ABSTRACT BOOK

Improving Health and Performance Through Sports & Exercise

INTERNATIONAL SPORTS MEDICINE & EXERCISE SCIENCE CONFERENCE (ISMESC 2021)

11th & 12th September 2021

ORGANISER:

Malaysian Association of Sports Medicine (MASM)

UNIVERSITI MALAYA

Sports Medicine Unit, Faculty of Medicine; Centre for Sport and Exercise Sciences, Universiti Malaya (UM)

CO-ORGANISER:

UNIVERSITI TEKNOLOGI MARA

Faculty of Sports Science and Recreation, Universiti Teknologi MARA (UiTM)

UNIVERSITI KEBANGSAAN MALAYSIA
The National University of Malaysia

Faculty of Education
Universiti Kebangsaan Malaysia (UKM)

The artwork of the cover page was designed by Fong from Zenith Digital Solution (001798242-H). The cover page illustrated the multisport globe that indicates coverage of various sports medicine and exercise science topics with worldwide participation in this prestigious conference.

JOURNAL OF HEALTH AND TRANSLATIONAL MEDICINE (JUMMEC)

Special Issue 2021

The International Sports Medicine and Exercise Science Conference (ISMESC 2021) is held on 11th and 12th September 2021 virtually with the theme "*Improving Health and Performance Through Sports and Exercise*". This conference is organised by the Malaysian Association of Sports Medicine (MASM) and co-organised by the Sports Medicine Unit, Faculty of Medicine, and Centre for Sports and Exercise Sciences, Universiti Malaya (UM); Faculty of Sports Science and Recreation, Universiti Teknologi MARA (UiTM); and Faculty of Education, Universiti Kebangsaan Malaysia (UKM).

FOREWORD

It is a great honour for the Malaysian Association of Sports Medicine (MASM) to welcome all of you to the International Sports Medicine and Exercise Science Conference (ISMESC) 2021 held on 11th and 12th September 2021. This is our very first international conference held virtually with the theme of '*Improving Health and Performance Through Sports and Exercise'*. This 2-days conference managed to line-up 27 distinguished international and local renowned experts to share their knowledge and experience in the conference. We have received 99 abstracts from invited speakers, oral and poster participants. The abstracts were reviewed by our esteemed colleagues from the Scientific Committee. We had a total of 490 participants from 28 countries all over the world, and we concluded the conference with Tan Sri Dr. Majid Ismail Young Researcher's Award for Oral and Poster presentation. The topics were up-to-date, paying attention to the impact of COVID-19 pandemic to the sports medicine and exercise science. On behalf of the organising committee, we would like to express our deepest appreciation to our co-organizers Sports Medicine Unit, Faculty of Medicine and Centre for Sports and Exercise Sciences, Universiti Malaya, Faculty of Sports Science and Recreation, Universiti Teknologi MARA and Faculty of Education, Universiti Kebangsaan Malaysia for their support to this conference. We also would like to thank all MASM council, organising committee and scientific committee members. Finally, MASM is proud to complete this conference with the publications of these abstracts in the Journal of Health and Translational Medicine (JUMMEC).

Thank you.

Yours truly,

Assoc. Prof. Dr. Abdul Halim Mokhtar
Scientific Chairperson

Dr. Chan Kin Yuen
Conference Chairperson

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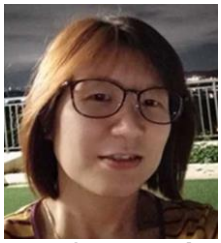

Assoc. Prof. Dr. Goh Siew Li (UM)

Dr. Denise Koh Choon Lian (UKM)

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SAILING THROUGH PANDEMIC: CHALLENGES AND STRATEGIES – FROM THE SPECTACLES OF MALAYSIAN ASSOCIATION OF SPORTS MEDICINE

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Abstract
When the World Health Organization declared Covid-19 Pandemic on March 11, 2020, the whole world started to change. The infection rate, morbidity and mortality caused by the COVID-19 virus, scientifically termed SARS-Cov-2 virus, were soaring and pushed us to many extreme measures which included lockdowns and travel restrictions. Only the essential activities were allowed. This has impacted our daily activities and livelihood. Sports and exercise, seen as the less essential activities, were seriously affected. Both, however, are essential in our lives, the sports medicine, science, athletes, coaches, practitioners and many more experienced the brunt just as much as the other sectors. Sports and exercise keep us physically and mentally healthy and serve as our career, enjoyment and feel-good. The vaccines, manufactured immediately, were thought to be the key protection against the infection. However, as the world strives to vaccinate the population, we realize the emergence of virus variants like the Delta variant results in higher transmissibility and potentially more serious outcomes, putting us to another major challenge. This lecture aims to discuss the challenges in facing the pandemic and the strategies to overcome them from the spectacles of the Malaysian Association of Sports Medicine.

ORAL PL-01

ON-FIELD RESUSCITATION DURING COVID-19 PANDEMIC

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Abstract
As we know pandemics are not new to human history and the risk of viral transmission in bodily fluids has long been recognized. In the 21st century we have the growth of sport at all levels intersecting with the increased requirements for emergency medical services to manage risk to the competitors. 2020 introduced Sars-CoV2 virus into the equation challenging our established procedures and forcing us to learn quickly in an environment of dynamic risk to all.

Sports Medicine Australia is the peak national multidisciplinary sports medicine organization in Australia providing leadership and guidance whilst promoting safe and active sport. At a community level SMA delivers the Safer Sport programme training professionals, parents, coaches, officials, trainers, teachers and participants in essential safety skills and first aid. At a higher level of sport SMA plays a role in setting policies including around resuscitation.
This pandemic forced us and many similar bodies to review their policies and procedures around resuscitation. We not only developed new guidelines and procedures but totally revised our training delivery to follow the safety message as well as developing the practical skills for the sporting environment.

The management of risk in the community is as dynamic as the virus is proving and sport deserves the safest resuscitation procedures possible for both athletes and those providing emergency services. We must however remain agile and adapt to new information and changing risk environments.

ORAL S1-01

EXERCISE IS MEDICINE

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Abstract
Exercise is Medicine (EIM) is a global initiative by the American College of Sports Medicine. Launched in 2007, the program calls on health care providers to prescribe physical activity and exercise for the prevention and treatment of chronic diseases. Malaysia has an EIM National Centre to drive its EIM initiatives, which includes establishing the Physical Activity Vital Sign (PAVS), running EIM Exercise Prescription Courses, and promoting physical activity. This talk highlights the rationale behind EIM and the Sports Physician's role in promoting EIM.

ORAL S1-02

POST ACLR: IMPROVING LOADING SYMMETRY AND NEUROMUSCULAR TRAINING FOR SAFE RETURN TO SPORTS

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Abstract
Deficits in muscle strength and asymmetrical lower limb loading following anterior cruciate ligament reconstruction alter the biomechanics of functional movements. These deficits and alterations persist at the time of return to sport and for years after surgery. A number of interventions have therefore been designed to address this issue. Neuromuscular electrical stimulation (NMES) has been adopted to elicit externally generated muscle contractions either as single treatment or in combination with voluntary exercise. Additionally, eccentric exercise, biofeedback therapy or open and closed kinetic chain exercises have given interesting results. Despite these approaches have improved rehabilitation, deficits in strength are still reported. In order to create an effective training stimulus, it is important to start strength training as early as possible to reverse atrophy, and ensure an effective exercise intensity. This could be an issue in the early rehabilitation following ACL surgery as patients are not able to voluntary and fully recruit motor units. Further, it is not possible to overload the operated knee joint with high external loads. Our group has shown the effectiveness of an early intervention, based on NMES of the quadriceps muscle superimposed while performing a functional movement, a sit-to-stand-to-sit, on muscle strength and symmetry in lower limb loading. Moreover, we have recently demonstrated a facilitation in spinal excitability following NMES superimposed onto voluntary contractions ($NMES^{+}$), thus suggesting that $NMES^{+}$ may provide a more effective neuromuscular stimulus and, hence, training modality compared to NMES alone.

ORAL S1-03

BASIC MUSCULOSKELETAL (MSK) ULTRASOUND – UPPER LIMB

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Abstract
Musculoskeletal ultrasound imaging is an important skill for clinicians in Sports and Exercise Medicine. Not only does it provide a safe, rapid and dynamic investigation to support clinical assessment, but it also aids in the delivery of diagnostic and therapeutic interventions. Equally, upper limb pathologies are common in the sporting and active populations and are often associated with considerable morbidity. As such, these injuries require prompt assessment and evaluation to restore function and musculoskeletal ultrasound helps expedite this process.

Key to assessments using ultrasound it the understanding of basic imaging tools and scanning protocols for the area being investigated. While the former enables clinicians to optimise images on the screen, the latter ensures that all relevant anatomical structures and pathological nuances are assessed as thoroughly as possible. In doing so, one will be able to provide a systematic assessment, that is relevant to the clinician and colleagues involved in downstream care.

This presentation will initially consider some general principles regarding ultrasound imaging, including some tips on optimising the imaging. Subsequently delegates will be taken through the essential steps in imaging the shoulder, elbow and wrist, as per the ESSR guidelines. With some reflections from clinical practice, delegates will hopefully feel empowered to take up Musculoskeletal Ultrasound, if they have not previously done so, or reflect on their practice and determine ways of optimising their practice.

ORAL S1-04

BASIC MUSCULOSKELETAL (MSK) ULTRASOUND – LOWER LIMB

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Abstract
This talk will encompass the current indications for MSK Ultrasound of the lower limb with focus on the knee and ankle ultrasound imaging. Musculoskeletal Ultrasound is now the gold standard investigation for superficial ligaments and tendons of knee and ankle joint and grading of muscle tears of the thigh and calf. The reason for this is ultrasound's ability to zoom in to the region of point of maximal tenderness and see in high resolution the cause of the patient's current pain.

In the Knee ultrasound is particularly useful for assessing:

1. MCL, LCL, Quadriceps, patella and pes anserinus tendons.
2. Medial and lateral retinaculum
3. Cysts around the knee eg. meniscal cyst, Baker's cyst
4. Menisco-capsular injuries which are often missed diagnosis but cause of pain.

In the Ankle ultrasound is useful for assessing:

1. Lateral complex injuries such as ATFL, CFL and AiTFL and dynamic testing is useful to test function.
2. Deltoid ligament injuries
3. Peroneal and medial tendons such as posterior tibial tendon
4. Achilles tendon pathology
5. Plantar fasciitis
6. Morton's neuroma

For muscle injury ultrasound is useful to assess:

1. Grading of muscle tears - the Peetrons/George classification. Clinical grading tends to undergrade muscle tears

Most importantly ultrasound can make grading of ligament tears which can correlate to the loss of function of said ligament. It can also assess clinical tendinitis (pain in and around a tendon) into one of the actual causes such as

1. Tendinosis
2. Sheath synovitis
3. Tenosynovitis
4. Bursitis
5. Calcific tendinosis
6. Enthesopathy (spur, periostitis)
7. Tendon tear

or combination of one or more of the above.

ORAL S2-02

RETURNED-TO-PLAY AFTER COVID-19 INFECTION

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Abstract
A COVID-19 infection is linked with acute and possibly chronic damage to health. Respiratory and cardiovascular system, but also the skeletal muscle, the nervous system, the kidneys and the liver are involved in acute phase. Due to this multiorgan sufferance, athletes affected by COVID-19 disease require a medical evaluation by a medical professional before return to play. Sport should not be resumed until the athlete has any kind of symptoms. Sport physicians should advise patients on the modality of returning to sport. These protocols depend on the severity of the symptoms but also on the age and medical background of the athlete, his type of sport, his level of play.

ORAL S2-03

COVID-19 AND THE ATHLETE'S HEART

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Abstract
COVID-19 is a virus disease that may also affect the heart of athletes, particularly in the form of myocarditis. Several studies have addressed this issue and come to different conclusions about the extent of the hazard. Recently, rare events of (non-contagious) myocarditis have been reported after mRNA vaccinations, too. This necessitates an assessment of how dangerous infections with SARS-CoV-2 (and possibly vaccinations against it) might be for performance-oriented athletes. The clinical task includes an appropriate choice of medical examinations in infected athletes as well as proper return-to-play protocols. Different existing approaches will be discussed.

ORAL S2-04

SPORTS AND IMMUNITY

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Abstract
There is a general consensus that regular exercise of moderate intensity is beneficial for reducing the risk of infection, especially in older adults and people with chronic diseases. In contrast, the burden of infection is reported to increase in high performance athletes during periods of intense training and is the second most common cause, after injury, of missed training days during preparation for major sporting events. This has shaped the common perception that strenuous exercise, which is more like an overload and does not allow sufficient regeneration, can temporarily suppress immunity. At the cellular level, acute exercise induce intensity-dependent leukocytosis which is followed by a redistribution of effector cells into the peripheral tissues. These processes result from the activation of the sympathetic nervous system and the hypothalamic-pituitary-adrenal axis, as well as the associated release of stress hormones such as catecholamines and glucocorticoids. It is assumed that the effector cells strengthen immunological barriers, such as the lungs and intestines, and initiate repair processes, for example in tissues that are stressed or damaged by exercise (e. g. muscles). Regular physical activity thereby mediates a favourable composition of the T-cell compartment, NK cells and monocytes, and improves the function of various leukocyte subpopulations over the entire lifespan. In addition, each single activity releases myokins from the muscles, which have numerous metabolic and immune-regulating effects. In summary, physical activity represents a key or additive behavioural intervention that has the potential to mediate numerous positive effects in the prevention and treatment of the most important lifestyle-associated diseases.

ORAL S2-05

COVID-19 VACCINATION, VARIANTS AND SPORTS PARTICIPATION

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Abstract
About 200 million cases of COVID-19 are confirmed around the world, with global death of 4.3 million as of August 2021. Vaccines against COVID-19 work relatively well, but there are some differences in the efficacy among different vaccines. Besides, emerging variants of concern, such as beta (B.1.351) and delta (B 1.617.2), are thought to escape from antibodies elicited by the vaccines. Yet, most vaccines have proven efficacy to prevent severe COVID-19 or death. Thus, it is crucial for athletes to be fully vaccinated to prevent the spread of SARA-CoV-2. Two approved mRNA vaccines have a risk of developing myocarditis and pericarditis among young males. Singapore started to recommend avoiding any exercise or strenuous physical activity for one week after vaccination. Despite its recommendation, it is considered a rare event, which should not prevent people from getting vaccinated. On the other hand, COVID-19 itself is known to cause myocarditis, placing the athletes in danger of sudden death during game participation. It is considered that the benefit of the vaccine outweighs the risk of its adverse events. The vaccination is recommended to all athletes and may be a requirement for participating the sports events in the near future. With recent reports of breakthrough infection of SARS-CoV-2 among fully vaccinated people, the question remains if screening for SARS-CoV-2 with PCR test should also be performed for infection control during sports events.

ORAL S2-06

PHYSICAL ACTIVITY AMIDST COVID-19 PANDEMIC: IS IT IMPORTANT?

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Abstract
The ongoing COVID-19 outbreak that was declared as a pandemic by the World Health Organization since 11 March 2020 continues to endanger mankind, causing hundreds of millions of infections globally and millions of deaths till now. Many countries worldwide, including Malaysia, have taken urgent public health countermeasures such as movement control, isolation, social distancing, and quarantine to prevent the spread of the disease. The stringent movement control and closure of gyms and sports facilities lead to reduced physical activity in the general population due to prolonged home stay. Prolonged home stay increases the risk of sedentary behaviors, leading to the increased risk or worsening chronic diseases. Compared to being sedentary, moderate-intensity physical activity can improve the immune system response to fight against viral respiratory infections by increasing immune cells such as neutrophils and natural killers and reducing excessive inflammation via changes in Th1/Th2 cell responses. Thus, reduce the severity of infections. Moderate physical activity also improves cardiorespiratory function and chronic diseases such as diabetes mellitus, hypertension, and cardiovascular disease. Furthermore, moderate physical activity is one of the best stress-coping mechanisms to prevent perceived stress, anxiety and depression due to many physical, psychological and financial implications resulting from COVID-19 pandemic by maintaining the body's cortisol level. An imbalance of the body's cortisol level can imperil the body's immune system and induce a hyperinflammation state. Numerous studies have reported that patients with COVID-19 who were consistently inactive had a greater risk of developing severe disease, hospitalization, admission to ICU, and death due to COVID-19 than patients who consistently met physical activity requirements or did some form of physical activity. Therefore, maintaining regular physical activity while staying at home is imperative to stay healthy amidst the COVID-19 pandemic.

ORAL S3-01

NONLINEAR PEDAGOGY IN SKILL ACQUISITION

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Abstract
Nonlinear Pedagogy, underpinned by Ecological Dynamics, is a pedagogical approach that focuses on encouraging exploratory behaviors for learners to acquire individualised movement solutions. In this sharing, the focus is on introducing Nonlinear Pedagogy within the context of Skill Acquisition and incorporate relevant recent empirical findings on the application of Nonlinear Pedagogy in the physical education and sports context. Nonlinear Pedagogy provides principles of practice for coaches and physical education teachers to design learning tasks specifically for each learner. This approach emphasises learner-environment mutuality in supporting learners to explore, search and exploit movement solutions. Pedagogical principles relevant to supporting representative learning designs, constraints manipulation, task simplification, awareness of attentional informational constraints, and practice variability are central to a Nonlinear Pedagogical approach. Notably, there has been increased interest over the last decade in adopting Nonlinear Pedagogy in physical education and sports settings. Key practical implications for coaches and physical education teachers will also be shared to encourage practitioners to consider the use of Nonlinear Pedagogy in this session.

ORAL S3-02

PSYCHOLOGICAL EFFECTS OF COVID-19 AND SPORTS PERFORMANCE: CHALLENGES AND ADAPTATIONS

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Abstract
The pandemic effects of COVID-19 display a very challenging situation in individuals involved in sports (e.g. athletes, coaches, support staff) impacting career trajectories. This presentation would highlight the transition stages of adaptations to the 'new normal'. The first phase would focus on the psychological responses to 'pre- corona phase', where stable routine and systematic training was in place. A second phase is the 'corona lockdown phase' laden with instability, uncertainties, apprehensions and associated emotional responses. A situation we can equate with crisis. The third 'adaptation phase', would display some methods of how the athletes engaged their coping resources to the endure the change. More specifically, the psychological impact of the transition from regular routine to quarantine, social distancing, online training, cultural influences, and travel curbs. The fourth phase highlights the responses to unlocking and return to field, blending the new protocols for training with the old ways and relearning from the pandemic effect. The key issues underlined are tolerance, acceptance and associated psychological adaptation and unique coping responses that individuals adhered during pandemic situation.

ORAL S3-03

USE AND ABUSE OF PHYSIOTHERAPY MODALITIES: FACTS AND FALLACIES

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Abstract
The role of therapeutic modalities in physiotherapy continues to be controversial, where empirical research evidence clashes with traditional models of care and therapist/patient experience. In this presentation, we will explore the role of different treatment modalities in evidence-based practice and review the latest literature around different modalities. Fundamental principles important for tissue healing and recovery from injury will be revised, together with clinical application in our current sport and exercise medicine landscape.

Together we will investigate different claims made around the efficacy of common treatment modalities and determine criteria that will allow a more critical approach in our own practice. We will aim to discuss certain myths and misconceptions that exist around the use of physiotherapy modalities.

The discussion will include clinical reasoning around common injuries and how acute management may differ from long-term rehabilitation. We will discuss important elements to include when considering different treatment options, and discover ways to improve on our current management of Musculoskeletal and sports injuries.

ORAL S3-04

SPORTS SHOE DESIGNING BASED ON BIOMECHANICS AND ENGINEERING

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Abstract
In the process of designing sport shoes, we clarify the functions required of the target sport, and develop functional concept of the shoes. Next, we select appropriate materials and optimal structures using computer simulation technique before produce prototypes. Then, we carry out the wearing test in the actual motion, and evaluate the required functions based on biomechanical approach utilizing motion capture, force plates and so on, in the detail. By repeating the cycle of evaluation and correction, improvement points are derived, and the functions of the shoes are improved. For example, in a marathon, we have thought that producing a large step length with a small amount of energy consumption will lead to highly economical running and lead to good results in the race. In this presentation, we will introduce design examples of the latest marathon shoes designed corresponding to the classification for highly skilled runners including top athletes based on the characteristics of changes in cadence and step length.

ORAL S3-05

NUTRIGENETICS: THE FUTURE OF SPORTS NUTRITION

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Abstract
One of the ultimate goals of the promising field of precision nutrition is the design of tailored nutritional recommendations to manage or prevent chronic diseases. People differ in their nutritional requirements and responses to nutrients. Many inputs contribute to metabolic heterogeneity including variations in genetic makeup, epigenetics, metabolome, microbiome, lifestyle, diet, and environmental exposure. These genetic differences are the key enabler of the emerging nutrigenetics and nutrigenomics areas of research. However, the future of precision nutrition will not be solely based on nutrigenetics. To that end, precision nutrition approaches include, in addition to genetics, other factors such as dietary habits, food behavior, physical activity, the microbiota and the metabolome. One of the most effective applications of nutrigenetics and multi-omics approaches is in sports performance. The genetic variability between individuals can affect muscle strength, skeletal structure, heart and lung size, and tendon elasticity, leading to different human phenotypes, ultimately influencing athletic performance. Providing athletes with individually tailored dietary and other performance-related information based on their genetic makeup, metabolome and microbiome is a novel competitive edge embraced by both practitioners and scientists working in the world of sport. In line with this, a large-scale collaborative project called GeNuIne (Gene-Nutrient Interactions) Collaboration that aims to develop personalized nutrition strategies based on the evidence from nutrigenetics, nutrigenomics, metabolomics, gut microbiome, and dietary intervention studies using cohorts from various ethnic groups has been initiated. The translation of the growing increase of findings emerging from these areas of nutritional science into meaningful and clinically relevant dietary advice to improve athletic performance represents one of the important challenges of sports nutrition. Hence, before such individualized dietary recommendations are provided, tools will have to be created that can convert complex modelling of the systems biology of precision nutrition into recommendations for diet, and behavioural and pharmaceutical interventions that can be offered by health professionals.

ORAL S4-01

CONCUSSION IN FOOTBALL: THE DOCTOR'S DILEMMA

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Abstract
Sport-related concussions are increasingly being recognized in both recreational and elite football (as well as in other sports). As a result, there is an increasing need to ensure that these injuries are being managed appropriately. In this talk we will review the current rules and policies used to help doctors identify and manage concussion in football. We will also look at how other sporting codes have approached this problem and see what we can learn from these sports. We will also discuss current research regarding the assessment and management of sport related concussion and consider how we can more safely return players to the field of play.

ORAL S4-02

SUDDEN CARDIAC ARREST IN SPORTS

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Abstract
Sudden Cardiac Death (SCD) comprises 16% of all deaths of athletes, which is more than the percentage of deaths attributed to suicide, drug overdose and heat stroke combined. It has been estimated that the incidence of SCD in athletes is twice that of the general population. On average, there have been 12 Sudden Cardiac Arrest (SCA) per year in professional Football for more than the last 10 years, which equates to one SCA per month. In this presentation, we will examine the incidence, the cause and more importantly how to screen and manage Sudden Cardiac Arrest.

ORAL S4-03

GENDER ELIGIBILITY IN SPORTS – A MISTY ENVIRONMENT

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Abstract
Women were barred from participation and as spectators during the ancient games. The founder of modern Olympic Games in 1896, Baron Perrie Coubertin was against women participation. Nineteen women participated at the 1900 Olympic Games in Paris and by 1996 the numbers grew to over 3800 female athletes. Recently, Olympic Games Tokyo 2020, 50% of the 10,300 athletes were females. Olympic Sports have become keenly competitive, highly politicised and a showcase of international dominance to the World. Early in the century, the notion that male athletes masquerading in female sport was common perceived knowledge coupled with media hype reporting successful athletes with “male like” physical features (intersex) and questionable gender led the IOC to initiate gender verification. Athletes with “male-like” characteristics or attributes esp. “intersex” athletes seem to give them an unfair advantage in certain athletic events. Gender verification is not fully understood, difficult, complex, and expensive as well as its validity questionable. IOC introduced gender verification beginning with nude parade and gynaecological examination, later replaced by laboratory based cytogenetic testing and finally settling down to molecular determination of androgen levels have been challenged both by science and human rights groups in particular the Athlete’s Rights. Out-of-competition on-site gender screening often leads to emotional trauma, social stigmatization and are highly discriminatory in females with “intersex” diagnosis. Should serum testosterone levels be the sole criterion in determination of eligibility? The Court of Arbitration for Sports decision that the DSD regulations are discriminatory but a necessary, reasonable, and proportionate means of achieving the IAAF aim in preserving the integrity of female athletics in restricted events. Why restricted events? Are there other variables omitted? At the just concluded Olympic Games Tokyo 2020, the recent gold medal winner, Christine Mboma (DSD) from Namibia in the 200 meters and the weightlifter gold medallist, Laurel Hubbard from New Zealand a trans gender athlete (MTF) has caused the IOC to consider re-examination of participation regulations in female sport. On the other hand, do the regulations that govern individual sports such as athletics applicable to team sports? The nature and demands of sport do differ from one sport to the other. The situation of gender evaluation in sports is confounded by lack of sound scientific support, the difficulty in ensuring a just level playing field based on binary sex for all sports and the strong lobby of human rights issue. Every International Sports Federation should have its own Gender Eligibility Regulation specific for its sport.

ORAL S4-04

DIETARY SUPPLEMENTS WITH PARTICULAR REFERENCE TO FOOTBALL

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Abstract
Nutrition usually makes a small but potentially valuable contribution to successful performance in elite athletes. Dietary supplements in turn can make a small but important contribution to a successful nutrition program, but they cannot transform a mediocre athlete into a champion. Nonetheless, supplement use is widespread at all levels of all sports, and football is no exception. Products described as supplements target different issues, including the management of specific micronutrient deficiencies, supply of convenient forms of energy and macronutrients, and provision of direct benefits to performance or indirect benefits such as supporting intense training regimens. The appropriate use of some supplements can offer benefits to some players, but other supplements may be harmful to the athlete's health, performance, and/or livelihood and reputation if an anti-doping rule violation results. A complete nutritional assessment should be undertaken before any decisions regarding supplement use are made. Supplements claiming to directly or indirectly enhance performance are typically the largest group of sports products, but very few (including caffeine, creatine, specific buffering agents and nitrate) have good evidence of benefits, and even those are useful only in a limited range of events. Performance in football is hard to assess, so recommendations are normally based on laboratory simulations of simplified exercise models. Responses are also affected by the scenario of use and may vary widely between individuals because of factors that include genetics, the microbiome and habitual diet. Supplements intended to enhance performance should be thoroughly trialled in training or simulated competition before implementation in competition. Inadvertent ingestion of substances prohibited under the anti-doping codes that govern elite sport is a known risk of using supplements. Protection of the athlete's health and awareness of the potential for harm must be paramount, and expert professional opinion and assistance is strongly advised before embarking on supplement use.

ORAL S4-05

TRAINING LOAD MONITORING IN FOOTBALL

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Abstract
In football, the monitoring of training load (TL) has been vastly utilised especially in professional elite players using systematic and continuous assessment on training and match performance data. TL monitoring have been shown to assist coaches to analyse, design and modify training sessions based on individual player, position, team tactics and physical demand. Previous scientific recommendations also have highlighted the importance of monitoring TL to enhance performance and reduce injury risk. The primary aim of this presentation is to provide applied views on the issues, challenges and practical implications of both external (global positioning system) and internal (heart rate, rating of perceived exertion) TL monitoring in football.

ORAL S4-06

BIOMECHANICAL AND NEUROMUSCULAR MARKERS OF LOWER LIMB INJURIES IN FOOTBALL

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Abstract
Performance enhancement in sports such as football is mainly governed by the principle of supercompensation: you have to train hard to get fitter, but not too hard to avoid fatigue. In fact, not only does this matter from a physiological point of view, it also matters from a biomechanical point of view. Athletes need to expose themselves the right amount of mechanical load to make their musculoskeletal system stronger: denser bones, thicker cartilage, stiffer tendons, and of course, stronger muscles. However, the way a player moves may affect the extent to which loads are truly beneficial. For example, a young player may have too much valgus loading, or a player that returns to play after reconstruction of an Anterior Cruciate Ligament may show asymmetries or compensations. This can trigger an increased (re)injury risk, or even long-term musculoskeletal degeneration, e.g. under the form of osteoarthritis. Biomechanical and neuromuscular factors can turn desirable loading into potentially hazardous loading. In this lecture a framework will be discussed for the practical implementation of load management, incorporating current views on how biomechanical and neuromuscular markers of lower limb injuries may play an important role for short- and long-term player health. This framework should help trainers and coaches working with healthy athletes on the field, physiotherapists working with an injured athlete off the field, and human movement scientists in the lab. Above all, this presentation can hopefully inspire the next generation of researchers in the field of sports medicine and exercise science.

ORAL S4-07

ALTITUDE TRAINING IN SOCCER PLAYERS

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Abstract
The roles of altitude training have been specified to improve athletic performance. Real altitude and various simulated hypoxic interventions for athletes have only relatively gained interest from academic and sports coaching communities. While the major change from chronic intervention was initially compensated by haematological adaptation, many other physiological alterations have not been clearly specified.

Acute effects of hypoxic exposure on soccer players reduced performance, endurance time, oxygen consumption, and most cardiovascular variables. However, the compensation was immediately achieved via facilitation of respiratory function, whereas haematological compensation later appeared on the 3rd of simulated hypoxic exposure.

Four weeks of four combinations of living and training protocols had been investigated for LLTL, LLTH, LHTL and LHTH (LL-live low, TL-train low, LH-live high, TH-train high) in a hypoxic chamber with 15% oxygen concentration. Pre- and post-intervention showed that the haematological compensations existed throughout the four weeks period in LLTH, LHTL and LHTH (three hypoxic intervention) groups, some haematological changes remained within a week post-intervention. For long term effects, exercise retests were done under both normoxic and hypoxic conditions. Improvement in performance were found in three hypoxic intervention groups where the highest was in LLTH when exercise under normoxic condition. Remarkable CVS (heart rate, stroke volume and cardiac output) and respiratory adaptations (breathing frequency and minute ventilation) were found in LLTH and LHTL under both normoxic and hypoxic conditions. Whereas metabolic functions (VO_2 and VCO_2) were higher in three hypoxic intervention groups under hypoxic condition only.

ORAL IL-01

LOOKING BEYOND LIFESTYLE INTERVENTION FOR WEIGHT MANAGEMENT

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Abstract
Obesity is a multi-factorial disorder and is associated with many medical problems such as diabetes, hypertension, cardiovascular diseases, osteoarthritis, and certain cancers. Obesity is also associated with psychosocial issues such as low self-esteem, depression, anxiety, stress, suicidal ideation, and quality of life.

Body mass index is a screening tool for weight category and moderately correlated with more direct body fat measures. The World Health Organization (WHO) defines overweight and obese persons as those having BMI greater than or equal to 25 and 30 kg/m^2, respectively.

Asian populations are at an increased risk of cardiometabolic disorders at lower BMI levels than other ethnic groups, which has been attributed to a considerably higher body fat percentage. For that reason, in 2004 the World Health Organization (WHO) recommended lowering the BMI cut-offs for Asian adults, for overweight from 25 to 23 kg/m2 and for obesity from 30 to 27.5 kg/m^2.

The prevalence of obesity is very high in Malaysia. The National Health & Morbidity Survey (NHMS) 2019 shows that one in two of the Malaysian adult population is overweight or obese. Hence, prevention of obesity during should be considered a priority in Malaysia.

The management of obesity requires lifestyle modification and should always be the first step that needs to be taken in a patient's weight loss journey. Treatment options like anti-obesity drugs can be considered, however patients should use it in addition to diet, exercise and behaviour change.

ORAL YRA-01

THE EFFECTS OF SHORT DURATION HIGH-INTENSITY SOCCER-SPECIFIC FATIGUE SIMULATION (SFS[5]) ON SPRINTING KINEMATICS MARKERS OF HAMSTRING INJURY RISK IN ELITE U19 SOCCER PLAYERS

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Abstract
Background and Aim: Hamstring fatigue has been known to be a factor influencing hamstring injuries considering that one over two of all hamstring injuries occur during competitive soccer matches within the last 15 mins of each half. The purpose of this study is to investigate the effects of a five mins soccer-specific fatigue simulation on sprinting kinematics in elite U19 soccer players. Methods: Eleven (n = 11, mean ± SD age 18.3 ± 0.5 years, weight 62.3 ± 6.4 kg, height 171 ± 6.6 cm) elite U19 university soccer players completed a soccer-specific fatigue simulation (SFS5) and maximal 10 m sprint trials. Two-dimensional sprint kinematics data were recorded before exercise (time 0 min), immediately after SFS5 (time 5 min) and after 15 min SFS5 (time 20 min). A one-way repeated measures ANOVA was used to identify significant differences between conditions and over time, with $\alpha=0.05$. Results: Analysis of the kinematic sprint data revealed a significant reduction of combined maximal hip flexion and knee extension angle at time 5 min (39.9%), indicating reduced hamstring length ($p < 0.05$). Conclusions: These findings suggest alterations in sprinting technique during fatigue state may have implications for the increased hamstring strain injury risk. Our findings also recommended the inclusion of short-duration, high-intensity soccer-specific fatigue simulation as part of pre-season hamstring strain injury risk screening and return to play assessment to ensure the effectiveness in identifying the markers of hamstring strain injury risk in soccer players.

Keywords:
fatigue, hamstring, sprinting, kinematics, soccer

ORAL YRA-02

THE EFFECTS OF FOUR WEEKS HIP- AND ANKLE- FOCUSED EXERCISE INTERVENTION ON LOWER LIMB MECHANICS DURING SINGLE-LEG SQUAT AMONG PHYSICALLY ACTIVE FEMALES

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Abstract
Background and Aim: Exercise intervention based on top-down (proximal origins) and bottom-up (distal origins) kinetic chains may improve the occurrence of dynamic knee valgus (DKV). The purpose of the study was to examine the impacts of four-week hip- and ankle-focused exercises on the lower limb mechanics during the single-leg squat (SLS) among physically active females. Methods: Thirty-six physically active females with excessive DKV (>13° knee frontal plane projection angle (FPPA) were divided into three groups. The intervention group performed four-week exercises that emphasized on the hip (HIP group) and ankle (ANKLE group) muscles for 12 sessions while the control group continued their routine as usual. SLS tests (i.e., 45° and 60° squat depths) with 3D motion capture were performed before and after the intervention. The lower limb biomechanics at pre-and post-SLS test across three groups were analyzed by two-way ANOVA. Results: There were significant main effects for group x time interaction in the sagittal dominant knee ($F(2.66) = 9.437$, $p = 0.001$) and ankle ($F(2.66) = 16.465$, $p = 0.001$) moment during SLS at 45° knee flexion across groups. During 60° knee flexion, the hip extension angle for the dominant ($F(2.66) = 12.032$, $p = 0.001$) and non-dominant limb ($F(2.66) = 3.618$, $p = 0.032$) were also significant across three groups. Conclusions: The findings indicated that only hip-focused exercises showed biomechanical changes during SLS after the intervention. Hence, the hip-focused exercises targeting the hamstring and quadriceps muscles may improve DKV during SLS among physically active females.

Keywords:
biomechanical phenomena, dynamic knee valgus, human health, sports injury prevention

ORAL YRA-03

ACUTE WATERMELON-BASED ENERGY DRINK INGESTION IMPROVES TIME TO EXHAUSTION DURING HIGH-INTENSITY CYCLING EXERCISE IN MALE COLLEGIATE ATHLETES: A PILOT STUDY

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Abstract
Background and Aim: The ergogenic potential of long-term watermelon supplementation has been established by researchers. However, studies regarding potential ergogenic benefits of acute pre-exercise watermelon ingestion are scarce, particularly in male collegiate athletes. This study aims to investigate the effects of acute pre-exercise watermelon-based energy drink (WED) on cardio-physiological markers during high-intensity cycling exercise among male collegiate athletes. Methods: In a randomized, crossover design with one week washout period, ten male collegiate athletes (age 20.4 ± 1.0 years, bodyweight 60.5 ± 10.3 kg, BMI 20.7 ± 2.5 kg/m2, VO2 max 43.0 ± 3.8 mL/kg/min) concluded two high-intensity cycling exercise trials at 85% VO2 of maximal workload until volatile exhaustion on cycle ergometer 90 minutes post-consumption of either 1g carbohydrate/kg body weight of WED or glucose drink (Control). The perceived effort was recorded using Borg's scale and heart rate was recorded throughout the exercise trials and 1 minute after cessation of exercise to record heart rate recovery (HRR). Results: The participants cycled significantly longer time (p = 0.007) to exhaustion in WED (8.5 ± 2.1 min) compared to Control (6.9 ± 1.7 min). HRR was found significantly higher (p = 0.002) in WED than in Control. Peak heart rate and rating of perceived exertion exhibit no significant differences between WED and Control. Conclusions: An acute dose of WED supplementation appeared to enhance high-intensity cycling exercise performance in male collegiate athletes by perpetuating cycling time to exhaustion. These findings might have implications in developing a natural ergogenic aid for athletes.

Keywords:
athlete, energy drink, exercise, nutrition, watermelon

ORAL YRA-04

EFFECTS OF ACUTE HIGH-INTENSITY INTERMITTENT TRAINING (HIIT) ON GASTROINTESTINAL PERMEABILITY FOLLOWING IBUPROFEN OR PLACEBO INGESTION

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Abstract
Background and Aim: Data on the effects of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) ingestion on Gastrointestinal (GI) permeability in athletes is limited; described mostly used in the acute and chronic treatment of soft-tissue injuries as well as for analgesic purposes. Significantly, NSAIDs such as Ibuprofen have previously been reported to increase gastrointestinal GI permeability and inflammation following prolonged exercise. Given NSAIDs are widely used amongst invasion field sports where high-intensity, repeated bouts of activity are frequent. Findings between HIIT and NSAIDs would provide insight into potential effects on GI function. Methods: Using a double-blind repeated measures design, effects of HIIT on GI permeability and symptoms relative to rest and following the co-administration of the NSAID [Ibuprofen]or placebo were examined [four trials]. Twelve (age: 19.6 ± 2.3years; height 1.78 ± 0.06m; body mass 75.1 ± 5.9 kg) trained intermittent games players participated. They undertook a modified Running Anaerobic Sprint Test [4sets x 6reps x 35m (<6s)]. GI permeability was determined following the ingestion of Lactulose (L)/L-rhamnose (R) and the ratio measured in serum at 2 hrs post-exercise. Results: There was no significant main effect of NSAID or placebo (P>0.05) on GI permeability or symptoms. A single but intense short bout of HIIT in trained male games players doesn't increase GI permeability and symptoms relative to rest. Conclusions: Preceding short but intense HIIT type exercise with the use of NSAIDs does not adversely affect the GI permeability, considerations of the interaction of HIIT and NSAIDs upon GI function requires further consideration.

Keywords:
high-intensity intermittent training, gut permeability, ibuprofen

ORAL YRA-05

RELATIONSHIPS BETWEEN CORE STABILITY ASSESSMENTS AMONG HEALTHY ADULTS

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Abstract

Background and Aim: Core stability components consist of lumbopelvic control, trunk endurance and balance. Mixed results in core stability assessments are common, and this could be due to a lack of testing that includes all components or the best test representations. This study aims to evaluate the relationships between lumbopelvic control, trunk endurance and balance. Methods: Forty (20 males, 20 females) healthy collegiate students, mean aged 21.4 ± 1.92 years, body weight 58.72 ± 10.96kg, height 1.63 ± 0.09m were recruited for this cross-sectional study. Participants' lumbopelvic control was assessed using Sahrmann 5-level core stability test (S5CST), while trunk endurance: trunk flexor (TF), trunk extensor (TE), and side plank (SP) using McGill and Ito protocols. For static and dynamic balance, Stork and Y-balance tests were used respectively. Results: Correlation analysis revealed positive relationship ($p < 0.01$) between S5CST and Stork balance (dominant leg; Rho = 0.62, non-dominant leg; Rho = 0.56), non-dominant leg Y-balance (Rho = 0.38), and Ito TF (Rho = 0.33). No significant relationships were observed between trunk endurance and balance. Conclusions: In conclusion, core stability appears to be best represented by lumbopelvic control. Individuals with good lumbopelvic control tend to have good abdominal endurance, bilateral leg static balance and non-dominant leg dynamic balance. Therefore, lumbopelvic control should be included in any core stability assessments while trunk endurance may provide information on different aspects of core muscle performance.

Keywords:
core stability, lumbopelvic control, trunk endurance, balance

ORAL YRA-06

MUSCULOSKELETAL DISORDERS AND ITS ASSOCIATION WITH PHYSICAL ACTIVITY AND PHYSICAL FITNESS AMONG HOSPITAL NURSES

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Abstract

Background and Aim: Musculoskeletal disorders (MSDs) are common among nurses with the prevalence ranges between 40% to 95% worldwide. Previous studies mainly emphasized on ergonomic factors without measuring overall physical activity (PA) and physical fitness (PF) level. Hence, the aim of the study is to determine the association between PA and PF level with MSDs among nurses. Methods: A cross-sectional study was conducted among 550 nurses working in a large urban tertiary hospital. Validated questionnaires were used; PA level and MSDs were measured using IPAQ and NMQ respectively. Cardiorespiratory fitness (CRF) was measured using YMCA 3-minutes step test while handgrip strength (HGS) using handgrip dynamometer. Multiple Logistic Regression was performed where confounders such as sociodemographic, occupational, and psychosocial factors were included. Results: MSDs prevalence in 1 year and 7 days among participants were 86.4% and 79.1% respectively. 98.0% of them reported moderate to high-level PA which is mainly contributed by occupational PA. Interestingly, majority were either overweight or obese (66.4%) and below average CRF (78.0%) despite reported high-level PA. HGS mean for dominant hand were 24.85 kg and 22.26 kg for non-dominant hand. In multivariate analysis, moderate PA level (AOR:7.661, 95% CI=1.48-39.60), high PA level (AOR:4.528, 95%CI=1.13-18.23), musculoskeletal disease history (AOR:6.068, 95%CI=1.35-27.34) and supervisor support (AOR:0.274,95%CI=0.12-0.63) were significantly associated with MSDs in 1 year while musculoskeletal disease history (AOR:3.791, 95%CI=1.29-11.17) with MSDs in 7 days. CRF and HGS were not significantly associated with MSDs. Conclusions: In view of significant influence of PA level especially at work, a comprehensive workplace management and targeted intervention is needed to minimise MSDs among nurses.

Keywords:
musculoskeletal disorders, physical activity, physical fitness, cardiorespiratory fitness, handgrip strength

ORAL FC1-01

PRACTITIONERS' KNOWLEDGE, ATTITUDE, AND PRACTICE OF THE FIFA 11+ INJURY PREVENTION PROGRAM IN COMPETITIVE SOCCER

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Abstract

Background and Aim: This cross-sectional survey recorded the perceptions of athletes, coaches, physiotherapists, and fitness coaches on injury prevention exercise programs (IPEP), specifically the extensively promoted FIFA 11+ in various competition levels in Malaysia. Methods: Sixty-nine respondents completed an online survey on lower limb injury susceptibility and seriousness, how they perceive the value and practicality of IPEP especially FIFA 11+ introduced by FIFA, and the barriers and facilitators to maintaining IPEPs in their teams. Results: 72.5% of respondents believe that soccer athletes are susceptible to high risk of injury. More than half of the respondents agreed that lower limb soccer injuries may have adverse effects on athletes and team performances. 76.8% of respondents agreed that science-based exercises to prevent injuries should be performed by athletes. Only 40.6% of respondents have heard of the FIFA 11+, and 36.2% of respondents currently use the program. 46.4% of respondents familiar with the FIFA 11+ appear sceptical on the sustainability of the FIFA 11+ over multiple seasons and 82.1% of them believe it could be improved and adjusted to suit their teams including 45% of all coaches. Attitude and motivation are perceived to be the greatest facilitators to maintaining an IPEP (79.1%) followed by knowledge and experience of the head coach (76.1%), while lack of adequate supervision (73.5%) and equipment (72.1%) are the most reported barriers to IPEP maintenance. Conclusions: These findings may implicate that the FIFA 11+ may require further exposure among Malaysian soccer teams and be subjected to careful tailoring to suit its utilization at various competing levels.

Keywords:
soccer, perception, injury prevention, injury risk

ORAL FC1-02

CORRELATION OF HIGH-SENSITIVITY C-REACTIVE PROTEIN (HS-CRP) WITH CARDIOVASCULAR RISK FACTORS IN PROFESSIONAL FOOTBALLERS

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Abstract
Background and Aim: Sudden cardiac death (SCD) is the leading cause of death in footballers during matches. High-sensitivity C-reactive Protein (hs-CRP) is an inflammatory marker that has predictive value in coronary heart disease and other cardiovascular (CV) diseases. The study aimed to correlate hs-CRP with cardiovascular (CV) risk factors in professional footballers. Methods: Eighty-four footballers (n=84) were recruited. Questionnaires that include demographic data, medical, family, and smoking history were gathered. Blood pressure and body mass index (BMI) were measured. Fasting blood sugar (FBS), lipid profile, hs-CRP were collected. Spearman was used to test nonparametric correlations with the significant level set at $p<0.05$. Results: There were 58 male and 26 female footballers. The overall mean age was 21.7 ± 4.4. Mean BMI for male and female footballers was 22.8 ± 2.1 and 21.2 ± 1.3, respectively. Mean systolic blood pressure (SBP) for male and female footballers was 124.8 ± 9.7 and 110.7 ± 13.5, respectively. There was a weak positive correlation between hs-CRP with gender, age, family history of heart disease, SBP, FBS, total cholesterol and LDL-cholesterol (rho = 0.04, 0.09, 0.10, 0.07, 0.16, 0.003 and 0.11, respectively), whereas a weak negative correlation between hs-CRP with BMI, smoking, triglycerides and HDL-cholesterol (rho = -0.10, -0.01 and -0.14 respectively). All the variables were not statistically significant ($p>0.05$). Conclusions: The hs-CRP showed a weak and not significant correlation with the CV risk factors among professional footballers. Future studies should focus on a larger sample size with older age groups to clarify the predictive value of hs-CRP in SCD.

Keywords:
hs-CRP, cardiovascular risk factor, footballer, sudden cardiac death

ORAL FC1-03

EFFECT OF DYNAMIC AND PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION STRETCHING ON SELECTED FLEXIBILITY AND MUSCULAR ENDURANCE VARIABLES IN VOLLEYBALL PLAYERS

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Abstract
Background and Aim: Volleyball is a team sport that requires specific physical fitness performance and stretching is believed to help the players to reduce the risk of injury and improved performance. However, there is still lack of research investigating the effect of stretching on performance of the volleyball players. Therefore, the aim of this study was to determine the effect of different stretching methods specifically focusing on (a) dynamics stretching (DS); (b) proprioceptive neuromuscular facilitation (PNF) stretching; and (c) no stretching (NS) on improving the range of motion (ROM) and muscular endurance (ME). Methods: Thirty volleyball players (mean age ± SD, 22 ± 2.2 years) volunteered in this study were assigned to the DS group (n=10), PNF group (n=10) or NS group (n=10). Participants in the experimental groups (DS and PNF) perform flexibility training for 4 weeks with the frequency of 3 times per week. The pre and post-tests consist of the ROM test (sit and reach and goniometer) and ME test (1-minute sit-up). Data were analyzed using analysis of variance and the significant value was set at $p<0.05$. Results: There were no significant differences between the groups ($p>0.05$) on ROM and ME. However, the within-group analysis showed better ROM in the DS and PNF stretching group when compared between the pre and post-test results. Conclusions: Four weeks of DS and PNF stretching does not show significant improvement in ROM and ME among volleyball players. Future studies on stretching may be conducted for a longer study intervention.

Keywords:
dynamic stretching, proprioceptive neuromuscular facilitation, flexibility, muscular endurance

ORAL FC1-04

SPORTS DENTAL INJURY THROUGH THE EYE OF NATIONAL CONTACT SPORTS ATHLETES

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Abstract
Background and Aim: The risk of getting sports-related dental injury especially in contact sports can be minimized by using a properly fitted mouthguard. In Malaysia, however, information on dental injury and mouthguard usage among national athletes is still lacking. This study aimed to determine the prevalence of dental injury and assess mouthguard use. Methods: Athletes were recruited randomly from the rugby, hockey and silat teams in the National Sports Institute. A cross-sectional survey evaluating knowledge, self-reported dental injury and mouthguard usage were extracted from the structured questionnaires. Oral examination was performed to identify hard or soft tissue injury. Results: Out of 96 athletes who participated, 51% experienced a sports-related dental injury, the highest is hockey followed by rugby and silat (22.9%, 14.6%, 11.5%). More than half (67.7%) of the athletes have adequate knowledge in managing dental injury. The common self-reported dental injury was soft tissue (36.5% lip laceration and 25.0% bruised face). However, 11.5% of teeth injuries related to sports were observed during the examination. Most athletes (95.8%) acknowledged the injury's prevention by mouthguard, but only 59.4% had used it and the majority were ready-made type. However, they stop using the ready-made type as it significantly correlates to salivation with nausea and disturb speech ($p<0.001$). Conclusions: The prevalence of sports dental injury is high and evocatively seen in clinical examination. The majority of athletes are aware of prevention via mouthguard but stop using it due to salivation with nausea and disturb speech. Hence, there is a need for the improvement and advocation of custom-made mouthguards.

Keywords:
athletes, sports injury, mouthguards, Malaysia

ORAL FC1-05

THE IMPACT OF AQUATIC EXERCISE PROGRAM WITH WEIGHTED VEST ON POSTURAL STABILITY AND FALL RISK AMONG MIDDLE-AGED WOMEN

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Abstract

Background and Aim: Prevention of fall risk and impaired postural stability are crucial in middle-aged women who experienced undesirable physiological and hormonal changes. Thus, this study aimed to compare the effect of aquatic exercise (AE) program with and without weighted vest on postural stability indices and fall risk index among middle-aged women. Methods: In this quasi-experimental study, 26 middle-aged women (56-60 years old; with lower limb length of <0.94 in the Y balance test) were randomized in two groups including AE with (n=13), and without (n=13) weighted vest. A six-week of AE intervention program was carried out, three sessions weekly; 45 minutes per session. The postural stability indices (anterior/posterior, medial/lateral and overall stability) and fall risk index were measured using the Biodex Stability System as pre and post-tests. Results: Conducting a MANOVA test revealed there was no significant difference in the effect of AE program with and without weighted vest on total postural stability indices between the group's subjects ($F=3.15$, $p=0.11$, $\eta 2=0.37$), exception for medial/lateral stability index ($p= 0.008$). In addition, the paired t-test results showed a significant difference in the effect of AE with and without weighted vest on fall risk index ($t=9.58$; $p=0.001$). Conclusions: Although both intervention programs significantly improved postural stability indices, AE with weighted vest had a superior effect on the improvement of medial/lateral stability index and fall risk Index among middle-aged women. In fact, the findings of this study recommended the advantage of a six-week AE program with weighted vest to prevent fall risk in middle-aged women.

Keywords:
aquatic exercise, weighted vest, postural stability, fall risk, women

ORAL FC1-06

THE IMPACT OF COMBINATION OF CORE STABILIZATION EXERCISE AND WALKING ON PAIN PERCEPTION AND LOW BACK PAIN DISABILITY

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Abstract
Background and Aim: Low-back pain (LBP) has increasingly been leading on diminish work performance and cost ascent of healthcare services. This study aimed to identify the effectiveness of a combination of Core Stabilization Exercise (CSE) with walking on pain perception and LBP disability among people with non-specific low-back pain (NSLBP). Methods: A total of 36 active people with NSLBP (18-42 years old; BMI≥24.9 kg.m-2) were randomized in three groups; CSE (n=12), and CSE with walking (n=12) as intervention groups and Control group (n=12). The intervention groups carried out the exercise programs (CSE with and without 30 minutes walking), three times weekly for six weeks. The pain perception and LBP disability were measured using Numerical Pain Rating Scale and modified Oswestry Disability Questionnaire. The data was analyzed by a mixed model of analysis of variance (ANOVA). Results: The results showed a significant difference pain perception among intervention groups comparing to control group. The pain perception significantly decreased in CSE (p=0.021) and CSE with walking (p=0.003) after six weeks (18 sessions) intervention program. There was a significant difference between these groups (p=0.015). Disability function significantly improved in CSE (p=0.031) and CSE with walking (p=0.007). Although, results revealed no statistically significant difference between CSE and CSE with walking, in reducing pain perception and LBP disability, the disability index improvement were greatest in CSE with walking group. Conclusions: The intervention program including CSE with 30 minutes walking had a superior effect on improvement of pain perception and LBP disability among people who suffered from NSLBP.

Keywords:
core stabilization exercise, walking, low-back pain disability, pain perception

ORAL FC1-07 (Invited Speaker)

"LE MENU Â LA CARTE" IN ANTERIOR CRUCIATE LIGAMENT (ACL) INJURIES IN FEMALE ATHLETES

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Abstract
Anterior cruciate ligament (ACL) injuries among young female athletes occur much greater than in male athletes and, in general, females experience more sports injuries than their male counterpart. The risk factors for non-contact ACL injuries can be categorized as intrinsic (anatomic and hormonal) and extrinsic (environmental and bio mechanical). Research has shown that this gender discrepancy results from differences in neuromuscular adaptations and biomechanics, most often during deceleration activities such as related to landing techniques. Athletes with this injury experience significant acute morbidity. These athletes are predisposed to the development of knee osteoarthritis which will decrease the quality of life of the knee. The risk factors that are thought to contribute to the higher incidence of ACL injuries in women, the development of prevention strategies, and the outcomes of ACL reconstruction in women will be discussed. To date, ACL injury prevention has focused on neuromuscular and anatomical factors without including issues relating more broadly to the athlete. Coincident with greater female sports participation are other influences that may heighten their injury risk. We review those factors, which includes early single sport specialization, unhealthy dietary habits, chronic sleep deprivation and higher levels of fatigue, substance use and abuse, and psychological issues. Also, will discuss about the effect of menstrual cycle and contraceptives on ACL injuries and laxity. We augment existing models of ACL injury with these additional dimensions. Grassroots level are natural settings for youth and for coaches to promote healthy lifestyles, as decisions that result in better athletes in the future. Widening the lens on factors influencing ACL injury expands the prevention paradigm to combine existing training with activities to promote psychological well-being and a healthy lifestyle. If developed and shown to be effective, those programmes might better reduce injuries and, in addition, provide life skills that would benefit young female athletes both on and off the playing field.

ORAL FC2-01

THE ASSOCIATIONS BETWEEN PHYSICAL CHARACTERISTICS AND PHYSICAL FITNESS AMONG FORWARD AND BACK OF COLLEGIATE RUGBY UNION PLAYERS

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Abstract
Background and Aim: Rugby is a sport that demands a combination of various anthropometric and physical fitness components to enhance in-game performance. The aims of this study were to explore the physical characteristics and each physical fitness component among collegiate rugby players and to examine the associations between these characteristics based on their playing positions. Methods: Twenty-seven collegiate rugby players (age 21.2 ± 1.1) were grouped according to their position i.e. forwards (n = 13) and backs (n = 14). The body weight, body fat percentage (BF%) and lean body mass (LBM) were measured, and sprinting, agility, vertical jump, and aerobic running performance were assessed during the pre-season period. Results: Forwards were significantly different ($p<0.01$) from backs for bodyweight (89.0 ± 10.7 vs. 64.6 ± 6.1 kg), BF% (27.1 ± 5.6 vs. 13.9 ± 4.8 %), LBM (65.3 ± 5.2 vs. 55.5 ± 4.3 kg), agility (19.6 ± 1.9 vs. 17.5 ± 0.6 sec), and aerobic capacity (36.4 ± 7.1 vs. 45.6 ± 3.4 mL/kg/min). BF% in forwards demonstrated strong correlations with speed ($r = 0.99$, $p<0.01$), agility ($r = 0.83$, $p<0.01$), lower-body muscular power ($r = -0.81$, $p<0.01$), and aerobic fitness ($r = -0.94$, $p<0.01$), while backs demonstrated moderate correlations between BF% and agility ($r = 0.61$, $p=0.02$). Within backs, LBM showed moderate correlation with lower-body muscular power ($r=0.69$, $p<0.01$). Conclusions: These findings suggest that multiple physical characteristics are related to physical fitness components and that specific positional conditioning programmes are important to improve athletic performances.

Keywords:
fitness testing, physiological, anthropometric, body composition, rugby

ORAL FC2-02

SOCCER SIMULATION PROTOCOL DEVELOPMENT FOR U13, U14 AND U15 AGE GROUP SOCCER PLAYERS

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Abstract
Background and Aim: The aim of this study was to assess the reliability of a novel soccer simulation protocol (SSP), which was designed to replicate the activity pattern typically recorded in U13, U14 and U15 soccer players' match-play. Twenty (n=20) young male outfield soccer players: U13 (n=7), U14 (n=7) and U15 (n=6) representative players from Auckland Football Federation (AFF) volunteered to participate in the study. Methods: The SSPs were performed on two occasions to determine test-retest reliability. The SSP was set up for each age group; SSP-13, SSP-14 and SSP-15;60, 70 and 80 minutes of exercise respectively. To standardize and control the movement pattern, the SSPs was designed in 4 blocks of exercise separated by 5 min recovery. This protocol required participants to run between two lines (15 m apart) at various running intensities. Each block consists of cyclical cycles of exercise. Sprint speed ($km \cdot h^{-1}$) was measured using 15 Hz global positioning system units. Results: No differences between trials in mean heart rate, leg power, perceptual scales and sprint speed ($p>0.05$). The reliability assessment; Pearson product movement correlation (r), Intraclass correlation (ICC) and standard error of measurement (SEM) showed strong and good reliability (r: 0.78 to 0.97, $P<0.05$, ICC: 0.84 to 0.98, $P<0.05$ and SEM: ± 0.01 to ±0.7). Conclusions: It can be concluded that this SSP presented the first reliable and valid football simulation designed specifically for young players.

Keywords:
football, intermittent exercise, field test, youth, soccer protocol

ORAL FC2-03

THE RELATIONSHIP OF HIP STRENGTH AND DYNAMIC KNEE VALGUS DURING SINGLE-LEG SQUAT IN PHYSICALLY ACTIVE FEMALES

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Abstract
Background and Aim: Excessive dynamic knee valgus (DKV) due to the altered kinematics of the hip (i.e., top-down kinetic chain) may further results in non-contact lower limb injuries during sports. The purpose of this study was to investigate the relationship between hip strength and lower limbs kinematics during the single-leg squat (SLS), a common motion in sports, among physically active females. Methods: Thirty-four physically active females were recruited, went through screening test, and were separated into two groups (normal DKV and excessive DKV group). They performed SLS at 45° and 60° squat depths with three-dimensional (3D) motion capture. Isokinetic muscular strength for the hip was tested at 180°/s angular velocity for both legs. Pearson's correlation test was applied to examine the relationship between hip strength and knee kinematics during SLS. Results: In normal DKV group, there were significant relationships between dominant hip adduction strength (r= -0.51, p= 0.04), non-dominant hip extension strength (r= -0.56, p= 0.02) and knee valgus angle during SLS at 45° squat depths. For the excessive DKV group, a significant relationship was noticed between non-dominant hip abduction strength and knee valgus angle during SLS 60° squat depths (r= -0.53, p=0.03). Conclusions: During SLS, both groups revealed the influence of the top-down kinetic chain on knee valgus angles, even though the muscle groups involved were different. Screening test is recommended because those with normal range of DKV utilized different muscle groups than those with excessive DKV. Specific hip strengthening exercise programme can be prescribed for performance enhancement in order to prevent injury.

Keywords:
human health, injury prevention, knee kinematics, non-contact injury, top-down kinetic chain

ORAL FC2-04

EFFECT OF MOTIVATIONAL MUSIC ON RATING OF PERCEIVED AND HEART RATE RECOVERY IN HIGH-INTENSITY INTERVAL TRAINING

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Abstract
Background and Aim: Music was proven to reduce the rating of perceived exertion during a moderate steady state of exercise. The aim of the study is to investigate the effect of motivational music on the rating of perceived exertion and cardiorespiratory response of heart rate recovery in high-intensity interval training (HIIT). Methods: Eighteen (n=18) healthy adults were recruited (age 31 ± 3.3 years, body mass 72.2 ± 10.06 kg, height 165.4 ± 7.15 cm). The participants underwent HIIT protocol with music and without music which consisted of 2 minutes of low intensity at 35 percent VO_2R and 1 minute of high intensity at 75% VO_2R in 5 intervals. The cardiorespiratory response and rating of perceived exertion were recorded before and after training. Results: The study showed that participants who underwent HIIT with music had a significantly lower rating of perceived exertion compared with no music at the start of exercise (10.8 ± 2.05 vs 11.6 ± 2.5; $p<0.05$) to at the end of the test (12.8 ± 2.53 vs 13.9 ± 2.67; $p<0.05$). As for the heart rate recovery, the lowest reading was recorded at 2 min, followed by 1 min and 0 min. Lower heart rates values were also recorded with music compared to no music for all time intervals. However, the results were not statistically significant ($p >0.05$). Conclusions: This study showed a rating of perceived exertion during high-intensity interval training can be reduced by motivational music that played during the exercise.

Keywords:
high-intensity interval training, motivational music, perceived exertion, heart rate recovery

ORAL FC2-05

EFFECT OF VISUAL TRAINING USING VIRTUAL REALITY ON EYE-HAND COORDINATION AMONG VARSITY BASKETBALL PLAYERS

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Abstract
Background and Aim: Virtual Reality (VR) is a computer-based technology that allows users to interact with a multisensory simulated environment and receive real-time feedback on performance. Basketball requires the athlete to react with hand movements to rapidly changing visual information. Thus, the purpose of this study is aimed to find out the effect of visual training by using VR on eye-hand coordination among university basketball players. Methods: A total of 22 university basketball players were volunteered as study subjects. The conveniently recruited subjects were randomly assigned either into the experimental group (n=11) or the control group (n=11). The experimental group received visual training by using virtual reality for 12 sessions in four weeks period with their usual training regimen. On the other hand, the control group received typical training regimen alone. The Sports Vision Trainer (SVTTM) was used to measure eye-hand coordination before and after the intervention for both groups. Results: The finding of this study demonstrated that there were significant improvements in proactive mode (p=0.001) and reactive mode (p=0.000) of eye-hand coordination after 12 sessions of intervention in the experimental group. On the contrary, there were no significant improvements observed in the control group. Conclusions: The current preliminary study concluded that visual training using virtual reality technology had positive effects on eye-hand coordination among university basketball players. Though further studies are needed to explain the underlying mechanisms, the observed improvements in eye-hand coordination may possibly explain through the motor learning theory, neuroplasticity, and efficient control of eye muscles.

Keywords:
basketball, virtual reality, visual training, eye-hand coordination, sports vision trainer

ORAL FC2-06

SIX-WEEKS OF TABATA TRAINING UNDER HOT CONDITIONS IMPROVED HEALTH-RELATED FITNESS COMPONENTS IN YOUNG OVERWEIGHT INDIVIDUALS

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Abstract
Background & Aim: Tabata training (TT) is used widely as an indoor intermittent exercise training method for elite and normal individuals. However, the impact of outdoor TT in overweight individuals is unknown. Therefore, this study examined the effectiveness of TT under hot conditions on health-related fitness components in young overweight individuals. Methods: A total of 23 overweight females (n=11; 21.3±1.7 years; 64.3±14.2kg; 159.6±5.8cm; %BF= 36.9±7.8%) and males (n=12; 21.8±1.6 years; 81.2±15.5 kg; 172.9±6.2 cm; %BF= 26.5±7.2%) were recruited and they were randomly assigned into the Tabata group [TG] (n=12) and Control group [CG] (n=11). TG underwent high-intensity intermittent training (2 sessions/week; 30-min/ session) and CG underwent continuous cycling at 65% HRmax (3 sessions per week; 50-min per session) under hot conditions (~34°C; ~60% rh) for 6 weeks. Body composition analysis, sit and reach test, lower back strength test, 1-min repetition squat test, 1-min push up test, and beep test were conducted during pre and post-tests. Independent and Paired Sample t-tests compared between and within groups results respectively. Results: Results showed TG improved significantly in all health-related fitness components ($p<0.001$); whereas CG showed significant improvement in upper body muscular endurance ($p<0.001$); lower body muscular strength ($p=0.004$) and cardiorespiratory endurance ($p<0.001$). However, no significant difference was found between groups. Conclusions: In conclusion, a 6-week of TT under hot conditions (32-35ºC) exhibited greater beneficial effects in TG.

Keywords:
body composition, body muscular endurance, flexibility, muscular strength, cardiorespiratory endurance

ORAL FC2-07

THE EFFECTS OF DELIBERATE PLAY ON MOTOR COORDINATION AMONG ADOLESCENTS

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Abstract

Background and Aim: Deliberate play has become an essential approach among coaches to prepare young athletes with holistic motor skills development. Hence, this study investigates the effects of the deliberate play approach on motor coordination among adolescents. Methods: A total of 60 non-athlete male participants aged between 13 to 14 years old volunteered to participate in this study (age 13.50±0.50 years; body mass 35.89±4.59 kg; height 145.08±5.92 cm). The participants were randomly assigned into a control group 1 (CG1) that without training intervention, control group 2 (CG2) that involves specific training of football and futsal, and an experimental group (EG) that consists of a variation of sports activities such as football, futsal running, sepak takraw, volleyball, basketball and netball. The motor coordination was measured through Zig Zag Basketball Dribbling along the 12 weeks of study, which involved pre-test, post-test 1 and post-test 2. Results: The analysis of Repeated measure ANOVA showed that the main effect of the training program for motor coordination score across time in each group is statistically significant $F(2, 57) = 21.84$, $p<0.001$. As for Pairwise comparison between groups, there is a significant difference between EG and CG1 ($p<0.05$), whereas no significant difference between EG and CG2 ($p>0.05$). Conclusions: In conclusion, each activity or training improved the motor coordination of adolescents. However, deliberate play influences significantly better compared to self-doing activities. For suggestion, the effect of deliberate play on children aged between 6 to 12 years old should be applied for further studies.

Keywords:
motor skills, fun training, deliberate practice, multilateral training, multi-sports

ORAL FC2-08

EFFECT OF AUGMENTED FEEDBACK TOWARDS STRAIGHT DRIBBLE TECHNIQUE AMONG MARAN DISTRICT PRIMARY SCHOOL HOCKEY PLAYER

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Abstract
Background and Aim: Augmented feedback in field hockey is divided into two types: knowledge of result (KR) or knowledge of performance (KP). KR offers feedback on goal attainments, while KP enlightens the quality of the movement implementation. This study aimed to evaluate the effect of augmented feedback based on verbal and video in straight dribbling skills among field hockey players in the Maran district of Pahang. Methods: This study was conducted on 18 subjects which consisted of nine boys and nine girls. They were divided into three groups which were verbal feedback, video feedback and control group The study had parameters that included all essential cues. The observation was divided into three phases: the starting phase, the execution phase, and the final phase. All data during pre-test and post-test were collected afterward. On the first day, all subjects dribble the ball without instruction from the coach, and movement was observed. Next, they were divided into three groups randomly. The observation looked at the critical element, including the head, hand, elbow, and knee cues. Results: The results demonstrated ~50% improvement for both verbal feedback and video feedback group during the post-test compared to control group. Conclusions: The inclusions of both verbal and video feedback have been shown to improve straight dribble performance in primary school field hockey players.

Keywords:
field hockey, straight dribble, augmented feedback, video, verbal

ORAL FC2-09

COMPARISON OF LOWER LIMB BIOMECHANICS DURING SINGLE-LEG LANDING AMONG PHYSICALLY ACTIVE FEMALES WITH AND WITHOUT HISTORY OF ANKLE SPRAIN

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Abstract
Background and Aim: Those with history of ankle sprain are susceptible to recurrent ankle sprain and chronic ankle injury (CAI) particularly during intense motions such as jump-landing. The purpose of this study was to compare the lower limb moments and angles between physically active females with and without history of ankle sprain. Methods: Thirty females were recruited (n=15 with history; n=15 without history of ankle sprain). They were instructed to perform maximum countermovement jump followed by single-leg landing (SLL) on the force platform. The kinetic and kinematic variables during two phases of landing (i.e., initial contact and maximum vertical ground reaction force (vGRF)) were measured using three-dimensional (3D) motion capture and analysed using musculoskeletal modelling. Independent t-test was used to evaluate differences between the 2 groups. Results: The group with ankle sprain history showed significantly greater hip adduction (p=0.01) than the group without ankle sprain history. For frontal plane kinetics, there were significant differences in the hip moment (p=0.04) and knee moment (p=0.03) at maximum vGRF, and the ankle moment (p=0.01) at initial contact between the 2 groups. Conclusions: Physically active females with history of ankle sprain showed excessive dynamic knee valgus during SLL compared to those without history of ankle sprain. Therefore, coaches and players should include strength training for lower limbs particularly among females with history of ankle sprain.

Keywords:
lower limb biomechanical, dynamic knee valgus, single-leg landing, ankle sprain, injury prevention

ORAL FC2-10

KINEMATIC ANALYSIS OF 7-METER THROW IN HANDBALL BETWEEN PERAK AND SELANGOR SUKMA XIX TEAM

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Abstract
Background and Aim: A 7-meter throw in handball is given when the chance of scoring is destroyed illegally in court by an opposing team or team official. There are three types of 7-meter throws such as jump shot, lob shot, and set shot. This study aims to analyze the kinematic movement of the 7-meter throw in handball between the Perak and Selangor SUKMA XIX team. Methods: The study recruited 14 male SUKMA XIX handball players; 7 players from the Perak team and the rest from the Selangor team. The mean age, weight, height, BMI and experience of subjects were 18.7±1.4 years old, 69.0±6.3 kg, 1.70±0.1 m, 18.7±2.6 kg/m2 and 4.2±1.3 years respectively. Kinematic parameters studied were the angle of elbow, shoulder, knee, and ankle. The 7-meter throw is divide into three phases: wind-up, stepping, and arm acceleration. The camera is parallel to a 7-meter line with a height fix to 1 meter. Kinematic analysis for 7-meter throw using Kinovea software and the data were analysed using paired t-test in SPSS software. Results: The results showed all parameters in three phases for both teams is not significant ($p>0.05$) except the shoulder parameter in the stepping phase ($p=0.008$). Conclusions: The kinematic value derived from the research can be used by coaches as a guide to plan training programs and future research. The 7-meter throw is a vital throw that generates a goal for a team-winning opportunity in real game situations.

Keywords:
handball, 7-meter throw, kinematic analysis, biomechanics, SUKMA XIX

ORAL FC3-01

EATING DISORDERS IN RECREATIONAL BADMINTON PLAYERS

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Abstract
Background and Aim: Eating disorders are widely studied among competitive athletes. There are limited studies on eating disorders among recreational or physically active individuals in Malaysia. The aim of this study is to investigate eating attitude among recreational badminton players in Kuala Lumpur according to their age, gender and body mass index (BMI). Methods: The participants were 300 recreational badminton players located in Kuala Lumpur. They voluntarily completed the Eating Attitude Test (EAT-26) which was used to assess the attitudes and behaviours associated with eating disorders such as Anorexia Nervosa and Bulimia Nervosa. Differences of the scales (Dieting, Bulimia and Food Preoccupation scale and Oral Control Scale) to the parameters (gender, age and BMI) were assessed using independent t-test and ANOVA. Results: The underweight group accounted for 8.3% of the population, the normal weight group comprised 55.7%, the overweight group was 26%, and the obese group accounted for 10%. As a result of investigating eating attitudes, it is found that 14.7% scored greater than 20 which indicated a need for further investigation by a qualified professional. It is also found that there was a significant difference in BMI and eating attitude. The overweight and obese group are highly associated with dieting ($p < 0.01$) and bulimia and anorexia disorder ($p < 0.01$) meanwhile underweight category is associated with oral control behaviours ($p < 0.01$). Conclusions: These results show that eating disorders do exist among recreational badminton players and not only among elite athletes. Further efforts to improve eating attitudes among recreational badminton players are needed.

Keywords:
eating attitude, EAT-26, eating disorder, badminton, recreational players

ORAL FC3-02

CALO-LITE™: DEVELOPMENT OF SMART COUNTER FOR ATHLETE'S DIETARY ASSESSMENT

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Abstract

Background and Aim: The current method of recording dietary intake by athletes is to manually fill out a food diary, which is time-consuming and causes some athletes to face difficulty in recording their intake accurately. The use of electronic-based tools to track various aspects of one's health, such as physical activity and diet, is constantly evolving. Thus, this study proposed an effective smart counter for athletes to monitor their food intake. Methods: An embedded smart counter, also known as Calo-Lite™, is comprised of strain gauge sensors, radio-frequency identification (RFID), and a microcontroller that provides real-time feedback to a server through the use of radio frequencies. The parameters under investigation are the accuracy of the food weight, the placement of the food on the smart counter, the type of material used to construct the smart counter's surface, and the response time from the RFID. Results: From the results, Calo-Lite™ has 99% of the accuracy of food weight which is obtained by implementing strain gauge as the weight sensor and the value of weight is the same for all positions regardless of the material of the counter made of the result showed time response of 40 ms. Conclusions: Overall, the method applied in this study benefits the sports dietitian in the study of the eating practice of athletes, issues of athlete's nutritional status which will be related to their health, performance and the special dietary requirement of athletes.

Keywords:
strain gauge, RFID, sports nutrition, smart counter, dietary

ORAL FC3-03

ICE INGESTION MAINTAINS COGNITIVE PERFORMANCE ON A REPEATED SPRINT PERFORMANCE IN THE HEAT

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Abstract
Background and Aim: This study investigated the effectiveness of precooling via crushed ice ingestion on cognitive performance during repeated sprint cycling in the heat. Methods: Nine males, non-acclimatised to heat (mean age: 28.2±2.7 years; height: 175.7±9.7 cm; body-mass: 76.9±10.6 kg) completed a 30 min bout of the repeated sprint (36 sprints × 4 s) on a cycle ergometer. Crushed ice ingestion (7g·kg-1, -0.4°C) (ICE) or no cooling (CON) interventions were completed at rest, 30 min prior to exercise in the heat chamber (35°C, 70% relative humidity). Working memory was assessed via Serial Seven Test (S7) and the Automated Operation Span Task (OSPAN) before cooling/no cooling, prior and after exercise. Core body temperature (Tc), forehead temperature (Th) and thermal sensation (TS) were assessed during the protocol. Results: Precooling significantly decreased Th (-0.59°C, $p<0.001$) and Tc (-0.67°C, $p=0.005$) in ICE compared to baseline but increased in CON (Th: +0.54°C, $p<0.001$, Tc: +0.17°C; $p=0.01$). Further, S7 and OSPAN scores significantly declined over time in CON compared to baseline, $p<0.05$. Although S7 and OSPAN were not different ($p=0.94$, $p=0.84$, respectively) compared to CON, ICE has been shown to preserve working memory by maintaining S7 between baseline (20±2.6) and min 27 (20±3.7,$p>0.05$) and OSPAN between baseline (65±5.4) and min 30 (66.8±4.2 $p>0.05$) compared to CON. In addition, thermal sensation was lower at baseline in ICE compared to CON ($p<0.05$). Conclusions: Crushed ice ingestion significantly reduced core body and forehead temperature and facilitated maintenance of cognitive performance responses during repeated sprints in the heat.

Keywords:
precooling, cognitive function, team sport, forehead temperature

ORAL FC3-04

THE ABILITY OF A PRE-EXERCISE MEAL TO SUPPRESS HUNGER SENSATION HENCE INFLUENCE RESISTANCE EXERCISE PERFORMANCE

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Abstract
Background and Aim: Food intake improves performance through the provision of exogenous carbohydrate, besides suppressing hunger sensation. However, the effect of appetite sensation influence on exercise performance has never been investigated. The aim of this experiment was to alter hungriness by manipulating meal viscosity and investigate whether appetite sensation influences resistance exercise performance. Methods: Sixteen athletes completed two experimental visits where they ingested high (HVM) and low (LVM) viscosity meal, with comparable carbohydrate content (1.5g/kg BW), 2h prior to 4 sets of back-squat and bench-press to failure. Meal viscosities were manipulated by adding gum. Sensation of hunger and fullness, also plasma glucose, insulin, PYY and ghrelin, were assessed before and continually after each meal. Number of repetitions in each exercise was used to determine performance. Results: Fullness was greater whilst hunger was lower in HVM, before and throughout exercise ($P<0.05$). Total repetitions for back-squat were ~10% greater in HVM (HVM 57±9; LVM 51±7 reps; $P<0.01$), but no difference noted for bench-press (HVM 48±11; LVM 48±10 reps; $P=0.621$). Post-prandial glucose and insulin concentrations were greater during LVM (12% increase in peak glucose) but were similar throughout exercise. For appetite blood markers, ghrelin decreased at 45 min and 105 min, whilst PYY increased at 45 min compared to pre-meal in both trial ($P<0.05$). Conclusions: This study demonstrates that performance in back-squat was improved by hunger suppression in the HVM. Therefore, this study provides novel finding that suggests performance might be influenced by the level of satiety, at least for resistance exercise.

Keywords:
pre-exercise meal, weight training, satiety, appetite sensation, breakfast

ORAL FC3-05

EFFECTIVENESS OF ACUTE RED PITAYA JUICE SUPPLEMENTATION ON RUNNING TIME-TRIAL PERFORMANCE IN YOUNG TRAINED ATHLETES

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Abstract

Background and Aim: Red pitaya is a fruit that is naturally high in carbohydrates and antioxidants, making it a viable sports supplement option. This study investigated whether acute supplementation of red pitaya juice before exercise would enhance running time-trial (TT) performance. Methods: In this randomised, double-blind, cross-over study, 11 young male trained athletes completed two endurance running trials with either red pitaya juice (DRG; isocaloric to 6% glucose concentration) or placebo (PLA; containing 6% glucose). A 350ml of DRG or PLA was consumed 45min before the running trials. Then, the participants ran for 20 minutes at 75% VO_2max followed by a 5km TT. The blood glucose and lactate levels were measured before and immediately after exercise. The fluid sensation scale (FSS) was measured immediately after consuming the DRG or PLA. Results: There were no significant differences in the running performance ($p=0.166$), blood glucose level ($p=0.218$), and lactate level ($p=0.266$) between DRG and PLA trials. However, there were significant differences in blood glucose ($p=0.001$) and lactate ($p<0.001$) levels between pre and immediately after exercise in both trials. The FSS measurement also showed no significance differences on the sensations of thirst ($p=0.611$), sweetness ($p=0.660$), nausea ($p=1.000$), fullness ($p=0.393$) and stomach upset ($p=0.796$). Conclusions: Red pitaya juice supplementation produces similar effects on running TT performance. Our findings also indicated that DRG and PLA elicited similar effects on blood glucose, lactate, and FSS when consumed before exercise. Therefore, red pitaya juice can be used as an alternative ergogenic aid in maintaining high-intensity endurance performance.

Keywords:
time-trial performance, red pitaya, lactates, blood glucose

ORAL FC3-06

STUDY OF DIETARY SUPPLEMENT STATUS DURING COVID-19 MOVEMENT CONTROL ORDER AMONG ATHLETES AND NON-ATHLETES: BASED ON AGE CLASSES

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Abstract

Background and Aim: Numerous guidelines emphasize the importance of minerals and vitamins in maintaining immune system function. The aim of this study was to determine the status of dietary supplements consumption (DSC) among young and adults' athletes and non-athletes during the COVID-19 pandemic in early (EAY:18-24years) and late-aged young; (LAY:25-34 years), early (EAA:35-44 years) and late-aged adult (LAA:45-54 years) classes. Methods: This cross-sectional study collected data via an online survey questionnaire (Modified Dietary Supplement Questionnaire) among 309 (estimated by G*Power 3.0.10) young and adults volunteer athletes (n=153) and non-athletes (n=156). The respondents were invited via social media (Facebook, Instagram etc.) and the athletes were from the sports clubs and universities sports teams (≥3 years regular sports involvement). They were under Movement Control Order (MCO) condition during the first wave of COVID-19 in 2020. Results: The results revealed that totally non-athletes (90;58.1%) had more DSC than athletes (59;37.6%) with the highest DSC among LAA in both groups. The Lowest DSC was reported from athletes EAY (13;31.7%) following the order with LAA (13;38.2%) and LAY (16;40%). Similarly, among non-athletes, EAY (16:41%), LAY (21;58%) and EAA (26;68.4). Based on their report, the majority type of DSC were multivitamins, vitamin C and D in all ages and groups. Conclusions: This research has provided baseline data about DSC status among athletes and non-athletes young and adults age classes during COVID-19 pandemic. These findings can assist the professional concern groups to have sufficient and accurate knowledge about DS to identify the proper advice for DS consuming strategy.

Keywords:
dietary supplement, COVID-19, movement control order, athletes, non-athletes

ORAL FC3-07

SURVEY ON RUNNING INJURIES AMONG TRACK EVENTS ATHLETES IN SABAH: TYPE OF INJURY, RISK FACTORS AND AWARENESS TOWARDS INJURY AND PREVENTION

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Abstract
Background and Aim: Running injuries are unfortunately inescapable among track events athletes. However, it can be difficult to predict when an injury would happen. Hence athletes' awareness about injury prevention and its associated risk factors is crucial to avoid such problems. This study aims: (1) to identify self-reported running injuries and their associated risk factors, and (2) to assess athletes' awareness towards injury and prevention. Methods: A descriptive cross-sectional design was applied. The track events athletes, involved in sprints, middle distance, long-distance, hurdles and relays were recruited in this study. The data was collected using an online self-administered questionnaire. Results: A total of 48 participants, aged 21.13± 2.46 enrolled in this study. The most common running injuries reported were Achilles' tendinitis (89.6%), ankle sprain (79.2%), patella-femoral (62.5%) and shin splints (60.4%). 56.3% of these injuries were believed due to overtraining. Other associated injury risk factors included recurring injuries (50%) and bad running technique (35.5%). In total, respectively 79.2% of participants indicated that they used proper footwear and rest if injured. However, only 20% of participants seek medical treatment after injury, while 50% claimed they let the injury heal itself. Most of them also don't have a proper training schedule from the coach (60.4%), and only 16.7% do training on running track. Conclusions: The data shows that lower leg injuries are the most common self-reported running injuries and are associated with overtraining. Enhancing knowledge and awareness among coaches and athletes are the best preventative strategies.

Keywords:
running injuries, risk factors, track events, awareness, injury prevention

ORAL FC3-08

KINEMATIC ANALYSIS OF TENNIS FOREHAND AMONG MSSD UNDER 12 MUAR TENNIS PLAYERS

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Abstract
Background and Aim: The tennis forehand is the most natural shot made by swinging the racket across one's body with the hand moving palm-first. The study aims to analyse the kinematic analysis of the tennis forehand among MSSD Muar under 12 years old tennis players. Methods: The recruited subjects consisted of 20 MSSD Muar under 12 tennis players: ten boys and ten girls. The subjects were divided into two groups: experimental groups and control groups. Each group has ten subjects (five boys and five girls). Observations are divided into three phases: preparation phase, shot phase, and follow-up phase, where data for pre-test and post-test are taken. All subjects made a forehand during the pre-test without any instructions and were observed according to the built parameters. After an eight-week intervention was conducted on the experimental group, a post-test was performed for both groups. The kinematic parameters seen are the shoulder angle, angular angle, foot opening distance, and ball velocity. The camera was located 2 meters from the shot area with a height fix to 1 meter. Kinematic analysis for tennis forehand using Kinovea software and the data were analysed using paired t-test in SPSS software. Results: The results showed the experimental group has a significant ($p<0.05$) increase from 20% to 81%. Meanwhile, control groups only increased from 9% to 32%. Conclusions: There has been an optimum improvement in forehand performance after intervention among tennis players in the experimental group.

Keywords:
tennis, forehand, kinematic analysis, biomechanics

POSTER YRA-01

DIURNAL DIFFERENCES IN THE MYOFIBRILLAR PROTEOME OF HUMAN VASTUS LATERALIS

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Abstract
Background and Aim: The ability of skeletal muscle to produce force is significantly greater in the evening than in the morning. However, the mechanisms underpinning this diurnal variation have not been resolved. The protein complement (i.e. proteome) of muscle underpins its functional properties; therefore we reasoned the diurnal difference in performance is associated with changes in muscle myofibrillar proteins. Methods: The experimental sessions [maximal voluntary contraction (MVC) and maximum rate of force development (RFD) of their knee extensors] in the morning (0800 h) and evening (1700 h) were counterbalanced in order of administration and separated by at least 72 h (N=10). Muscle samples were then collected from the vastus lateralis of the exercised leg. Myofibrillar proteins were resolved by 2-dimensional gel electrophoresis. Gels images were analysed in SameSpots (TotalLab v3.3) and proteins were identified by mass spectrometry. Statistical analysis was conducted by repeated measures one-way ANOVA. Results: MVC and RFD in the evening (754.4 ± 112.9 N.m-1) (7030.5 ± 1100.7 N.s-1) were significantly ($p<0.01$) greater (11%) (15.7%) than in the morning (679.9 ± 104.9 N.m-1) (6077.3 ± 1371.7 N.s-1). In total, 122 proteins were analysed and the abundance of 8 spots were statistically ($p<0.05$) different, and the highest abundance greater in the evening observed is myosin binding protein C1(MyBPC1) (80 %). Conclusions: The slow isoform of MyBPC1 exhibited the greatest difference in diurnal variation and is known to modulate the activity of actin-bound myosin ATPases. MyBPC1 was resolved to 6 species, therefore the difference in abundance reported here may represent a change in post-translational modification.

Keywords:
muscle strength, diurnal variation, proteomic, MyBPC1

POSTER YRA-02

THE EFFECT OF DIAGONAL EXERCISE AND 90° WALL DRIBBLING EXERCISE ON STRENGTH OF SUBSCAPULARIS MUSCLE AMONG RECREATIONAL BADMINTON PLAYERS

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Abstract
Background and Aim: Being the largest part of the rotator cuff, subscapularis contributes to dynamic, multiaxial movements. Due to its anatomical nature, the subscapularis muscle is highly susceptible to injury during repeated overhead motions following frictional trauma at the coracoid process. Racquet sports in particular report subscapularis injury every year. Physiotherapy management is prescribed in mild-moderate trauma to minimize the injury incidence rate. This study is aimed to compare the effectiveness between resistance versus and plyometric training in conditioning the subscapularis thus, reducing overhead injury among recreational badminton players. Methods: An experimental study was carried out 3 days per week for a total of 4 weeks. 42 recreational badminton players of both genders, aged between 18-25 years were randomly assigned into (1) resistance training-diagonal exercise and, (2) plyometric training-90° wall dribbling exercise. Subjects were assessed pre-and-post using handheld dynamometer test and push-up plus test. p-value was set at 0.05. Results: Paired t-test showed that both resistance and plyometric training were significant in improving the subscapularis muscle strength during pre-and post-test. Data analysis between groups using independent t-test reported that resistance training is significantly better than plyometric training with the p-value < 0.05. Conclusions: Resistance training is more effective in strengthening the subscapularis and thus minimizing the chance of injury during overhead movements in recreational badminton players.

Keywords:
subscapularis muscle, diagonal exercise, 90-degree wall dribbling exercise, hand-held dynamometer test, push-up plus test

POSTER YRA-03

THE EFFECTS OF DETRAINING IN A RECREATIONAL ATHLETE WITH PROFOUND FIRST-DEGREE ATRIOVENTRICULAR BLOCK: A CASE REPORT

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Abstract

Background and Aim: Profound first-degree atrioventricular block (AVB) is a first-degree AVB with PR interval of ≥400ms. This finding is considered abnormal among athletes and required further evaluations. Current recommendations include performing an exercise electrocardiogram (ECG), Holter monitoring, and cardiac imaging. There are also recommendations that advocate detraining strategy to differentiate between normal physiological cardiac remodelling and pathological conditions. Methods: We report a case of a 23-year-old Chinese male badminton player with profound first-degree AVB. He is a recreational athlete who trains between 10 to 12 hours per week at moderate to vigorous intensity. The athlete had no history of exercise-induced chest pain, exercise intolerance, and syncopal episodes. Family history regarding sudden cardiac death (SCD) and cardiac diseases was unremarkable. Physical examination demonstrated a regular pulse rate of 64bpm, blood pressure of 117/84mmHg, and loud S1 heart sound with no murmur. A resting 12-lead ECG demonstrated a prolongation of PR interval of 456ms. His maximal oxygen uptake ($\dot{V}O_2max$) and Anaerobic Threshold (AT) were 44.42ml/min/kg and 30.13ml/min/kg respectively. Due to the COVID-19 lockdown measures, his training regime reduced substantially for 5 months which subsequently demonstrated his ECG reverted to a normal sinus arrhythmia on the next clinic follow-up. Results: In this recreational athlete, detraining had an effect on cardiac electrical changes from an abnormal profound first-degree AVB to normal sinus arrhythmia. Conclusions: Profound first-degree AVB is abnormal ECG findings in athletes and recommended further evaluations. This report suggests reversibility of the cardiac electrical remodelling associated with the athlete's heart.

Keywords:
profound first-degree atrioventricular block, extreme prolonged PR interval, detraining, recreational athletes, athlete heart

POSTER YRA-04

DESIGN AND DEVELOPMENT OF SMART CALORIE COUNTER PROTOTYPE FOR ATHLETE USAGE

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Abstract
Background and Aim: Awareness of calorie intake among people has increased due to health concern. Inappropriate amount of calorie intake may affect our health. Daily recording of food consumed is helpful in calculating calorie intake. However, busyness and forgetfulness are problems faced in daily recording. Therefore, a Beta-version smart calorie counter prototype was developed for daily recording. However, the accuracy and consistency of measurements are influenced by easily loosen wire connections and the instability of components. A printed circuit board (PCB) is designed and developed to improve the stability and accuracy of counter. PCB is a baseboard in most electronics for physical support piece and surface-mounted wiring area. Methods: This prototype has a microcontroller, a RFID reader and five load cells. After researching, the schematic circuit diagrams of required components are drawn and converted into a PCB circuit through EasyEDA software. The connection tracks between components are designed. After comparing with 4-layer PCB, the 2-layer PCB design is chosen and sent to manufacturer. Then, the printed PCB is tested and troubleshot. Results: 2-layer PCB with dimension 10cm by 11cm is developed as it has cheaper printing cost. From the result, the accuracy of this prototype is better than beta-version-prototype with an accuracy of 99.85% and average percentage error of 0.15%, but the beta-version-prototype had an accuracy of 99.64% and average percentage error of 0.36%. Conclusions: In conclusion, PCB for smart calorie counter prototype is developed. It can measure weight up to two decimal places which is more accurate than using a breadboard for the circuit.

Keywords:
calories, consume, smart counter, electronic, prototype

POSTER YRA-05

A SYSTEMATIC REVIEW OF CLINICAL TRIALS OF THE APPLICATION OF DRY NEEDLING IN ATHLETES WITH MYOFASCIAL TRIGGER POINT

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Abstract
Background and Aim: Athletes are a highly trained population. Each training session and competition results in microtrauma to muscles. This repetitive microtrauma can also lead to muscle shortening and the development of myofascial trigger point (MTrP), which impairs muscle function and nerve impulse conduction, thereby increasing the risk of injury. Proper treatment of trigger points in athletes has the potential to reduce clinical symptoms and improve athletic performance. The purpose of this study is to conduct a systematic review of the literature on the application and effect of MTrP dry needling. Methods: Embase, Cochrane, and PubMed databases were searched until June 2021 for relevant studies. Randomized controlled trials (RCTs) that used dry needling as the primary treatment and athletes who met criteria for MTrPs were included. Two reviewers independently screened articles, scored methodologic quality, and extracted data. Results: This systematic review included six studies. Pain, range of motion, electromyography were the primary outcomes assessed. Dry needling appears to be effective in the short term for pain relief, range of motion improvement, and electromyography improvement when compared to other treatments. There is a lack of evidence for its effect on long-term follow-up and muscle performance. Conclusions: Despite some evidence of a beneficial effect in the short term, additional randomized clinical trials with high methodological quality and the use of standardized procedures for dry needling application are required.

Keywords:
dry needling, myofascial trigger point, athlete, systematic review

POSTER YRA-06

CHARACTERISTICS OF RESTING ELECTROCARDIOGRAM AMONG SABAH PROFESSIONAL MALE FOOTBALLERS

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Abstract
Background and Aim: The purpose of this study is to describe the resting electrocardiogram (ECG) seen among 176 professional male footballers from Sabah Football Association Club during preparticipation evaluation. Methods: Data were analysed retrospectively from 2017 to 2019 from pre-participation evaluation forms using standard international criteria for analysing ECG in athlete. Results: Majority of the players were Sabah natives (n=153, 87%) while the remaining were Malay footballers (n=23, 13%). Mean age of the players was 19.9 ± 3.1 years, mean body mass index was 22.6 ± 7 kg/m2, mean resting heart rate was 53.6 ± 9.4 bpm, mean systolic blood pressure was 122.3 ± 12 mmHg, and mean diastolic blood pressure was 65.1 ± 8.8 mmHg. Using the International Criteria for ECG Interpretation in Athletes 2017 consensus guidelines, 8.5% (n=15) had abnormal ECG while 2.8% (n=5) had borderline ECG. The most common ECG changes seen in the normal findings were sinus bradycardia (n=123, 69.9%), early repolarization (n=115, 65.3%) and left ventricular hypertrophy (n=83,47.2%). Abnormal ECGs were abnormal t wave inversion (n=7,4.0%) and pre-excitation syndrome (n=5,2.9%). All footballers with abnormal ECG findings were subjected to further evaluation by a cardiologist using echocardiography assessment and exercise stress test. They passed the cardiology assessment; thus, they were deemed fit to play. Conclusions: ECG is a valuable tool for pre-participation health screening prior to exercise or sports participation, as it is vital for a physician to identify any abnormal ECG in order to minimise the risk of sudden cardiac death during exercise due to cardiac pathology.

Keywords:
resting electrocardiogram (ECG), footballer

POSTER YRA-07

BENEFITS OF PHYSICAL ACTIVITY TO COGNITIVE FLEXIBILITY: A SYSTEMATIC LITERATURE

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Abstract
Background and Aim: Physical activity (PA) will affect the prefrontal cortex and is associated with the brain processes of humans in the cognition field. It is also beneficial to reduce psychological conditions including stress, depression, and dementia. Regular in PA can contribute to the achievement of better fitness and overall well-being. Therefore, the present study analyzed a systematic literature review specifically to physical activities' effects on human cognitive flexibility. Methods: A systematic quality assessment from 361 preliminary searches was found according to the predetermined search strategy. The present study integrated multiple research designs and the review was filtered based on the publication standard namely, Reporting standard for Systematic Evidence Syntheses (ROSES). This search of articles was based on three leading databases namely Scopus, a web of science (WOS), and Willey on Library at the range from years of 2010-2021. The keywords used in the study were PA and cognitive functions/flexibility. Results: Eleven findings that comprehensively examine cross-sectional from multiple data that explore PA affects cognitive flexibility outcomes were found. Most researchers agree that PA plays a role in contributing to human cognitive flexibility at any level of age. Participation in PA also showed a strong role in improving cognitive processes and memory, increased individual capacity to adapt to shifting work demands, and even induced a sense of wellbeing. Conclusions: In conclusion, physical activity is important for human cognition especially in the cognitive flexibility as well as various obstacles to face in life. Overall, the importance of engaging in physical activities can influence human cognitive abilities.

Keywords:
physical activity, cognitive flexibility, exercise, systematic literature

POSTER YRA-09

THE ROLE OF DRY NEEDLING THERAPY AS PART OF A MULTI-MODAL APPROACH IN MANAGING MYOFASCIAL PAIN SYNDROME OF THE NECK AND UPPER BACK: A CASE SERIES

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Abstract
Background and Aim: Postural-related neck and upper back pain is increasingly common especially in the advent of hand-held smart devices which requires prolonged static flexion of the neck. Such a repetitive stance may lead to the development of myofascial trigger points which is the cause of myofascial pain syndrome (MFPS) of the neck and upper back. Common locations of dysfunction include the levator scapulae, upper trapezius, rhomboids, deep cervical extensors, and shoulder external rotator complex. Our case series attempts to explore the effect of three consecutive sessions of dry needling therapy (DNT) on myofascial trigger points involving the neck and upper back as part of a multi-modal approach to manage MFPS. Methods: This retrospective reviews a series of fifteen patients with MFPS of the posterior neck and upper back without cervical radiculopathy. The patients received a minimum of three treatment sessions of DNT at least two weeks apart. Oral eperisone was prescribed for the first fortnight upon index DNT. Patients were also educated on methods of ischaemic compression, postural correction, and targeted strengthening exercises to be performed after each visit. Measures of pain intensity, Neck Disability Index and patient satisfaction were obtained. Results: Pain intensity and neck disability levels were markedly decreased across the three sessions. Patient satisfaction increased in the follow-up visits. Conclusions: This narrative suggests that a multi-modal approach together with DNT alleviates MFPS of the neck and upper back. Nevertheless, it is unclear as to the ideal number of DNT sessions needed to achieve the end-point of therapy.

Keywords:
dry needling therapy, myofascial pain syndrome, myofascial trigger points, neck, upper back

POSTER YRA-10

EFFECT OF TAI CHI ON THE HEALTH PROMOTION OF MIDDLE-AGED AND ELDERLY PEOPLE IN SOUTHEASTERN HUBEI, CHINA

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Abstract
Background and Aim: Tai Chi has a profound traditional cultural heritage in China, and its slow and gentle movements are suitable for middle-aged and elderly people. This article selects Tuanfeng County in the southeast of Hubei Province to conduct an experimental study to explore the health benefits of Tai Chi for middle-aged and elderly people in this area. Methods: Using the physical examination database of the local hospital, a total of 60 middle-aged and elderly people over 65 years old with no significant difference in physical function were selected to participate in the experiment. Group A: 30 people have practiced Tai Chi for more than 3 years (16 males and 14 females), Group B: 30 people without Tai Chi training (15 males and 15 females). The cardiopulmonary function and joint range of motion of the two groups were tested for a comparative study. Results: The mean VO_2max of the cardiopulmonary function of the men in group A was 2.67±0.69 and the mean range of motion of the shoulder joint was 36.6±0.25. The mean VO_2max of the men in group B was 2.15±0.84 and the mean range of motion of the shoulder joint was 31.9±0.47. There was no significant difference in the cardiopulmonary function between the two groups of women in A and B, only the mean range of motion of the shoulder joint was 40.2±0.36 and 35.8±0.51, respectively. Conclusions: Long-term practice of Tai Chi can improve the cardiorespiratory function and shoulder mobility of middle-aged and elderly people.

Keyword:
Tai Chi, middle-aged, elderly, health promotion

POSTER YRA-11

MODIFIED KINESIOLOGY TAPING METHOD FOR MERALGIA PARESTHETICA IN A PATIENT WITH TRUNCAL OBESITY: A CASE REPORT

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Abstract
Background and Aim: Meralgia Paresthetica (MP) is an entrapment of the lateral femoral cutaneous nerve (LFCN) at the level of inguinal ligament which causes pain and numbness. Factors such as obesity and pregnancy are associated with increased intra-abdominal volume that can lead to LFCN compression. Our aim is to introduce a modified kinesiology taping (KT) technique in a male patient with truncal obesity. Methods: A 37-year-old man, with underlying diabetes and obesity (BMI: 31 kg/m2) presented with symptoms of MP following shoulder surgery in December 2020. The diagnosis was confirmed with nerve conduction study. Pharmacotherapy provided no relief to date. Pain score and sensations level of affected thigh were graded according to Numeric Rating Scale, whereby pre-treatment pain score was 7/10 and sensations reduced over LFCN distribution. Methods used, 2 strips of KT were cut about 15 inches each, attached at pelvic level and run over the stomach to the rib cage vertically and obliquely. This pattern was repeated over the other side. For lower back, the KT was anchored at gluteal region and 2 strips were run vertically on each side of the spine. A decompression strap was applied. Results: Immediate results were noticeable in pain reduction during first course of treatment for 3 days. Pain score was reduced from 7/10 to 5/10, however, numbness was still present. The limitation was difficult to sustain the taping effect. Conclusions: Kinesiology taping can be used for MP patients with truncal obesity. Despite the conventional decompression at the inguinal ligament, abdominal taping might also provide relief.

Keywords:
meralgia paresthetica, kinesiology taping, truncal obesity, modified technique

POSTER P-01

BODY SURFACE AREA AS A PREDICTOR OF CARDIOPULMONARY RESPONSES IN HEALTHY SEDENTARY AND ACTIVE MALE ADULTS

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Abstract
Background and Aim: Body surface area (BSA) plays an important role in several aspects of medicine such as in determining treatment course, drug dosage calculation, and intravenous fluid administration. However, it uses in exercise physiology remain unexplored. Hence, in this study, we investigated the relationship between BSA and cardiopulmonary responses in healthy sedentary and active male adults. Methods: This was a cross-sectional observational study involving 33 sedentary and 35 active healthy male adults. BSA was estimated through DuBois equation. Meanwhile, the cardiopulmonary responses were measured using cycle ergometer incremental ramp test. Results: After controlling for body mass index (BMI), the Pearson partial correlation coefficient showed a strong positive relationship between BSA and absolute $\dot{V}O_2$max (maximal oxygen consumption) r= 0.59, P<0.001 and a moderate positive relationship between BSA and absolute AT (anaerobic threshold) r= 0.45, p<0.006 in the active adults. Meanwhile, in the sedentary adults, BSA showed a moderate positive relationship with absolute $\dot{V}O_2$max r= 0.46, p<0.010. In addition, in univariate linear regression analysis, after controlling for BMI, BSA significantly predicted absolute $\dot{V}O_2$max R2= 0.55, P<0.001, absolute AT R2= 0.39, p<0.001, breathing reserve R2=0.25, p<0.009, and $\dot{V}O_2$max at AT R2= 0.22, p<0.019 in the active adults. However, in the sedentary adults, BSA significantly predicted absolute $\dot{V}O_2$max R2= 0.36, p<0.001, relative $\dot{V}O_2$max R2= 0.33, p<0.002, and absolute AT R2= 0.23, p<0.022. Conclusions: Body surface area (BSA) is a good predictor for cardiopulmonary responses, especially in active adults. BSA best predicts absolute $\dot{V}O_2$max in both groups.

Keywords:
body surface area, cardiopulmonary, exercise testing

POSTER P-02

EPIDEMIOLOGICAL STUDY OF SOFTBALL INJURIES AMONG ATHLETES IN MALAYSIAN UNIVERSITY

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Abstract
Background and Aim: Injury surveillance is fundamental in the prevention of sports injuries among softball athletes in Malaysian University. This study aims to describe what was found for the safety and continued growth of the sport. Methods: This study used a retrospective descriptive epidemiological study design, with N=217 university softball athletes (male, n= 121, female, n=96) voluntarily participated in this study. Data were collected using an online self-reported survey designed for the study. The reportable injury was defined as any injury that occurred during training or competition that limits or stops the athlete's from participating in sports or requiring first-aid treatment during an event. Descriptive statistics were analysed for types of injury, time of injury, and injury severity (time-loss, TL). Results: A total of 123 athletes reported injury in the previous 12 months. Sprain (44%), strain (24%), and an open wound (11%) were the commonest reported injury. About 57% of injuries occurred during training. Athletes reported minimal injury (1-3 days of TL) (40%), mild (< 8 days of TL) (27%), moderate (8-21 days of TL) (15%), and severe injury (> 21 days of TL) (17%) respectively. 64% of all injured athletes did not involve in any structured rehabilitation program. Conclusions: Softball athletes in this study experienced frequent sprain and strain injuries. This highlights the possible importance of early first-aid management and structured rehabilitation that will ensure an early safe return to activity. Further research is needed on the development of a standard injury surveillance database for the safety and prevention of injury in this sport.

Keywords:
athletic injuries, injury prevention, epidemiology, softball injury, injury surveillance

POSTER P-03

DIETARY INTAKE, PHYSICAL ACTIVITY LEVEL AND QUALITY OF LIFE AMONG TRAINEES IN TERTIARY MILITARY INSTITUTE

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Abstract
Background and Aim: Dietary intake (DI) and level of physical activity (PA) are important indicators to measure energy balance especially in army trainees who are involved in military training. To date, there are limited studies on the quality of life (QOL) conducted among trainees in tertiary military institutes. The aim of this study is to evaluate the DI, PA and QOL among trainees according to their subcategory. Methods: A total of 166 trainees from the National Defense University of Malaysia were involved in this research with 32 cadets, 44 civilians and 90 athletes, respectively. The trainees were given three validated questionnaires which were the Food Frequency Questionnaire (FFQ), Short International PA Questionnaire (IPAQ) and WHOQOL-Bref Questionnaire. Analysis of variance and post-hoc tests were used to analyse the data with significant values set at $p<0.05$. Results: Results showed that the average DI of male trainees was 2992.3 kcal/day and 2522 kcal/day for female trainees. However, the vegetable intake was below the Malaysian Dietary Guideline of 3 servings per day. Moreover, the sugar intake exceeds the recommendation. The PA level significantly differs ($p<0.05$) among the female subcategories; highly active (cadets), active (athletes) and moderately active (civilians). However, the male trainees did not show any significant difference in the level of PA. As for the QOL, these trainees scored the moderate level of QOL scores (50-75%). Conclusions: In conclusion, PA level and QOL of these trainees were at par with the standard recommendation. However, nutrition intervention and campaigns should be developed to further improve their nutritional status.

Keywords:
dietary Intake, physical activity, quality of life, military trainee

POSTER P-04

KNOWLEDGE AND ATTITUDE TOWARDS FIRST AID MANAGEMENT (FAM) AMONG UNDERGRADUATE UNIVERSITY STUDENTS

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Abstract
Background and Aim: First aid is invaluable for individuals to provide emergency care to minimize the injury and possibly to save a life. Each individual at every stage of age needs sufficient skill in First Aid Management (FAM) before being able in handling emergencies that happen in various workplace settings. This study aims to determine the level of knowledge and attitude towards FAM among final-year undergraduate university students in Malaysia. Methods: This cross-sectional study was conducted using purposive sampling recruited on 154 participants involving public and private university students using an online self-administered questionnaire (i.e. Basic knowledge, Knowledge on FAM, and Attitude on FAM). Approval was obtained from the research committee before data collection. Results: Results show 70% of participants are female (n=107), with 90% represent Malay. A total of 95% learned the basic FAM, and 79% have received FAM education on a theory and practical basis. However, 75% indicated did not have enough information on FAM. In addition, 72% of participants mentioned Not Confident in providing FAM in an emergency. Overall, final year undergraduate student shows a moderate level of knowledge toward FAM (Public university, 52%; Private university, 48%); and both groups show a positive attitude toward FAM (>75%). Conclusions: There was a lack of confidence and insufficient knowledge toward FAM among the undergraduate final year university. Specific FAM education is needed in a university setting for the implementation of more effective training. Future research is necessary to explore the readiness of primary and secondary school-age children toward FAM.

Keywords:
first aid, knowledge, attitude, education, injury management

POSTER P-05

THE USE OF DIAGNOSTIC ULTRASOUND FOR TENSOR FASCIA LATA TEAR IN YOUNG ATHLETES: A CASE SERIES

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Abstract
Background and Aim: Lateral hip pain among adolescents and paediatrics enumerates numerous differential diagnoses, ranging from avulsion injuries, apophysitis to local muscle tear. One of them is tensor fascia lata tear. This, however, is not a clear presentation, and in most situations, magnetic resonance imaging (MRI) of the pelvic is called to support the diagnosis. Even though MRI provides better visualization of soft tissue, it is impractical because it is time-consuming and costly to the patient and clinician. Based on previous research and personal experience, we believe that a bedside ultrasound of the hip or pelvis will help in this circumstance. Thus, we present these two cases to share our personal experiences in using ultrasound to diagnose tensor fascia lata tear in young athletes. Methods: The first case was a 12-year-old swimmer with recurring left lateral hip pain for a year, and the second case was a 14-year-old sepak takraw athlete with concurrent left hip pain after had a fall with a left knee injury during a sepak takraw match five months ago. Results: Both patients showed heterogeneous hypoechogenicity changes at the proximal tensor fascial lata attachment with perifascial oedema, demonstrating a partial tear of the tensor fascia lata. Conclusions: In our practice, these are a few examples of tensor fascia lata muscle tears, particularly in the adolescents' age group. This case series justified the value of using ultrasonography in identifying the pathology of tensor fascia lata attachment at the lilac crest which causes persistent lateral hip pain in both young athletes.

Keywords:
tensor fascia lata tear, diagnostic ultrasound, young athlete, case series

POSTER P-06

OUCH! MY KNEE HURTS: A CLASSICAL CASE REPORT OF ANTERIOR CRUCIATE LIGAMENT INJURY

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Abstract
Background and Aim: Anterior cruciate ligament (ACL) rupture is a serious injury in patients who are typically athletically active and young, with potentially long-term complications including functional limitation, posttraumatic osteoarthritis of the knee, and impaired quality of life. We reported a classical case of an anterior cruciate ligament rupture in a middle-aged gentleman who plays competitive football. Methods: Mr. K first presented to the Sports Medicine clinic in January 2021 after an acute sports injury 3 days prior to his visit. He complained of an alleged sports injury during playing football whereby he was tackled over the left knee while he was running with the ball. Post-trauma, he complaint of pain over the left knee and was unable to ambulate and continue playing. Results: Patients that sustained an ACL injury and wish to return to sport should engage in systematic rehabilitation programs, ensure functional stability, and determine the readiness to safely return to sport. This involves an adapted rehabilitation program that initially focuses on the treatment of residual impairments, stability training and ultimately linking to a successful, dynamic return to sport progressively. The Conservative rehabilitation program is divided into 3 phases, namely acute phase, intermediate phase, and advanced phase with a gradual return to sports. Conclusions: ACL injury can be treated both by non-operative and surgical intervention. Although ACL reconstruction is the more prevalent treatment for complete ACL tear, the majority may benefit from non-operative treatment. Patients who are able to modify activity and compliant to comprehensive rehabilitation program may be candidates for non-operative treatment.

Keywords:
anterior cruciate ligament, ACL reconstruction, football

POSTER P-07

EFFECTS OF MUSIC ON CARDIAC AND RESPIRATORY FUNCTION: A REVIEW OF CURRENT EVIDENCE

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Abstract
Background and Aim: Music has been shown to have beneficial effects for sports, exercises, and some diseases. Current evidence of the effect of music on cardiac and respiratory function had not been explored. Methods: This is a review of current evidence regarding the effects of music on cardiac and respiratory functions. Results: Current evidence showed music reduced heart failure events and served as a therapeutic tool for patients having problem with respiratory function. Such patients battle with symptoms such as shortness of breath, fatigue, and anxiety, and all these inhibit their activities. Music, when applied for such patients contributed to their health and well-being, better compliance to exercise with improvement in terms of mood and relaxation. For those without any illnesses, music listening had also been used as an adjunct to exercise with encouraging results. Listening to music during exercise was shown to improve work output and reduced perceived exertion, better mood, and enjoyment. Current evidence showed that music has beneficial effects on the heart and lungs. Lower blood pressure and heart rate had been shown in multiple studies. Limited study on respiratory function has shown change of respiratory rate affected by music tempo as well as higher oxygen content in the blood. Increased parasympathetic activity, reduced inflammatory neurochemicals, pain and anxiety with music intervention have been shown in studies. Conclusions: There is a vast opportunity for research regarding the use of music for cardiorespiratory function improvement as its use as a means of therapy has not been explored extensively with well-designed research.

Keywords:
music, cardiac function, respiratory function, review

POSTER P-08

UNIVERSITY STUDENTS' PERCEPTION OF MOTIVATIONAL CLIMATE AND T.A.R.G.E.T. DIMENSIONS TOWARDS SPORTS SCIENCE LESSONS DURING COVID-19 LOCKDOWN

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Abstract
Background and Aim: The study investigated the university students' perception of teacher-initiated motivational climate and Target, Authority, Recognition, Grouping, Evaluation and Time (T.A.R.G.E.T.) dimensions towards sports science lessons during COVID-19 lockdown. Methods: The participants were 160 participants (115 males and 45 females) aged 18 to 23 years old (M=1.10, SD=3.30) majoring in sports science. The Teacher-initiated Motivational Climate in Physical Education Questionnaire (TIMCPEQ) and T.A.R.G.E.T. Measures were utilized to measure the task, authority, recognition, grouping, evaluation, time, teacher-initiated mastery and performance orientation motivational climate. Results: The independent-samples t-test indicated that there was a significant difference in grouping, $t(158) = 2.10$, $p = 0.04$ for gender. One-way ANOVA was used to compare the effect of teaching methods in TIMCPEQ and T.A.R.G.E.T. There was significant difference in teacher-initiated mastery orientation for the three teaching methods, $F(2, 157) = 3.31$, $p = 0.04$. Whereas two-way ANOVA was used to examine the effect of gender and age groups in TIMCPEQ and T.A.R.G.E.T. The main effect of gender was significant in grouping, $F(1, 156) = 4.88$, $p = 0.03$. Two-way ANOVA was also used to examine the effect of gender and teaching methods in TIMCPEQ and T.A.R.G.E.T. There was significant main effect of gender in grouping, $F(1, 154) = 5.20$, $p = 0.02$, and teacher-initiated performance orientation, $F(1, 154) = 5.06$, $p = 0.03$. Conclusions: The findings suggest integrating specific T.A.R.G.E.T. strategies in the lessons to enhance a teacher-initiated mastery orientation which can stimulate better students' interaction and outcomes.

Keywords:
T.A.R.G.E.T., motivational climate, students

POSTER P-09

PLANT-BASED CULINARY NUTRITION MODEL: A MODIFIED DELPHI METHOD APPROACH

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Abstract
Background and Aim: Plant-based nutritional knowledge and culinary skills in meal preparation have contributive correlations. Hence, the development of a Plant-Based Culinary Nutrition Model (PBCNM) for fitness among sports science students. This study was aimed to achieve consensus of the experts on the development of plant-based culinary nutrition model for fitness. Methods: A 3-round modified Delphi method was used to establish consensus. Thirteen experts representing sports and exercise sciences, sports medicine, recreation, nutrition, education, and research in Malaysia and abroad were invited to participate in this study. The consolidated criteria for reporting qualitative research (COREQ) have been used to interview a panel of experts in depth. Round 1 was face-to-face meeting, followed by interaction through email for round 2 and 3. Results: Following the content analysis of in-depth interview, review and suggestions from the 3 rounds, a composite of statements was created. A total of 15 items was developed which consisted of 8 items about the need of PBCNM and 7 were the components of PBCNM. All 13 experts did not recommend any specific plant-based model for reference, however, they advocated for the need of PBCNM that addresses current fitness challenges and food trends. Conclusions: A 3-round modified Delphi resulted in consensus which is the integration of expert perspectives on the importance and need of PBCNM for fitness. PBCNM achieved credible valuation and achieving expert consensus on the model's key components and the development of PBCNM were the cornerstone of this study. Hence, the original contribution of knowledge for this research.

Keywords:
plant-based nutrition, plant-based culinary, health and fitness, sports science

POSTER P-10

MUSIC EFFECTS ON RESPIRATORY FUNCTION AT SIMULATED HIGH ALTITUDE

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Abstract
Background and Aim: Music effects on the respiratory function at high altitudes had not been previously explored. This study investigated the effects of music listening on respiratory function at high altitudes. Methods: 11 men (n=11) participated in this cross-over study design with a mean age 27.73 ± 3.29 years. The respiratory function was evaluated using respiratory rate (RR), pulse oximeter (SpO2), lung ultrasound (B-lines for fluids leakage) and spirometry study at sea-level (SL), 3000 and 5000m in a hypobaric chamber. Participants underwent three types of interventions: no music (NM), relaxing music (RM) and arousal music (AM). Results: Increased SpO_2 in AM (p=0.020) and RM (p=0.032) compared to NM. At SL, the mean SpO_2 was 97.36±1.12 % with NM and higher by 1.19% with AM. At 3000m, the SpO_2 was 87.45±4.08% (NM), but higher by 5.00% (RM) and 4.46%(AM). At 5000m, it was 75.82±11.40% (NM) but higher by 2.27%(RM) and 5.27%(AM). For B-lines, the mean number of lines were 0, 1.55±0.93 and 3.36±1.50 at SL, 3000 and 5000m respectively. With RM, reductions by 88.38% and 94.64% at 3000 and 5000m respectively (p<0.001). With AM, reductions by 41.29% and 72.91% at similar respective altitudes (p=0.001). No significant difference in terms of spirometry and readings within normal range. Conclusions: Both AM and RM exposure resulted in significantly higher SpO_2 and less number of 'B-lines' on lung ultrasound, reflecting less fluids leakage. Music exposure could potentially benefit high altitude climbers in terms of better oxygenation and less fluids leakage into lung tissues.

Keywords:
music, respiratory, simulated, altitude

POSTER P-11

CORRELATION BETWEEN PHYSICAL ACTIVITY AND SLEEPING QUALITY AMONG MALAYSIAN PROFESSIONAL FOOTBALLERS DURING THE COVID-19 LOCKDOWN

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Abstract
Background and Aim: The lockdown was imposed on 18th March 2020 in Malaysia due to the outbreak of COVID-19 limiting physical and sporting activities, including team sports such as football. This study aims to determine the correlation between physical activity (PA) and sleep quality (SQ) during COVID-19 lockdown among professional male footballers. Methods: A total of 136 professional male footballers (n=136) from Klang Valley, Malaysia, were recruited using the universal sampling method. Most footballers: were aged 21 to 30 years old (79.4%); studied till secondary school (61.8%); were single (58.1%); had an experience of 10 years or less (86%); were Malaysian (89%); were Malay ethnicity (67.6%). This research focused on the correlation between footballers' PA and SQ during COVID-19 lockdown. To measure the PA and SQ, IPAQ-SF and PSQI questionnaires were used respectively and filled manually in a printed form by the footballers. The data was analysed using Linear Regression and Pearson Correlation. The reliability was measured using Cronbach's alpha. Results: Cronbach's alpha showed a good reliability of PA (0.734) and acceptable reliability of SQ (0.608). Regression analysis showed that the SQ was positively affected by the PA of the footballers with (R-squared=0.539, $p<0.001$). Moreover, there was a significant positive correlation between the PA and SQ (R-squared=-0.734, $p<0.05$). Conclusions: This study showed that increased in footballers' PA resulted in better SQ during COVID-19 lockdown and vice versa. Future studies should investigate the impact of mental health on the sleep quality of footballers during COVID-19.

Keywords:
physical activity, sleeping quality, professional footballers, COVID-19

POSTER P-12

EFFECTS OF PRACTICE IN MIND (PIM) TRAINING ON SHORT-SERVICE PERFORMANCE AND SELF-EFFICACY AMONG BADMINTON PLAYERS: PROTOCOL OF QUASI-EXPERIMENTAL STUDY

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Abstract
Background and Aim: The value of imaging and psychological skills training research to enhance sports performance is considered one of the most popular and best techniques used by athletes. Practice in Mind (PIM) training is an imagery intervention that includes seven elements of 'PETTLEP' imagery obtained from the functional equivalence between imagery and motor task physical efficiency. Previous researchers found that the PIM training helped to improve the skill performance of athletes in individual and team sports with different levels of age and experience. As with most racquet sports, the badminton serve is critical in how the rally plays out. Service in badminton is crucial because a weak serve regularly makes an opportunity for the opponent to execute an attacking shot. Hence, it is essential to realize how to serve appropriately with the goal of no losing any point. This study will be identifying the effects of PIM training on short-service performance and self-efficacy among badminton players. Methods: This will be a single-blinded quasi-experimental study. 20 badminton players will be participating in this study. Participants will be divided into two groups: (i) PIM training group and (ii) Control group with 10 participants each group. Both groups will be completed the six-week intervention program with three training sessions per week. PIM training group will be instructed to do imagery-physical practice whereas the control group will only perform the physical practice. Results: - Conclusions: The proposed project will broaden our understanding of imagery training in sports and improve the short-service performance and self-efficacy among badminton players.

Keywords:
PIM training, serve performance, self-efficacy

POSTER P-13

COMPARISON OF INTERPRETATION OF ATHLETES' ELECTROCARDIOGRAM (ECG) BASED ON THE STANDARD CRITERIA VERSUS THE INTERNATIONAL CRITERIA FOR ECG INTERPRETATION IN ATHLETE

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Abstract

Background and Aim: Electrocardiographic (ECG) enables the detection of conditions associated with sudden cardiac death (SCD) from a young age but the athlete's ECG must be interpreted according to specific criteria. Standard ECG interpretation may lead to high levels of false-positive ECGs when undertaking pre-participation cardiac screening. The 2017 International Athlete ECG Criteria included several changes to improve sensitivity and specificity. The aim of this study was to examine differences in the athlete's ECG interpretation using International ECG criteria and standard ECG criteria. Methods: 243 young athletes without a history of cardiac problems from 17 different sports underwent pre-participation screening, which included a 12-lead ECG. Two expert clinicians read all ECGs independently. ECG results were classified as normal or abnormal, and all variants which classified as normal according to international criteria have been grouped according to athlete characteristics. Results: Total 57.2% of the athletes were male, with an average age 15.5 ± 1.36 years. There are differences in the interpretation of abnormal ECGs using standard and international ECG criteria, with 98.6 % of abnormal ECGs interpreted using standard criteria being considered normal when interpreted using international Criteria ($p<0.0001$). Variants which classified as normal in international criteria are more commonly found in male athletes, ≤ 15 years old, and moderate to high dynamic sports groups. Conclusions: International ECG criteria can classify some abnormal ECG interpretations as normal. High prevalence of ECG abnormalities that reduce by International ECG criteria mostly representing training-related ECG adaptation, sex, and age of the athletes.

Keywords:
electrocardiographic, athlete, preparticipation screening, international criteria

POSTER P-14

RETROSPECTIVE EPIDEMIOLOGY OF ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION (ACLR) CASES: OVERVIEW OVER 6 CONSECUTIVE YEARS (2015 -2020)

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Abstract

Background and Aim: Individual involvement in recreation sports is rising and thus increasing the risk of injury. Anterior Cruciate Ligament (ACL) rupture is the commonest knee injury that requires reconstruction surgery. This study aims to describe the pattern of ACLR from 2015-2020 among recreational athletes. Methods: Retrospectively, ACLR cases that were reported between January 2015 until December 2020 in a public hospital in Malaysia were extracted and reviewed. Descriptive statistics were utilized for the data analysis. Non-sports-related injuries or competitive athletes were excluded. Reported ACLR cases every year were recorded using the Injury Information form which includes information about sociodemographic, type of ACL rupture (surgical report), meniscus injury, bone injury and time duration from injury to surgery. Results: 131 ACLR cases were reported between 2015-2020; 12, 16, 21, 25, 30, 27 cases respectively (Male, n=122) with mean age at surgery was 27.1 ±7.79. The number of ACLR fluctuated during the observed year. ~98% of ACLR cases represent the youth age group. 80% of athletes stated no history of previous knee injury prior to injury incidence. The type of ACL tear was complete tear (88%), partial tear (9%), and re-rupture (3%). A meniscus injury was noted in 61% of cases and 3% reported bone injuries. The time from injury to surgery was 23.02 ±31.77 weeks. Conclusions: The reported ACLR cases associated with sports involvement are increasing every year. Most ACLR cases were conducted only after 5 months of injury. Youth recreational athlete is at greater risk of experiencing ACL injury.

Keywords:
epidemiology, knee, injury, anterior cruciate ligament reconstruction, athletes

POSTER P-15

NITRATE SUPPLEMENTATION IMPROVED AEROBIC ENDURANCE PERFORMANCE: AN UMBRELLA REVIEW

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Abstract

Background and Aim: Consistency of meta-analytical findings is often lacking and meta-analyses investigating the ergogenic effect of nitrate supplementation have produced conflicting findings. Current work reports a systematic evaluation of published meta-analyses that examined the effects of dietary nitrate on exercise performance, using an umbrella review approach. Methods: Studies were located via EBSCOhost, PubMed, Scopus, and Web of Science electronic databases. Twenty-four meta-analyses from 9 published studies met the inclusion criteria and were included in the analysis. The methodological quality (assessed using Grading of Recommendations Assessment, Development and Evaluation; GRADE, and Assessing the Methodological Quality of Systematic Reviews 2; AMSTAR 2) of the included meta-analyses were generally deemed as moderate. Results: Overall, nitrate supplementation significantly improved exercise performance by 0.10% ($p < 0.01$) compared with placebo. However, when the type of exercise was considered, sub-group analysis revealed that nitrate supplementation only improved aerobic endurance performance by 0.11% ($p < 0.001$), but not muscular endurance, muscular strength, and anaerobic power/speed performance ($p > 0.05$). Notably, muscular endurance performance tends to improve with nitrate supplementation by 0.31% ($p = 0.07$). Conclusions: In summary, the current work indicates that nitrate supplementation can improve exercise performance with the magnitude of the effect is greater in aerobic endurance compared to anaerobic performance.

Keywords:
nitrate supplementation, exercise performance, umbrella review, meta-analysis

POSTER P-16

EFFECTS OF SUPER BRAIN YOGA (SBY) ON HUMAN'S ELECTROMAGNETIC RADIATION (EMR): PROTOCOL OF PROSPECTIVE STUDY

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Abstract
Background and Aim: This research investigates the human body Electromagnetics Radiation (EMR) before and after Super Brain Yoga (SBY). SBY is performed by crossing their hands, the thumbs and the forefinger holding onto the earlobes while doing squats with repetitions. The aim of this research is to investigate the effects of the practice of SBY on cognitive control and physical health using the Human's Electromagnetics Radiation (EMR). Methods: Participants must be healthy and the SBY is carried out in a conducive surrounding in particular indoor or outdoor with comfortable spaces. Participants need to perform SBY with 20 repetitions twice daily, between 6.00 am – 9.00 am in the morning and 5.00 pm – 8.00 pm in the evening, for two weeks at their own places. The EMR is captured using an intelligent portable, handheld and reliable monopole frequency receiver named Frequency Detector. Results: The frequency measurements are collected twice which is before and after the completion of performing the SBY. The data will be analysed using statistical analysis software to compare the effects of SBY on EMR from the human body. Conclusions: Hence, this research is expected to contribute to the positive improvement of human health, especially for students to improve their memory and health conditions and enhance their academic achievement and performance.

Keywords:
electromagnetics radiation, super brain yoga exercise, frequency detector

POSTER P-17

DOES SIMULATED SOCCER MATCH-PLAY AFFECT PASSING SKILLS PERFORMANCE IN RECREATIONALLY TRAINED YOUTH PLAYERS?

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Abstract

Background and Aim: This study aimed to investigate the effects of simulated soccer match-play on short and long ball passing speed performance. Methods: In a repeated measure study design, twenty male (n = 20) recreationally trained youth soccer players (age: 17 ± 2 years, height: 1.69 ± 0.6 m, mass: 67.9 ± 6 kg) participated in this study. Participants completed a 90-mins soccer match simulation interceded by a 15-min half time interval with eight trials of short and long passing at selected time points throughout the simulation. A two-way ANOVA was used to identify significant differences, with α=0.05. Results: Significant effects of time for short (P = 0.001) and long (P = 0.017) ball passing speed were observed. Pairwise comparisons revealed that the ball speeds for both short and long passes have significantly decreased during the last 30-min of simulated match-play. Conclusions: These findings suggest that exertion may influence the quality of passing skills during the latter stage of match-play. Practical implications of training interventions to maintain skilled performance during the second half of match-play in youth players are warranted.

Keywords:
soccer, passing skills, youth, exertion

POSTER P-18

CASE REPORT: AN OVERLOOKED ENTITY IN DIAGNOSING HIP PAIN WITH NEUROPATHY IN A YOUNG ADULT

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Abstract
Background and Aim: Hip pain is frequently encountered in the athletic community. Femoro-acetabular impingement (FAI) is a common cause of hip pain in young adults. However, it is important to appreciate the uncommon diagnosis and the role of imaging for unexplained hip pain. This particular case vignette on an overlooked osteoid osteoma that led to the delay in diagnosis and increased morbidity. Methods: A 20-year-old patient with progressive right hip pain caused by osteoid osteoma of proximal shaft of femur is described. He was treated as herniated disc for 8 months before the accurate diagnosis was established. At that time all the conventional radiographs were reported as normal. In magnetic resonance studies, the diagnosis of osteoid osteoma at proximal femur was suggested. However, working diagnosis also included FAI, pudendal nerve entrapment and herniated disc. Results: Osteoid osteoma is a small benign bone tumour that is usually found in young patients presented with dull hip pain in varying degrees and limping. It is relieved by rest and NSAIDs. It is most commonly located at proximal femur. However, diagnostic deviations are common as osteoid osteoma may not be recognizable clinically. Thus, makes it difficult to differentiate osteoid osteoma from other common causes of hip pain. Delayed treatment may cause changes in bone morphology as well as secondary osteopenia. Conclusions: This case emphasizes the importance of early recognition of osteoid osteoma. The CT scan provided a definitive diagnosis of osteoid osteoma. Early correlation clinically and imaging could potentially make an early diagnosis and avoid from unnecessary radiations.

Keywords:
hip pain, sciatica, meralgia paresthetica, osteoid osteoma

POSTER P-19

CAN TASK-INVARIANT MOVEMENT SIGNATURES BE IDENTIFIED FOR AT-RISK INDIVIDUALS? AN INITIAL STEP TOWARDS SCREENING FOR ACL INJURY RISK ACROSS SEVERAL DYNAMIC TASKS

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Abstract

Background and Aim: If biomechanical anterior cruciate ligament (ACL) injury risk factors can identify at-risk individuals across several tasks, then these are likely hard-wired behaviours that are task-invariant and representative of an athlete's behaviour, in other words, the athlete's movement signature. The aim of this study was to determine if existing biomechanical ACL injury risk factors rank individuals consistently across dynamic tasks, and to explore if task-invariant movement signature exists for individual athletes. Methods: Forty-six injury free male athletes performed five trials of bilateral (BDVJ) and unilateral (SLDVJ) drop vertical jump, single-leg hop (SLHOP) and sidestep (SS) tasks. Prospective biomechanical risk factors of the knee and ground reaction forces were extracted and correlated between tasks. Each athlete's variables were then ranked separately and split into quintiles for each task. Results: Cohort analysis revealed moderate to good correlations between SLDVJ and SLHOP across all risk factors (ρ=0.52-0.86). Knee abduction angle (KAA) showed moderate to good correlations across tasks (ρ=0.43-0.86) while the remaining variables showed very low to moderate correlations (ρ=-0.02-0.69). Individual analysis revealed a high number of movement signatures (37 out of 46 participants) and half were highly ranked. Conclusions: Results suggest that KAA showed most potential in providing task-invariant information concerning an individual's ACL injury risk. However, correlation analysis alone does not inform us of the individual's relative change across tasks. Further individual analysis proved the existence of task-invariant movement signatures and its capability to identify undesirable movement behaviours. Movement signatures could provide a more enhanced and better-informed injury screening for researchers and practitioners.

Keywords:

anterior cruciate ligament, ACL injury, ACL risk factors, injury screening, injury prevention

POSTER P-20

FACTORS RELATED TO SELF-REPORTED CONCUSSIONS AMONG SECONDARY SCHOOL STUDENTS ATHLETES PARTICIPATING IN TEAM SPORTS: A SYSTEMATIC REVIEW

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Abstract
Background and Aim: Factors affecting the reported behavior following concussion incidence are multifactorial. Associated studies in factors related to concussion reporting behavior are needed to be explored precisely. This study aims to evaluate the available evidence for internal and external factors relating to concussion reporting behavior. Methods: A systematic review of the MEDLINE, OVID, SPORTDiscus, and PubMed databases was performed from 2016 to 2021. Studies reporting on factors such as concussion history, gender and team games were determinants of self-reporting concussion. Weighted analysis was performed after reporting factors on concussion were pooled across included studies. Results: Overall, 170,2021 studies were identified in the initial search based on the specific keyword. 11 studies (n = 39,564,910 patients) were included based on inclusion and exclusion criteria reported factors of reporting on concussion. Female and team games were frequently influenced the reporting factors. Other than that, history of having a concussion, self-efficacy, age, duration involve in sports and having an athletic trainer was also influenced the rate. Conclusions: Internal and external factors play important role in reporting behaviour following concussion. Female was the most commonly reported, had a greater concern and likely to inform the concussion signs and symptoms to coach or team-mates. Other than that, game types, concussion history, self-efficacy, age, ethnicity, experience in sports and having an athletic trainer were identified in this review may have a role in reporting behaviour following concussion, however, their roles need to be further investigated so that this could motivate the athletes in self-reported concussion incident.

Keywords:
concussion, athletes, players, contact, non-contact

POSTER P-21

PERCEPTIONS OF COACHES' MOTIVATION AND NEEDS SATISFACTION TOWARDS COACHING DURING COVID-19 RESTRICTIONS

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Abstract
Background and Aim: This study examined the coaches' motivation and needs satisfaction towards coaching during the COVID-19 restrictions in Malaysia. Methods: The Basic Need Satisfaction at Work Scale for Coaches (BNSWSC) and Coaching Motivation Questionnaire (CMQ) were administered to 122 coaches (99 males and 23 females) aged 21 to 60 years old from various sports with 1 to 25 years coaching experience. Results: The independent-samples t-test showed that there was no significant difference in gender on BNSWSC and CMQ variables. However, one-way ANOVA revealed a significant effect in intrinsic (CMQ), $F(3, 118) = 3.73$, $p = 0.01$ for the age groups of 21 – 30, 31 – 40, 41 – 50, and 51 – 60 years old, and amotivation (CMQ), $F(3, 118) = 3.57$, $p = 0.02$ for Malay, Chinese, Bumiputera Sarawak and others. The two-way ANOVA was used to examine the effect of gender and age groups in BNSWSC and CMQ. The main effect of age groups was significant in intrinsic (CMQ), $F(3,115) = 3.75$, $p = 0.01$ whereby the post-hoc Bonferroni indicated that age groups of 21 – 30 rated 0.84 point lower than age groups of 41 – 50 and 0.86 point lower than age groups of 51 – 60. Conclusions: Further study should compare different states' coaches. Coaches need to self-regulate by embracing, transiting, and converging to different coaching strategies and sustain their motivation to build stronger rapport and support within their coaching community in times of uncertainty.

Keywords:
coaches, motivation, needs satisfaction

POSTER P-22

THE TRAINEE TEACHERS' SITUATIONAL MOTIVATION AND MENTAL WELL-BEING IN PHYSICAL EDUCATION

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Abstract
Background and Aim: The study aimed to examine the trainee teachers' situational motivation and mental well-being during physical education classes. Methods: The participants were 413 trainee teachers (176 males and 237 females) from several Institute of Teacher Education Campuses aged 18 to 23 years old (M = 0.30, SD = 0.46). The Situational Motivational Scale (SIMS) and Warwick Edinburgh Mental Well-Being Scale (WEMWBS) were used to measure intrinsic motivation, identified regulation, external regulation and amotivation, eudaimonic and hedonic of the trainee teachers. Results: Two-way ANOVA was used to examine the effect of gender and age groups in SIMS and WEMWBS. The main effect of gender was significant in external regulation, amotivation (SIMS), and eudaimonic and hedonic (WEMWBS). In addition, the main effect of age groups was significant in intrinsic motivation, identified regulation (SIMS), eudaimonic, and hedonic (WEMWBS). Two-way ANOVA was used to examine the effect of gender and teaching methods in SIMS and WEMWBS. There was significant main effect of gender in external regulation, amotivation (SIMS) and eudaimonic (WEMWBS). The main effect of teaching methods was significant in intrinsic motivation (SIMS). Hierarchical regression analysis revealed that age groups, intrinsic motivation, identified regulation and amotivation (SIMS) were found significant predictor with mental well-being (WEMWBS). Conclusions: The findings recommend self-determined situational motivation within the pedagogical approaches to nurture the mental well-being of the trainee teachers.

Keywords:
motivation, well-being, teachers

POSTER P-23

A REVIEW: DOES SKILL LEVEL INFLUENCE MOVEMENT VARIABILITY?

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Abstract

Background and Aim: Many sports skills require complex motor patterns to adapt in dynamic performance environments, making movement variability essential. However, the effect of expertise on movement variability is still unclear and not fully studied in the literature. The purpose of this study is to review previous literature to determine whether movement variability differs as skill level changes. Methods: A total of 10 studies were retrieved from MEDLINE, ProQuest and Google Scholar databases from 2008 to 2019 for this review. Studies were selected if they (a) included any sport skills/movement (b) compared between skill levels (c) examined movement variability for at least one dependent variable, and (d) provided a statistical between-skill level comparison when comparing measures of movement variability. Results: There was a statistically significant difference in at least one dependent variable used to examine movement variability between skills levels in 80% (n=8/10) of the studies included. A greater degree of variability was noticed among participants with lower skill levels (n=7/10), as indicated by the increase of movement variability from 15% to 60%. Conclusions: The findings concluded that movement variability during skill execution is a function of skill level. It indicated that higher experience among skill participants enables them to control movement under various conditions. Future investigations should emphasize the various roles of movement variability (explorative or restrictive) as the skills levels change. Instead, progress in the level of skill of a task needs to be understood to determine the functionality of variability presented to optimize the success of the learning process.

Keywords:
movement variability, skill levels, expertise

POSTER P-24

ELECTROMYOGRAPHIC ACTIVITY OF PERONEUS LONGUS IN INDIVIDUALS WITH ANKLE SPRAIN: PRELIMINARY FINDINGS

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Abstract
Background and Aim: Peroneus Longus (PL) dysfunction is widely implicated in lateral ankle sprains. This study aimed to assess recovery of the PL function by comparing the electromyographic (EMG) activity between the injured and non-injured sides of individuals with history of unilateral ankle sprain. Methods: Ten participants (9 males, 1 female; mean age: 25.7±4.42 years; mean height: 1.69±0.07m; mean weight: 65.15±3.89kg) with history of unilateral ankle sprains were recruited to balance on the injured and non-injured leg in random order on the Lafayette stability platform. As vision acts together with mechanoreceptors in the ankle to maintain balance, we performed the test with eyes-closed to better isolate factors within the joint in this test. The mean duration since last injury was two years. The PL EMG activity was measured using peak amplitude normalized to the maximum voluntary contraction (MVC) of each individual (i.e. peak amplitude/MVC). Results are expressed as percentage of MVC (%MVC). The mean of three trials, for each injured and non-injured leg, were compared using the Mann-Whitney U test. The level of significance was set at 0.05. Results: Seven reported normal and three reported nearly normal ankle function. The amplitude of PL on the injured side (%MVC: 24.5±4.1) was lower than the non-injured side (%MVC: 54.4±16.4). However, the difference was not statistically different. Conclusions: The results suggest that PL dysfunction persisted 2 years after injury. Normal function does not indicate full recovery of the PL activity. The study needs to be extended to include more participants to increase the power of study.

Keywords:
peroneus longus, electromyography, ankle instability, single leg, Lafayette stability platform

POSTER P-25

CORRELATION BETWEEN JUMP-LANDING KINEMATICS AND MUSCULAR STRENGTH IN ELITE VARSITY FOOTBALL PLAYERS

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Abstract

Background and Aim: The Landing Error Scoring System (LESS) is a lower limb biomechanical assessment of anterior cruciate ligament (ACL) injury risk. Aside from LESS, it is known that the muscular strength parameters of the quadriceps and hamstrings can also identify an athlete's susceptibility to ACL injury. This study aims to investigate the correlations between LESS and the muscular strength assessments in elite varsity football players. Methods: Thirty-two (n = 32) male varsity football players (age: 20.8 ± 3.3 years; height: 1.72 ± .06 m; mass: 66.2 ± 8.6 kg) recruited from the UiTM FC Premier, U21 and U19 leagues completed three trials of a drop vertical jump task (LESS) and 60°/s maximal isokinetic quadriceps and hamstrings concentric contractions and hamstrings eccentric contractions. Linear regression procedure was used to test the null hypothesis. Results: Linear regression model was used for the statistical analysis. The analysis showed the mean ± SD for right limb Qcon (199.3±26.2N.m), Hcon (126.8±18.2N.m), Hecc (156.1±26.N.m), and left Qcon (197.2N.m±26.6N.m), Hcon (121.5±20.2N.m), Hecc (150.9±23.9N.m). The mean for Hcon:Qcon for right and left limb were 0.64±0.08 and 0.62±0.09 respectively, while Hecc:Qcon right limb was 0.79±0.14 and 0.88±0.27 for the left. There was no significant correlation between LESS score (2.13±1.73) with any of the muscular strength variables ($p > 0.05$). Conclusions: Neither LESS sores nor muscular strength parameters showed enough evidence to be predictors to one another. Therefore, this study suggests to include both assessments during screening to allow a more comprehensive evaluation of ACL injury risk in elite varsity football players.

Keywords:
jump-landing, ACL, isokinetic, football

POSTER P-26

DOES COVID-19 MOVEMENT CONTROL ORDER INFLUENCE QUALITY OF LIFE AMONG UNDERGRADUATE SPORTS STUDENTS?

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Abstract
Background and Aim: Coronavirus known as COVID-19 is a respiratory illness that affects people worldwide. The Movement Control Order (MCO) amidst COVID-19 has made significant disruptions in university academic and sports activities, which possibly affects the quality of life of students. Therefore, this study aims to compare the effect of MCO on quality of life between gender among undergraduate sports students. Methods: In a causal-comparative research design, two hundred eighty (n = 280; male = 154, female = 126), UiTM undergraduate sport students participated in this study. All participants were required to complete an online questionnaire (SF-36) to measure the quality of life. Independent t-test was used to identify the differences between the two groups. Results: Male students' quality of life score was 10.68 ± 15.54 and female students' score was 106.59 ± 15.39. There was a significant difference between male and female students' quality of life during MCO (p=0.028). Male students showed a significantly higher quality of life compared to their female counterparts. Conclusions: Male students posed higher quality of life compared to female students. Our results suggest the need to provide support services provision during the MCO to maintain a good quality of life among students, especially in female students.

Keywords:
movement control order, quality of life, undergraduate students

POSTER P-27

KINEMATIC ANALYSIS OF PENALTY STROKE IN FIELD HOCKEY AMONG PAGOH DISTRICT PRIMARY SCHOOL HOCKEY PLAYER

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Abstract
Background and Aim: A penalty stroke in field hockey is when a foul stops a goal from being scored or for a considered intrusion by an opposition team member in the penalty circle. This study aims to analyse the kinematic analysis of the hockey penalty strokes among Pagoh district primary school hockey players. Methods: 20 subjects recruited for this study were divided into two groups: the experimental group and the control group. The penalty stroke was divided into three phases: preparation phase, shooting phase and follow-through phase. All subjects executed the penalty stroke without instruction during the pre-test. The experimental group was taught the correct penalty stroke based on movement cues for eight weeks, and the post-test was conducted for both groups. The kinematic parameters analysed were elbow, left knee, the distance between legs, and the ball's velocity. The camera was located 2 meters from the shot area with a height fix to 1 meter. 2D kinematic analysis for penalty stroke using Kinovea software and analysed using paired t-test in SPSS software. Results: Results showed that the treatment group had shown a significant ($p<0.05$) increase from 18% to 87%, but the control group only increased from 17% to 27%, an increment of 9%. There is no significant difference ($p>0.05$) in kinematic analyses between the male and female subjects that received treatment during post-test results. Conclusions: This study showed that the group that underwent the intervention can improve skills, and this study was strengthened by analysing the subject's kinematic movement.

Keywords:
hockey field, penalty stroke, kinematic analysis, biomechanics

POSTER P-28

SNAPPING ANTERIOR SHOULDER FOLLOWING PUSH-UP INJURY: AN UNUSUAL PRESENTATION OF SUBCORACOID BURSITIS

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Abstract
Background and Aim: The aim of the case report is to describe an unusual presentation of subcoracoid bursitis following push-up injury leading to anterior shoulder snapping and discuss its structured rehabilitation. Methods: This is a case of a 29-year-old lady who presented with fatigue push-up injury, sustained anterior right shoulder pain with snapping. The pain disturbed her daily activities of living and do not resolve even after 6 months of rest which followed her general practitioner's advice. Clinical examination revealed reduced internal rotation and adduction, tenderness at the coracoid process, positive Yocum test, and pain during resisted wall push-up. However, Gerber's test was negative. Ultrasound of her right shoulder revealed subcoracoid bursitis snapping at the conjoint tendon. A diagnostic test with steroid and local anaesthetic injection into subcoracoid bursa relieved the pain, confirming that subcoracoid bursitis is the main cause of the pain. Results: In this case report, we outline the successful graded rehabilitation programs of subcoracoid bursitis. After 3 months of rehabilitation, she was ready to return to her pre-injury activity level. Conclusions: This case report highlighted the importance of making the right diagnosis and administer a proper rehabilitation program for early return to sports.

Keywords:
snapping shoulder, subcoracoid bursitis, push up injury

POSTER P-29

COMPARISON OF LOWER LIMB BIOMECHANICS DURING SINGLE-LEG LANDING BETWEEN MALE AND FEMALE VOLLEYBALL RECREATIONAL ATHLETES

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Abstract
Background and Aim: Male and female may produce differences in landing mechanics during executing dynamic task that potentially led to occurrence of injuries. The purpose of this study was to compare lower extremities frontal plane kinetic and kinematic differences between male and female during single-leg landing (SLL). Methods: Twelve male (n=12) and fifteen (n=15) female recreationally trained athletes performed three trials of SLL from a counter movement jump. Kinetic and kinematic of athletes were measured during Initial Contact and Maximum vertical Ground Reaction Force (MvGRF) using Qualisys Track Manager (v2.16) then Visual3D Pro(v5) for musculoskeletal modelling. Results: This study showed, there were no significant differences on all kinematics variables (Ankle, Hip and Knee joint angle) at both phases of Initial Contact ($p > 0.05$) and MvGRF ($p > 0.05$). Similarly, no significant results were observed for kinetic variables (Ankle, Hip and Knee joint moment) at both Initial Contact ($p > 0.05$) and MvGRF ($p > 0.05$) between male and female athletes although their vGRF ($p = 0.032, 0.000$) was proven to be significantly different. Conclusions: This research revealed that in recreationally trained volleyball athletes, both genders shown to produce normal dynamic knee valgus and execute ergonomic posture during landing which can help to reduce risk of lower limb injuries. For future study, we suggested that comparison between gender was also conducted on multi-axial planes. The correlation between multiple planes can determine factors that require focus in creating injury prevention plans and training programs on medial-lateral and anterior-posterior motion of lower limb in safe and effective conditions.

Keywords:
biomechanical phenomena, dynamic knee valgus, human health, injury prevention, sports medicine

POSTER P-30

Effects of Landing Height on Lower Limb Frontal Plane Kinematics and Kinetics in Female University Athletes

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Abstract
Background and Aim: Incorrect landing techniques may cause non-contact lower limb injuries among athletes. This study examined the effects of landing height on lower limb frontal plane kinematics and kinetics in female university athletes. Methods: Ten female university athletes with a normal range of Frontal Plane Projection Angle (FPPA) performed the Drop Vertical Jump (DVJ) test with three-dimensional motion capture and bone model analysis. Hip, knee, and ankle joints were compared among the three phases (i.e., initial contact, maximum vertical ground reaction force (vGRF) and maximum knee flexion) using one-way ANOVA model. Results: Paired t-test showed there were significant differences of hip kinematics during initial contact ($r(9)=5.21$, $p=0.001$) and maximum vGRF ($r(9)=4.83$, $p= 0.001$), knee kinematics during maximum vGRF ($r(9)=-6.43$, $p=0.001$) and maximum knee flexion ($r(9)=-6.67$, $p=0.001$), and ankle kinematics during initial contact ($r(9)=-10.48$, $p= 0.001$) and maximum vGRF ($r(9)=-2.57$, $p= 0.03$) on frontal plane for both landing heights 30 cm and 45 cm. For kinetics, there were only statistically significant differences of dominant ankle power during initial contact ($r(9)=3.35$, $p= 0.01$), maximum vGRF ($r(9)=2.90$, $p= 0.02$) and maximum knee flexion ($r(9)=-0.22$, $p= 0.83$). Conclusions: Increased landing heights will increase joints' moments and power to attenuate the motion. It showed increased impact being absorbed by the joints with the increase of landing height. Therefore, coaches and players are suggested to focus on lower body strength exercises and the correct technique of landing.

Keywords:
biomechanical phenomena, dynamic knee valgus, human health, injury prevention, sports

POSTER P-31

BIOMECHANICAL COMPARISON OF DOMINANT VERSUS NON-DOMINANT LEG DURING SINGLE-LEG LANDING AMONG FEMALE VOLLEYBALL RECREATIONAL PLAYERS

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Abstract
Background and Aim: Most sports-related non-contact ACL injuries occur during landing and may be caused by lower limb biomechanical abnormalities or imbalances in the dominant and non-dominant limbs. The purpose of this study was to compare the biomechanics of dominant and non-dominant legs during single-leg landing (SLL) among female volleyball recreational players. Methods: Fifteen female recreational volleyball players were recruited in this study (right-dominant = 14; left-dominant = 1). They performed three trials of SLL with maximum countermovement jump (CMJ) from the ground on both dominant and non-dominant legs. The jumping height was not fixed. The angles and moments of the ankle, hip, and knee were compared during specific landing phases (i.e., initial contact (IC) and maximum vertical ground reaction force (mvGRF)) using the paired t-test. Results: For the joint angles, the non-dominant leg showed non-significant improvement of the knee adduction during IC (1.48°, $p = 0.27$) and ankle adduction during mvGRF (1.01°, $p = 0.24$). Meanwhile, for the joint moments, significant differences were detected across the dominant and non-dominant legs during ankle moments ($p<0.05$) at IC and hip and knee moments ($p< 0.05$) during mvGRF. Conclusions: The finding revealed that greater knee valgus during landing was found in the non-dominant limb during SLL although the results signify no difference in the angle for dominant and non-dominant legs. This indicates that landing with a non-dominant leg may increase the risk of non-contact injury. Coaches and players are suggested to include more specific training focusing on the strengthening of hip and thigh muscle strength on non-dominant leg.

Keywords:
biomechanical imbalance, dynamic knee valgus, singe leg standing, injury prevention, volleyball player

POSTER P-32

DIETARY INTAKES OF MALAYSIAN ENDURANCE ATHLETES

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Abstract
Background and Aim: The assessment of the adequacy of dietary intake among Malaysian endurance athletes remains largely unexplored. This cross-sectional study aimed to assess the energy and macronutrients intake of Malaysian endurance athletes with comparison to recommendations from the International Society of Sports Nutrition and position of the Academy of Nutrition and Dietetics, Dietitians of Canada, and the American College of Sports Medicine. Methods: A total of 85 endurance-trained athletes (71 males, 14 females), consisted of 40 long-distance runners and 45 road cyclists participated in this study. A 24-hour dietary recall was used to assess 3-day dietary intake during the training season. The energy and macronutrients intake were compared to the established nutritional recommendation for athletes. An independent t-test was used to compare the dietary intake based on sports type. Results: The study showed 62.5% of long-distance runners and 64.4% of road cyclists met the recommendation of 40-70kcal/kg/day of energy. A total of 57.5% and 42.2% of long-distance runners and road cyclists consumed less than the recommendation for carbohydrates respectively. Only 57.5% of long-distance runners and 48.9% of road cyclists met the recommended protein intake. About 75.0% and 73.3% of long-distance runners and road cyclists met the recommended fat intake respectively. No significant differences in the energy and macronutrients intake between long-distance runners and road cyclists ($p>0.05$). Conclusions: This study demonstrated that the participating endurance athletes did not conclusively comply with the recommended dietary intake. The current finding would suggest that closer attention should be given to the dietary pattern of endurance athletes.

Keywords:
dietary intake, endurance athletes, energy, macronutrients, Malaysian

POSTER P-33

THE IMPLEMENTATION OF GEOGRAPHIC INFORMATION SYSTEM IN SOCCER SHOES DESIGN AMONG MALAYSIAN SOCCER PLAYERS

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Abstract

Background and Aim: The contribution of knowledge in the field of sports that focuses on product design and performance development through the use of Geographic Information System (GIS) remains limited. Soccer shoes are the most important piece of soccer equipment and must meet the player's distinct sport-specific demands. This study aims to examine the level of reliability of the questions used to identify the ergonomic factors in designing soccer shoes that are the choice of Malaysian soccer players. The objective of this study is to assess the confidence of issues utilised to determine ergonomic variables for designing soccer shoes for Malaysian soccer players. Methods: There were 50 male students in the study, all from various Malaysian soccer players. The survey data were collected by employing questionnaires and the results analysed using Statistical Package for the Social Sciences (SPSS) software. Results: Based on the final analysis, three items were found to be unsuitable for measuring the level of perception of Malaysian soccer players on the selection of soccer shoe designs. The remaining 58 items were found to be suitable for measuring the level of perception of Malaysian soccer players on the selection of soccer shoe designs. The results showed that the questionnaire has a good level of reliability, with a Cronbach's Alpha score of 0.985. Conclusions: The use of GIS in conjunction with a Decision Support System (DSS) to assist soccer players in selecting appropriate soccer shoes could result in the formation of a conceptual model.

Keywords:
design, soccer shoes, Geographic Information Systems (GIS), spatial analysis, Decision Support System (DSS)

POSTER P-34

THE PERILS OF AN UNASSUMING RESISTANCE EXERCISES BAND CAUSING TRAUMATIC OCULAR INJURY DURING THE COVID-19 PANDEMIC - A CASE REPORT

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Abstract

Background and Aim: The COVID-19 pandemic has led Malaysians to a nationwide lockdown, necessitating patients and other gym enthusiasts to workout at home. A popular surrogate to machine-based resistance training has been the humble resistance exercise band which has been regularly prescribed for home strengthening rehabilitation. Nevertheless, it has been known to cause various traumatic ocular injuries if not secured firmly and this is rarely informed to patients. Methods: A 65-year-old gentleman presented with blunt ocular trauma sustained from a resistance exercise band used during a bout of home-based strengthening session for rehabilitation of bicipito-tendinopathy of the shoulder. The injury occurred when the band inadvertently slipped off a door-knob and recoiled horizontally, striking his right eye. He experienced a sudden unilateral loss of vision and ophthalmalgia. He was diagnosed with traumatic hyphema, angle-recession glaucoma, traumatic mydriasis and retinal break which necessitated a ten-day admission. He completed a course of topical corticosteroids, aqueous suppressants and cycloplegic agents, with advice for complete bed rest and head-elevation to reduce intra-ocular pressure and further hyphema. Due to persistent floaters, he later underwent several sessions of barricade laser retinopexy to mitigate the risk of retinal detachment. At one-year post-trauma, he still suffers from mild vision loss and is now very mindful about using the band. Results: - Conclusions: Exercise resistance band may cause high-velocity, blunt ocular injury with consequential long-lasting vision loss if used ineffectively. As such, highlighting the importance of safe exercise techniques and advice for eye protection devices is essential during exercise prescription.

Keywords:
exercise resistance band, hyphema, ocular trauma, retinal injury, vision loss