypohydrated, euhydrated, cycling

Tunku Abdul Rahman University College wishes to express its gratitude and appreciation to the following parties who, through their support and contribution in one form or another have helped tremendously to bring about the success of this Conference:

Galway-Mayo Institute of Technology (Republic of Ireland)

Sultan Idris Education University (Malaysia)

Tsinghua University (China)

Griffith University (Australia)

Gymnastik-Och Idrottshögskolan (Gymnastics and Sport College,
The Swedish School of Sport and Health Sciences, GIH, Sweden)

Speakers, Session Chairpersons, Presenters and Reviewers

Sponsors, Advertisers, Contributors

Participants

All other parties and individuals who have helped in one way or another.

ISBN 978-967-0115-03-0



3rd FIEP Asia Conference 2018 (ACPES 2018)

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