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OF SPORTS MEDICINE
(MASM)

Building A Healthier Nation Through Sports

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Programme & Abstracts

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Sports Medicine



Asian Federation of
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Sports Medicine Unit, Faculty of
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Cover Art for the 2nd ASEAN Sports Medicine Conference (ASMC 2018)

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Description:

The cover picture depicts an athlete is running position with the background of Kuala Lumpur famous landmarks namely Twin Tower and KL Tower.

The 2nd ASEAN Sports Medicine Conference is held on 24th to 25th of March 2018 at Hotel Istana Kuala Lumpur and organized jointly by Japan Sports Council, Ministry of Health Malaysia, National Sports Institute of Malaysia (ISN), Sports Medicine Unit, Faculty of Medicine, University of Malaya and Faculty of Sports Science and Recreation, Universiti Teknologi MARA. The conference is affiliated to International Federation of Sports Medicine and Asian Federation of Sports Medicine.

Foreword

Dear Participants,

We welcome you to the 2nd ASEAN Sports Medicine Conference (ASMC) 2018. We are delighted that you chose to participate in this conference here in the hearth of Kuala Lumpur, Malaysia.

This year we have 2 days of combined symposia and workshops, with more than 200 participants registered. The participants come from local and abroad especially the South East Asia countries and others including Japan, Italy, Australia and India. We have 40 invited speakers and more than 60 free paper and poster presenters. The conference symposia included various themes in sports medicine and sports science to allow participants to pick and choose their preferred topics. We hope this would fulfil your expectation and provide you ample time to attend your topics of interest. Unlike the common pre- conference workshops, our workshops are combined within the conference, to ensure maximal benefit to all participants and ensuring a better attendance in the afternoon session. The workshops are hands-on, guided by experienced and qualified personnel from local and abroad to enhance real-time experience and exchange views.

Both chair together with the scientific committee members have vetted the abstract from various themes. Overall, good quality of review topics and original research works were submitted to this conference.

Please do take time to attend the sponsor's booths as they have been instrumental in supporting this conference. And when you have time, please continue to mingle, connect and increase your networking among speakers, participants and sponsors.

We take this opportunity to thank all our scientific committee members who have committed their time and efforts into the conference and to the presenters who submitted their research findings to share with everyone.

We hope that you would enjoy the conference to your utmost and don't forget to leave us feedback on how to make the future conference better.

Once again many thanks and continue your support to MASM. Yours

truly,

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ORAL KN-01

Regional Partnership & Collaboration: Advancing Sports Medicine and Science in Asia

YUNG Shu Hang Patrick

Asian Federation of Sports Medicine (AFSM);
Hong Kong College of Orthopaedic Surgeons (HKCOS);
Sports Medicine Team, Department of Orthopaedics & Traumatology;
Faculty of Medicine, The Chinese University of Hong Kong (CUHK)

Asian Federation of Sports Medicine is dedicated to promote public awareness of health and advancing sports medicine development in Asia. In recent years, AFSM aims to create a healthier Asia and advance sports medicine and health sciences by encouraging the public to participate in regular exercise or sports, offering training to sports medicine and health sciences professionals and students from relevant disciplines, and improving treatment protocols and the safety and efficacy of sports through basic and applied scientific research through evidence-based practice. Looking for future, AFSM is planning to establish a centralized clinical database to facilitate holistic treatment for sports patients, and anonymous data for research, creating community education programs to promote health through regular exercise or sports to the public, developing performance-enhancing technologies and devices to make sports participation safer and assist elite and amateur athletes in their training and performances, as well as collaborating with regional partners in research and development to further sports medicine and health sciences research and services in Asia. With the approach of the 2020 Tokyo Olympics in Asia, fostering the collaboration and partnership of AFSM with regional societies is most timely and important. We strongly believe that the AFSM, by pooling together expertise and resources of different societies in an effective manner, will give a strong boost to sports medicine development in Asia. Malaysian Sports Medicine Association (MASM) have strong, independent track records in sports medicine and sports health, respectively. Starting collaboration between AFSM & MASM is an excellent opportunity for the two societies to further exchange knowledge and learn from each other and ultimately benefit the community at large.

ORAL PN-01

Translating Research into Practice

Abdul Halim Mokhtar
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of Malaya, Kuala Lumpur, Malaysia

Unfortunately, not all research outcomes can be useful and hence not all research can be translated into practice. To most researchers, it is satisfying to see their research work being published; however, the ultimate joy is to see the research outcome being applied in the field. There are a number of reasons why this is not materializing. We, living in the current evidenced-based world, become more critical in our work. We tend to look at the research based on hierarchy of evidence, whereby would usually require more complex experiment, controlling all possible co-founders, and addressing all possible limitations before being accepted as strong finding. To do this will require substantial amount of time and money. Whilst not forgoing these facts, to ensure that our work in practised, several key factors need a revisit. The research questions must be beneficial to the real world and formulated based on the actual need. We should not do a research just because of the orthodox 'hunger of knowledge'. The research question must yield answers to matters at hand, applicable and practical. In sports injury for example, preventing an injury probably reduce us from treating many more, so the more practical research question is perhaps, "how to prevent the injury?" rather than "how to treat the injury?". Sports performance too has always been the matters close to our heart as sports scientists. Research findings that may enhance sports performance would likely to attract policy makers and sports practitioners into applying them. Another challenge is when we have several solutions for the same problem; this usually entails to which one is better? The answer unfortunately, is not always lay on the research findings, but on the practicality, applicability and dollar and cents. To policy maker, the latter is all about cost effectiveness and probably is the most preferred answer. In short, to translate research into practice, we researchers must not stay in the cocoon of what we want, but to wonder what the practitioner want and we should start from the basics.

ORAL PN-02

“Medical Emergency in Sports: First Responder”

Michael Kenihan
Sports Medicine Australia

S.M.A (Sports Medicine Australia) is the peak body for Sports medicine in Australia and represents the interests of both practitioners and athletes from elite to community in injury prevention, management advice and safety. Many of the sports played in Australia and beyond have high incidence of sport trauma and musculoskeletal injuries. Australia is very keen on all Sports and some are very high contact. Football and Rugby particularly are high contact and high speed games where physical clashes of players are common place.

Many other sports also pose a risk to participants in sports, such as rugby, hockey, football and horse riding.

Acute and ongoing management of such injuries is of great importance. Appropriate immediate treatment, diagnosis and management is a key to preventing injuries and to keeping players participating. In this talk I will focus on medical emergencies but the management of soft tissue injuries is also of great importance and sometimes such injuries will occur at the same time as a medical emergency.

This presentation will cover the role of the 1st Responder, planning for emergencies, including 1st Aid equipment, access and other services.

I will touch on approach to the athlete, assessment of the condition/injury and transport of a medical emergency.

A brief mention will be made of other sports injuries not are generally not considered medical emergencies.

Sports Medicine Australia conducted their 2017 annual conference in Langkawi, Malaysia.

ORAL PN-03

Urban Evolution: Exercise is Medicine

Ivy Lim

Changi General Hospital, Singapore

According to WHO data, non-communicative diseases (NCD) account for 70% of all global deaths. Urbanisation and the rise of technology have been cited as reasons for decreasing activity levels and dietary changes, contributing to the rise of obesity and other NCDs. There is a growing body of evidence that physical activity plays a part in preventing and managing NCDs. However, the presence of these NCDs can often become a barrier in someone becoming physically active. Healthcare providers have cited a lack of expertise or knowledge as a reason for not prescribing exercise to their patients with NCDs. This situation can result in a downward spiral to the health of an individual with NCDs. This talk will explore some of the evidence on the benefits of physical activity and the adverse effects of a sedentary lifestyle. The talk will also introduce a global initiative 'Exercise is Medicine[®]', and discuss how healthcare providers can use exercise and physical activity as an intervention to treat their patients with NCDs.

Advanced Wireless NMES Applications in ACLR rehab and Shoulder functional Instability: A New Treatment Concept for Progressive and Efficient Functional Rehabilitation

Heiko van Vliet
HVV Consulting

This presentation has two parts.

Part one:

Despite the latest advancement of ACLR surgical technique and rehabilitation technology, it is not uncommon for athletes not able to achieve lower extremity symmetry (<85%) to before return to sports (RTS). This could lead to higher risk of re- injury. Early intervention based on Wireless NMES superimposed to repeated STSTS exercises is effective for recovering quadriceps strength and symmetry (near to 100%) in lower extremity loading by the time of RTS.

Wireless NMES superimposed with different functional exercises during different ACLR rehabilitation phases would further help to accelerate rehabilitation progress and ensure safe RTS.

Part two:

Recent clinical study show that Wireless NMES training of the rotator cuff and periscapular muscles seems to successfully confine functional shoulder instability with temporary but immediate and complete remission of clinical symptoms. Combining the Wireless NMES technology in regular physiotherapy treatment program can lead to persistent shoulder stability, re-establish the muscular balance and motor control in affected patients.

The same Wireless NMES Combined Muscle Training (CMT) approach can also be applied to other shoulder indications such as: clavicular fractures, impingement frozen shoulders, Bankart lesion, rotator cuff post-op rehabilitation.

ORAL FP S1-01

Anti-Doping in Sports

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A constant “cat and mouse” game is in play since the introduction of anti-doping programs in sport. Unscrupulous organized professional doping supported by governments and sports bodies has tarnished the image of sports. Yet, the fight goes on in ensuring sports is free from doping. Economic gains and political interests are the driving forces that urge athletes to take risks. Athletes cannot be exonerated for their indulgence and preventive programmes are ineffective. The use and abuse of supplements go unabated. Lack of education and the pressure of traditional therapies based on cultural and traditional beliefs further confound the situation. Frequently, economic and political factors do over rule rationale medical advice. However, common sense must prevail in ensuring the safety of athletes. WADA cannot fight alone while International Sports Federations are not doing enough to curtail doping in sports. Finally, it is the dope that gets caught in doping.

Volume of swimming-induced supraspinatus tendinosis, is the major determinant of shoulder pain in elite swimmers

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Background

Shoulder pain in elite swimmers is common and its cause is unknown. One hypothesis is that repetitive swimming leads to shoulder laxity, which in turn leads to impingement and shoulder pain.

Purpose

An observational cross-sectional study was designed to test this hypothesis.

Methods

Eighty elite swimmers (13-25 years of age) completed questionnaires on their swimming training, pain and shoulder function. They were given a standardized clinical shoulder examination, and tested for inferior glenohumeral joint laxity using a non-invasive electronic laxometer designed for this study. Fifty-two swimmers also attended for a shoulder MRI.

Results

The laxometer had good-excellent reliability for inter-observer (Intra-class correlation coefficient, ICC = 0.74) and intra-observer (ICC = 0.76) assessments of joint laxity. The reliability of MRI-determined supraspinatus tendinosis was excellent with a single experienced musculoskeletal radiologist (intra-observer ICC = 0.85) and fair for an inter-observer assessment including less experienced radiologists (ICC = 0.55). MRI-determined supraspinatus tendinosis was present in 36/52 (69%) swimmers, including four international-level athletes. A positive impingement sign correlated with supraspinatus tendinosis ($r = 0.49$, $p = 0.0002$). The impingement sign had 100% sensitivity and 65% specificity for diagnosing supraspinatus tendinopathy. Shoulder laxity correlated modestly with impingement ($r = 0.23$, $p < 0.05$). There was no association between shoulder laxity and supraspinatus tendinosis ($r = 0.24$, $p = 0.08$). The number of hours swum/week ($r = 0.36$, $p = 0.01$) and the weekly mileage ($r = 0.34$, $p = 0.02$) both correlated significantly with supraspinatus tendinopathy whereas swimming stroke preference did not. Multiple logistic regression analysis performed with supraspinatus tendinopathy as the dependent variable showed the combination of hours swum/week and weekly mileage correctly predicted tendinopathy in 85% of elite swimmers.

Conclusion

These data indicate that: (1) supraspinatus tendinopathy is a major cause of shoulder pain in elite swimmers; and (2) this supraspinatus tendinopathy is induced by the volume/dose of swimming; and (3) shoulder laxity *per se* has only a minimal association with shoulder impingement in elite swimmers.

These findings in humans are consistent with animal and tissue culture findings which support the hypothesis that tendinopathy is related to the dose and duration of load to tendon cells.

Keywords

shoulder laxity; laxometer; swimming; impingement; tendinopathy; prevention

Pectoralis Major Tears By The Bench Press: A Perspective In Treatment

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Background

80% of Pectoralis Major tears, occur in bench press injuries. The age group in which it usually occurs, is between 20 to 40 years of age. It is an uncommon injury. The pectoralis major is important in power lifting but is not seriously disabling in normal activities of daily living.

Methods

Review of various nonsurgical and surgical treatment of pectoralis major tears in recent literature. A perspective on preventive measures to reduce the incidence of tears is reviewed.

Results

Surgical repair of the tear in various studies especially suture anchor fixation provides better outcome than non surgical treatment. It is noted that surgical treatment for tears less than 6 weeks old and for athletes less than 40 years old, provide better results in that technically, the tendon is readily identifiable. The results are not consistent for excellent and good scores, range from 33% to 67% for surgical repair. However there is a larger proportion of poor score in non surgical group at 30%, compared to the surgical group at 10%.

The problem with chronic tears more than 6 weeks, is getting the extra length of the tendinous part of the muscle and isolating the fibrotic tendon; resolved by using autografts or allografts. Surgical repairs restore the anterior axillary fold as cosmesis. Post surgery rehabilitation, the full participation in power lifting is rather long 9 months to 1 year. Older patients above the age of 50 years with pectoralis major tears are usually treated non surgically. The sternocostal part, fails more often than the clavicular part, especially in the last 30 degrees of shoulder extension, abduction and external rotation.

The mechanism of the pectoralis major muscle injury occurs in its muscular fatigue state and during a strong eccentric maximum muscle contraction (i.e. the "plastic region" of the stress-strain curve of musculotendinous tissue) in shoulder hyperextension. Prevention is considered in the technique of bench press: limit the distance the bar is lowered and narrow the distance between the grips on the bar. One needs to reduce the fatigue producing volume and intensity of bench press actions.

The usage of anabolic steroids may cause the incidence of re-rupture and poor quality of the tendon to heal.

Conclusion

Surgical repair of pectoralis major tear by suture anchor fixation provides a predictable return of strength, cosmesis, and overall function. A good emphasis on prevention needs to be practised.

Keywords

Pectoralis major, surgical, non surgical, prevention, power.

Limited Knee Range of Motion after Anterior Cruciate Ligament Reconstruction

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Background and Aim

Limitation of range of motion (ROM) of the knee is one of the most common and deliberating complication after anterior cruciate ligament (ACL) reconstruction. The purpose of this study is to determine the potential risk factors and treatment outcome of patients with limited knee ROM following ACL reconstruction.

Methods

We conducted a retrospective case series that include patients who received treatment for limited knee ROM after ACL reconstruction from Jun 2015 to December 2017 in a tertiary hospital. Limited ROM was defined as extension lag and/ or flexion loss at 8 weeks of follow up after surgery and received treatment. We recorded the patients' demographic data, clinical history, physical examination findings, treatment plan, intraoperative findings and compliance to rehabilitation. The treatment outcome was measured using pain scale, knee arc of motion, knee flexion and extension, and IKDC subjective evaluation questionnaire.

Results

The risk of limited knee ROM following ACL reconstruction was 5.9%. Seven patients were identified: 3 was treated with intensive physiotherapy alone, 3 underwent manipulation under anesthesia (MUA) with adjunct physiotherapy, and 1 underwent arthroscopic release in addition to MUA and physiotherapy. At 6 weeks post- intervention (either conservative and/ or surgical), good clinical outcome was shown with significant improvement in pain ($p<0.001$), knee arc of motion ($p=0.001$), knee flexion ($p=0.017$) and IKDC score ($p=0.001$). Potential risk factors can be classified into patient, surgical and rehabilitation factors. Patient factors include pre-operative knee ROM and swelling, existing medical illness, psychosocial issue, concomitant injuries and accessibility to healthcare facility. Surgical factor includes timing of surgery following injury, and rehabilitation factor being patient's compliance to rehabilitation.

Conclusion

Early diagnosis and prompt multidisciplinary can provide a good clinical outcome in patients with limited ROM after ACL reconstruction. Identify the potential risk factors is imperative to prevent this condition.

Keywords

Arthrofibrosis; Anterior cruciate ligament reconstruction; Knee range of motion; Knee stiffness

Competing Interests

The authors declare that they have no competing interests

ORAL FP S1-05

Effects Of Kinesio Taping and Athletic Taping On Balance And Leg Power Among College Athletes With Chronic Ankle Instability

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Background

The purpose of this study was to investigate the effects of kinesio taping and athletic taping on balance and leg power among college athletes with chronic ankle instability. The secondary study examined the effects of kinesio taping and athletic taping on perception of stability, confidence and reassurance among college athletes with chronic ankle instability.

Methods

A total of 15 college athletes with chronic ankle instability from Tunku Abdul Rahman University College were recruited in this study. They underwent 3 different conditions in randomized order: no tape condition, kinesio taping condition and athletic taping condition. The duration between conditions was at least 7 days apart. 3 physical testing were performed in each condition which were standing stork test, star excursion balance test and vertical jump test. Perception of stability, confidence and reassurance were assessed after both taping conditions.

Results

Results showed no significant difference in standing stork test, star excursion balance test and vertical jump test ($p < 0.05$) among the 3 conditions. Secondary study showed increase in the perception of stability (53.3%), confidence (66.7%) and reassurance (66.7%) during kinesio taping condition. Similar results were shown during athletic taping condition where perception of stability (80%), confidence (66.7%) and reassurance (93.3%) had increased.

Conclusion

In conclusion, sport taping does not give significant difference in static balance, dynamic balance and leg power. However, using sports taping gave better psychological effect during physical activity among athletes with chronic ankle instability.

ORAL FP S1-06

HIRARC in Sport: Issues and Current Approaches

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Sports and recreational activities are highly encouraged in our efforts to keep fit and avoid obesity. Actively involved in sports activities and do the physical movement of the body will make the body healthy by burning calories. The issue of accidents and injuries during average and competitive sports activities with inappropriate equipment, equipment that is not properly maintained and failure of equipment, and the critical age would be more likely at the age below 12 years and above 35 years old. In 2006 a study done by the Sports Council of the United States showed a total of 365,000 athletes injured during training due to neglect of safety. It is common among amateur and professional athletes especially for contact sports, using special equipment and high performance event. In Malaysia there are not many specific studies or statistics on accidents caused by negligence, unsuitable equipment, damage or failure of equipment that can cause injury to the athletes involved. To what extent these factors are given attention as when an accident happens, one side will blame the other party, and eventually we lose talented sportsmen due to accidents and injuries during training or competition. Issues such as the football field is not flat, the surface of cycling velodrome broken, poorly maintained gym equipment still considered trivial by some stakeholders. The approach should be emulated by all parties, namely the London 2012 Olympic tournament has established the safety and health as well as specific security strategy unveiled before, during and after the tournament. It accounts for the safety and health of athletes, personnel, parts and all the organizers of everyone involved. All parties should be aware that the issue safety and injury of athletes is a very important and should be taken seriously, even if the risk of injury in sports accident is consider as voluntary risk.

Keywords

Sport hazards, risk assessment, risk control, safety, sport safety

The Relationship Between Lower Limb Muscle Strength and Functional Stability in Recreationally Trained Soccer Players

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Background & Aim

The importance of strength and stability training has been highlighted in the literatures and applied information related with the associations between these two interventions may help in improving performance and reduce the risk of injury. The purpose of this study was to investigate the degree of relationship between lower limb muscle strength and functional stability among recreational soccer players.

Methods

Thirty one (n = 31) recreational soccer players (age = 22.9 ± 1.0 years, weight = 62.1 ± 7.8 kg, height = 167.4 ± 17.9 cm) were recruited for this study. Lower limb functional stability was evaluated using a stabilometer and muscle strength was measured as one- repetition maximum (1RM) leg press.

Results

The mean \pm SD of muscle strength (287.8 ± 64.1), anteroposterior stability (1.16 ± 0.71), mediolateral stability (1.02 ± 0.65) and overall stability (1.73 ± 1.06) was observed. Pearson's correlation coefficient revealed a moderated correlation $r(31) = 0.369$, $p < 0.05$ between muscle strength and overall stability, low correlation $r(31) = 0.151$, $p < 0.05$ between muscle strength and anteroposterior stability, and moderated correlation $r(31) = 0.378$, $p < 0.05$ between muscle strength and mediolateral stability. **Conclusion**

These findings suggest both strength and proprioceptive training for dynamic balance should be a primary consideration in injury prevention program.

Keywords

muscle strength, functional stability, soccer

The Acute Effects of Kinesio Taping on Lumbar Range of Motions

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Background & Aim

This study aimed at determining the initial effects of kinesio taping (KT) applied to erector spinae muscle on lumbar flexion, extension and lateral flexion range of motions (ROM).

Methods

Pre-post parallel controlled trial study was conducted on twenty healthy subjects divided equally into two groups (KT and placebo). Lumbar spine flexibility was evaluated using tape measure method for all lumbar tested motions.

Results

KT group showed significantly improve lumbar flexion ROM, yielded an increment of 9.9 cm compared with placebo group (9.9 cm, $t(9) = -4.265$, $p = 0.002$). However, no significant differences were discovered for lumbar extension (-0.9 cm, $t(9) = 1.132$, $p = 0.287$), right lumbar lateral flexion (1.2 cm, $t(9) = -1.964$, $p = 0.081$) and left lumbar lateral flexion ROM (0.8 cm, $t(9) = -1.633$, $p = 0.137$). The ANCOVA adjusted change scores revealed that the KT group demonstrated a very large effect size in lumbar flexion ROM. Meanwhile, trivial and moderate effect sizes were identified in lumbar extension and lateral flexion ROM respectively.

Conclusion

Hence, the KT positively influences erector spinae muscle, allowing improvements in the active lumbar flexion ROM immediately after the application of KT.

ORAL FP S1-09

Care of the Traveling Athletes

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The traveling Team Physician needs to ensure that the athletes' health and well-being are closely protected so that they can produce optimum performance on the field of play. A variety of factors can adversely affect performance of players including medical & non-medical issues. This necessitates good planning and preparation well before the journey starts. A pre-departure camp for assessment of athletes and the support staff goes a long way in foreseeing potential problems for taking precautions and making necessary arrangements. There are a few issues which require to be addressed even after arrival back home like continued vaccinations and prophylactic medications. A careful study of the destination is needed with regards to its health risk profile, availability of medical facilities, legal issues, weather, local culture, accommodation facilities & local travel arrangements. The travel to destination itself should be planned meticulously keeping in mind issues like athlete's comfort, sleep pattern and jet lag among many others. Athlete's nutrition, hydration, fatigue and psychological issues need special attention during the travel. Medical Kit bag and necessary medical supplies are to be carried in sufficient quantities with an eye on the arrival customs regulations. Local medical facilities and personnel could be visited or contacted on or before arrival to make sure they are available when needed. The travelling physician sometimes is required to expand his scope of service beyond the medical professional service in line with the requirement of the athlete or team. The travel with a sports person or team, though it looks fancy from outside, is highly demanding and challenging. The physician should be adequately prepared physically and mentally for the same.

ORAL FP S2-01

sEMG in Understanding Mechanics of Sports Technique and Minimizing the Risk of Injuries.

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In sports, injuries are bound to happen when the technique is executed in a manner which compromises the usage of major muscles; synchronization, coordination and sequence of the chain muscles that are involved in the movement. Secondly, fatigue and muscular endurance does play important role in execution of repeated movements in cyclic activities. Thirdly, the compromise of technique especially when the activities are done in explosive mode does lead to injuries.

Surface *EMG* recordings provide a safe, easy, and non-invasive method that allows objective quantification of the activity of the muscle. *EMG* – is an essential tool in the diagnostic evaluation of peripheral neurological disorders. The technique allows the observer to see the muscle activation at static and dynamic conditions over the course of a movement. Unfortunately, sEMG has its limitations, as it enables you to analyse only surface area.

In the presentation, few case studies of sEMG analysis with sportsmen in National Sports Institute of Malaysia who had an injury or issues in technique have been discussed from the mechanical efficiency and performance enhancement point of view.

In general, use of sEMG analysis can help the sportsmen to perform movements with proper muscle function and coordination. In elite sports where the difference between athletes is bare minimum, just gaining 1% improvement in terms of muscle performance and coordination, precise use of technique would result in an edge to winning performances. In clinical, it would assist the physio to channel and shaping of muscles to the functional demand of the sports.

ORAL FP S2-02

Corticospinal adaptation to high force contractions

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Early strength gains following high force contractions can be largely attributed to neural adaptation. However, the precise mechanism contributing to their changes remains relatively unknown. In recent years, the use of neurophysiological techniques such as Transcranial Magnetic Stimulation (TMS) has provided much information on the involvement of the corticospinal pathway. Current evidence reveal that high force contractions more likely affects intracortical inhibitory networks rather that corticospinal excitability. In addition, we propose that high force contractions may also share similar corticospinal changes with motor learning and that long-term potentiation (LTP) is the likely candidate mechanism involved. In my presentation, I will briefly walk through the corticospinal evolvement following high force contractions and highlight key findings from our research group and its practical implications.

Effects of Textured and Compression Materials on Movement Organisation in Different Populations

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Using textured and compression materials can cause simple deformation on the skin surface, which has been found to improve human perceptual-motor performance by enhancing somatosensory information used to regulate actions. There is unequivocal evidence that wearing textured and compression materials can improve human perceptual-motor performance especially in skills that utilize dynamic and static to slow phase movements. In addition, different types of textured and compression materials (socks, insoles, inserts and surfaces) have been examined in different populations (healthy, disease and athletes) to study their effects on postural stability, foot positioning, locomotion and sports skill performances. Studies looking into athletic performance investigated effects of wearing textured insoles and compression socks on performance of dynamic interceptive actions in young skilled and less skilled footballers. Twelve participants (15.42 ± 0.95 years) involved in these studies and they were required to perform instep kicking and ball reception tasks. All tasks were performed across four randomly organised insoles and sock conditions. Reflective markers were placed on key anatomical locations to facilitate three-dimensional (3D) movement recording and analyses. Kinematic data were captured by eight infrared cameras (Hawk Digital Camera, Motion Analysis Corporation) and recorded at 200Hz on the Cortex software (Motion Analysis Corporation, Santa Rosa, CA, USA). Visual three-dimensional (V3D) software (C-Motion V3D, USA) was used to construct an eight-segment model consisting of thorax, pelvis, thigh, shank and feet for each participant and to calculate 3D kinematic variables. The findings from these studies revealed that wearing textured and compression materials constrained movement organisation of skilled and less skilled football players and improved performance of kicking (i.e. significantly higher ball velocity) and ball reception task. This may occur through enhanced somatosensory system feedback utilised for foot placement and movement organisation of the lower limbs during complex and dynamic interceptive actions.

Keywords

clinical compression socks; dynamic interceptive actions; textured insoles

ORAL FP S2-04

The role of sports biomechanics to achieve performance enhancement in high-performance sports.

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Biomechanics is a basic discipline of science that investigates fundamental human dynamics, such as gait motion, running motion, etc. By contrast, the field of sports biomechanics can be more applied and explore optimal motions. As known that there are several fundamental motions in sports, such as swing motion, kicking motion, swimming motion, racket motion, etc. Those motions are mechanically extremely complicated and the qualities of motions depend on several factors including fatigue, weakness, allayment, body weight and more. Therefore, coaches need a process by which they can break down motions and identify specific issues to achieve performance enhancement. Within this process, sports biomechanics can play a vital role via investigation of an athlete's and/or a piece of equipment's motion. After an initial biomechanical screening, the biomechanist can provide direction to solve the issue and collaborate with other disciplines, such as physiologists, psychologists, nutritionists, and S&C trainers if it si required. In this session, the presenter will share certain biomechanical approaches to performance enhancement that were developed by the Japan Institute of Sports Sciences (JISS). These approaches aim to help athletes achieve great success at the Tokyo Olympic and Paralympic Games in 2020. The presenter would also like to hold a discussion with the other speakers and audience members to share ideas about how sports biomechanics can become a more useful tool not only for both coaches and athletes but also for general population.

ORAL FP S2-05

3D biomechanical analysis of University Cricket fast bowlers in India

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Aim

The aim of this study was to analyze the bowling mechanics of university level cricketers in India, examining parameters such as bowling action type, elbow angle, lateral flexion and front knee angle.

Methods

40 University level fast bowlers between the ages of 18-25 were fitted with 35 retro-reflective markers according to the full-body Plug-in-Gait marker set. The bowlers were then asked to ball 6 deliveries on a good length. Their bowling actions were captured with 12 Vicon 3D cameras. The best delivery from each bowler was selected for the study based on the completeness of data capture. The 3D kinematic data was processed with the Plug-in-Gait pipeline on Vicon Nexus software.

Results

Of the 40 bowlers, 23 had semi-open bowling action, 12 had front-on action, and 5 had mixed bowling action (Shoulder Counter Rotation $> 30^\circ$). 34 of the 40 bowlers had maximum lateral flexion of more than 40° . 37 out of the 40 bowlers had Flexor- Extensor style, 1 had Extensor style, 1 had Flexor style and 1 had Constant brace for front knee angle. 16 out of the 40 bowlers had illegal action (Elbow angle $> 15^\circ$).

Discussion & Conclusions

16 bowlers had illegal bowling technique, this could be due to lack of proper coaching which is more available among elite cricketers. Results from bowling action type and lateral flexion show that university bowlers are more predisposed to injuries. Using biomechanical studies, players predisposed to injuries can be identified early and injuries thus can be prevented.

Comparison of Motor Coordination and Cardiorespiratory Fitness in Urban-Rural Children

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Background

Rural children tend to be more physically active rather than urban children. Therefore, rural children have better cardiorespiratory fitness and motor coordination levels. The purpose of this study was to examine the effects of a living area on motor coordination and cardiorespiratory fitness levels. We also investigated the relationship between motor coordination and cardiorespiratory fitness in urban-rural children.

Methods

200 school children aged 10 to 11 years participated in this study. Of these all participants, 100 were urban children (Male=47, Female=53), and the other 100 were rural children (Male=48, Female=52). The student's gross motor coordination was measured by using Körperkoordinations Test für Kinder. A single test (1000 meter run) was used to measure the student's cardiorespiratory fitness levels. Urban-rural differences were calculated by using an independent sample t-test (Mann-Whitney U test if not normally distributed).

Results

No differences were found in body mass index between both groups. There were significant differences in motor coordination between urban and rural children ($p < 0.05$). Urban children showed lower gross motor coordination (mean=177.94) than rural children (mean=196.14). Urban children scored lower on walking backward ($p < 0.05$), hopping height ($p < 0.05$) and jumping sideways ($p < 0.05$) compared to rural children. Cardiorespiratory fitness was significantly different in both groups ($p < 0.05$). Cardiorespiratory fitness of rural children (mean=7.06 seconds) was better than urban children (mean=8.12 seconds). Statistical analysis showed positive relationship between motor coordination and cardiorespiratory fitness in both groups. Children with higher motor coordination performed better cardiorespiratory fitness.

Conclusion

living areas have influenced gross motor coordination and cardiorespiratory fitness of children.

Keywords

living area, motor coordination, cardiorespiratory fitness

Competing interest

None

Effects Of Exercise On Visual Evoked Potentials

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Background

Visual evoked potentials (VEP) are used to assess the central visual pathway. Some physiological factors are known to affect the VEPs . The attention has been drawn to the correlation between the physical activity and evoked potential responses of the athletes. Very few studies have been done on Indian sports persons.

Aims and Objective

The aim of this study was to investigate the effects of habitual exercise on visual evoked potentials (VEP) in Indian volleyball players.

Methods

The study group consisted of 20 male volleyball players and the control group contained 20 male students who were not involved in any sports activity. The N75, P100, and N145 latency and amplitudes were measured before and after exercise. Intergroup comparison for the chronic effects of exercise were analyzed.

Results

Significant differences were noted between athletes and the sedentary subjects in terms of pre-exercise left-N145 latencies and amplitudes and left -P100 amplitudes.

Conclusion

The results suggest that habitual exercise affects the VEP responses independent from the body temperature and other physiological parameters. Small sized pre- exercise P100 amplitudes in the athletes can be attributed to the effect of rapid visual- activity-demanding sports on the central nervous system. Visual evoked potentials maybe used as neuro physiological criteria in defining the performance of an athlete.

Keywords

Visual evoked potential, exercise, , volleyball (athlete), visual pathway.

Effects of 12-Weeks Exercise Training on Paretic Lower Extremity of Hemiparetic Stroke Survivors: Enhancement of Motor Strength and Improvement of Walking Gait Velocity

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Background & Aim

One of the major post-stroke impairments interfering with functional motor performance is muscle weakness in stroke individuals with hemiparesis. Muscle weakness in which deficits in muscle strength that cost hemiparetic stroke survivors their walking gait performance tends to be decreased in accordance with walking velocity. This research was conducted to evaluate the effects of exercise training on paretic lower extremity of hemiparetic stroke survivors in which to enhance their motor strength and improve walking gait velocity.

Methods

Research was conducted using pretest-posttest quasi-experimental design with a single experimental group. Ten subjects (mean age: 49±11.613 years) were recruited for the exercise training in the period of 12 weeks (3 days per week), which consisted of warm-up, lower extremity strength training (2 days per week), treadmill training (1 day per week), and cool-down. Motor strength was assessed using Motricity Index and walking gait velocity was analysed by Noraxon's myoRESEARCH 3.10.30 software using myoPRESSURE module. Both outcome measures of motor strength and walking gait velocity were analysed statistically using one-way repeated measures ANOVA (rANOVA).

Results

After the 12-weeks exercise training, the results of rANOVA showed that there was a significant effect of 12-weeks exercise training on motor strength enhancement ($F(2, 14) = 44.856, p = .000$) and on walking gait velocity improvement ($F(2, 14) = 19.998, p = .000$).

Conclusion

The 12-week exercise training was designed in way of simplistic and befitting according to subjects' exercise prerequisite, which had shown a significant effect and had proven in enhancing subjects' paretic lower extremity motor strength and improving their walking gait velocity performance.

Keywords

hemiparetic stroke; motor strength; walking gait velocity; lower extremity; Motricity Index

Competing Interests

None declared

High Intensity Simulated Soccer Fatigue Protocol Influences on Isokinetic Functional Hamstring Quadriceps Ratio

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Background & Aim

A higher incidence of anterior cruciate ligament (ACL) injury during the latter stages of soccer match-play may be attributed to fatigue. This study aimed to investigate whether a high intensity fatigue simulation (HIFS⁵) influences functional hamstring quadriceps muscle strength imbalances.

Methods

Ten (n = 10) male recreational trained soccer players (age = 23 ± 0.8 years; height = 171 ± 4.2 cm; mass = 69 ± 5.5 kg) participate in this study. Players completed a 5-min of HIFS⁵ utilizing soccer specific movements with and without a ball. Each player performed five maximal dominant-limb concentric quadriceps (Q_{con}) and eccentric hamstrings (H_{ecc}) isokinetic contractions before fatigue simulation (time 0 min), immediately following simulation (time 5 min), and after 15 min of passive rest (time 20 min). A one-way repeated measures ANOVA was used to identify significant differences over time, with $\alpha=0.05$.

Results

No significant changes were observed in Q_{con}, and functional HQ ratio. A significant reduction in H_{ecc} were observed at time 5 min compared to pre-simulation values.

Conclusions

Eccentric hamstring strength impairments after fatigue may suggest a greater risk of ACL injury. Incorporating eccentric hamstrings exercises in injury prevention program may reduce the incidence of injury in soccer players.

Keywords

soccer, fatigue, eccentric , FHQ ratio, hamstring, quadriceps.

ORAL FP S2-10

Does Stroke Rate Affect Rowing Biomechanics?

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Background & Aim

Rowers train at different intensities on both land and water to achieve different targets of fitness and performance. Low intensity and long duration ergometer training leads to changes in rowing technique, contributing to low back pain. Thus different training intensities could place different demands on the body, leading to a compromise in technique and inappropriate kinetic chain loading. This study aims to investigate possible kinematic and kinetic changes with different rowing stroke rates.

Methods

10 sub-junior national level male rowers (mean age 13.8 ± 0.98) underwent testing on a rowing ergometer. Retro-reflective markers were affixed on the subjects as per a standardised protocol and rowing motion was captured using 3D motion capture system at 3 different stroke rates. Ankle, Knee, Hip & Trunk angles at catch and finish positions were measured. Simultaneously, foot forces were recorded using an instrumented foot stretcher system fitted onto the footplate of the ergometer and peak toe & heel forces were measured. Statistical analysis of the data was done.

Results

As the stroke rate increased, the rowers showed lesser knee flexion and ankle dorsiflexion at catch phase. Peak toe forces and Peak total foot forces increased with increasing stroke rate. There were no significant differences found in the other kinematic and kinetic variables.

Conclusion

This study suggests that change in stroke rate can affect rowing biomechanics which can affect performance and possibly carry injury risk. Further studies are required to determine other biomechanical factors which can affect rowing performance and injury.

Keywords

Rowing, Kinematics, Kinetics, Training, Biomechanics, Performance.

Can High-Intensity Interval Training be an Effective Intervention for Non-Communicable Diseases?

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High incidence and prevalence of non-communicable diseases (NCDs), increasing obesity and inactivity, as well as rising health expenditure represent a set of developments that cannot be considered sustainable, and will have dire long-term consequences. Despite the massive evidence that aerobic type of exercise has been clinically proven to be cost effective intervention that could delay and in many cases prevent the health burdens associated with many NCDs, such as cardiovascular disease, diabetes, high blood pressure, many different types of cancer, asthma, arthritis, osteoporosis and Alzheimer's disease, however, epidemiological data still shows that majority of the adult population still fails to meet the recommended physical activity levels especially in the treatment of NCDs. Lack of time, including "quite boring" is often cited as failure to participate in regular endurance type of exercise, which is often time-consuming but an effective therapy for NCDs. Hence, high-intensity interval training (HIIT), which has been defined as either repeated short (<45 s) to long (2–4 min) bouts of rather high (not maximal) intensity exercise, or short (≤ 10 s, repeated-sprint sequences) or long (20–30 s, sprint interval session) all-out sprints, interspersed with recovery periods of rest or low-intensity exercise, making a person able to reengage in high-intensity exercise, has been introduced as an alternative form of exercise regime. These "high intensity intervals", when repeated several times, maximizes the training stimulus, as it is the accumulated time in the high intensity exercise zone that is believed to determine the outcome of the training. Therefore, HIIT provides time-effective cardiovascular and metabolic benefits that are similar if not greater in magnitude that those achieved with regular continuous aerobic exercise. HIIT can also easily be modified for people of all fitness level and medical conditions. This presentation will provide insight on the benefit of HIIT as an effective intervention in the management of NCDs.

Clinical outcomes and functional change with exercise training in Heart Failure with reduced ejection fraction (HFrEF) Patients.

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Exercise training has been shown to improve functional capacity. A review of the literature yields valuable information related to the effects of exercise training in CHF patients. However, improved survival in CHF patients is yet to be evidenced in spite of advances in drug therapy and exercise training. It has been speculated that the lack of evidence of improved survival could be due to poor implementation of current guidelines as well as sub-optimal exercise programming. Therefore, this body of work has been designed to address and explore some important issues in improving prognosis in heart failure patients and attempt to establish the optimal exercise protocol which should be individually tailored to patients. This work seeks to add to the evidence-base of safe and practical guidelines for the implementation of exercise training in heart failure (HF) patients. Intuitively higher exercise intensity is considered higher risk for serious events, but intensity may be the primary stimulus for physical adaptation. Seventy-three studies were included, producing 75 intervention groups; eight (10.6%) were high-, 38 (50.6%) vigorous-, 24 (32%) moderate- and five (6.7%) low- intensity groups, providing a total of 3,245 exercising subjects and 2,612 control subjects. Peak VO_2 increased by a mean difference of $3.33 \text{ ml.kg}^{-1}.\text{min}^{-1}$ (95% C.I. 0.53 to 6.13, $P=0.02$) with high intensity training in exercise groups versus control, equating to a 23% improvement from baseline. The corresponding data for vigorous intensity was (MD) $2.27 \text{ ml.kg}^{-1}.\text{min}^{-1}$ (95% C.I. 1.70 to 2.84, $p<0.00001$) with an 8% weighted mean; moderate intensity (MD) $2.17 \text{ ml.kg}^{-1}.\text{min}^{-1}$ (95% C.I. 1.34 to 2.99, $p<0.00001$) with a weighted mean of 13%; and low intensity $1.04 \text{ ml.kg}^{-1}.\text{min}^{-1}$ (95% C.I. -2.50 to 4.57, $P=0.57$) with a weighted mean of 7%. In 122,645 patient-hours of training, not one death was directly attributable to exercise. Our data suggest high-intensity exercise, achieving at least 460 Kcal weekly energy expenditure may elicit greatest changes in cardio-respiratory fitness, which is accompanied by lower study withdrawal in exercising patients.

ORAL FP S3-03

Analysis of physical activity in Lao people using 24-hour recall method

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Background

The 24-hour recall method is realistic and can be used to measure various variables (such as leisure activities, work activities, duration, intensity, frequency, calorie consumption estimation, etc.). It is easy to create, quantifiable, and relatively inexpensive.

Purpose

The purpose of this study is to analyze the physical activities of Lao people using the 24-hour recall method. These results will be useful as a basic data to identify the cause of the physical activity that the chronic disease rate of Lao people is increasing. Method: The subjects of the study were a total of 92 persons, including 45 adult males and 47 adult females aged 40 to 59 living in urban and suburban areas of Laos. Physical activity was divided into sleeping, lying down, sitting (floor), sitting (chair), clerk, walking, running, cycling, motorcycle, sports and leisure. Total energy consumption was calculated by energy consumption by activity x weight x time spent

+ resting metabolism (same as basal metabolism) x activity coefficient + SDA. The basal metabolic rate was calculated using the formula proposed by the Korean Nutrition Society (2005). Specific dynamic action of food (SDA) was calculated as 10% of the sum of basal metabolism and activity metabolism.

Result

Lao men were the most sleep (33.1%), followed by sitting (31.5%), walking (12.8%), and clerk (11.7%). Lao women were the most sleep (34%), followed by sitting (32.3%), walking (12.3%), and clerk (11.5%). Laos women were 0% in running and sports. The average basic metabolism of Lao men was calculated as 1566.5kcal in their 40s and 1401.9kcal in their 50s. The average basic metabolism of Laotian women was calculated as 1309.6kcal in their 40s and 1294.2kcal in their 50s. As a result of the calculation, the estimated energy requirement of Lao man is 2,703.9kcal, and total energy consumption is 2,636.7kcal. Lao men showed lower total energy consumption than estimators. The total amount of energy consumed of Lao woman was 2,191.7kcal, and the estimated energy requirement calculated by the formula was 2,352.6kcal. On average, women in Laos spend about 160kcal less.

Conclusion and suggestion

The Lao people were sleeping for an average of 8 hours, sitting for 8 hours, standing for 3 hours, and walking for 3 hours. However, there was no exercise or sports activity. When assessing a good physical activity level for a chronic disease, a cardiovascular risk factor, all physical activities above the moderate level should be included. Therefore, the Lao people can conclude that more than moderate physical activity is needed.

Keywords

Laos, 24hrs recall, Physical Activity, Chronic Diseases.

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Estimating Body Fatness in Children and Adolescents

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Aims

Body fatness represents a fundamental issue in both physical performance and health. In sports with weight categories - like boxing and wrestling - it is important to minimize body fat percentage (F%) in order not to compete with stronger opponents. In other sports - especially where running and jumping are involved - to maximize strength-to-weight ratio gives athletes a competitive advantage. Further, a high F% is correlated to increased cardiovascular risk. Nonetheless, to measure body fat accurately is expensive and complicated. For these reasons, several proxies have been proposed. The most widely used is probably the body mass index (BMI). Unfortunately, BMI is not accurate. The aim of this study was to assess the accuracy of a new anthropometric model for body fat estimation.

Sample and method

The following data were collected in a sample of 2053 male Russian children and adolescents: age, height, weight, waist and chest circumferences, triceps and subscapular skinfold thickness, volume and frequency of physical activity. F% was calculated by means of skinfolds. Body mass index (BMI) and waist2-to-chest (W2C) were used to estimate F%. Different data mining techniques were used to identify overfat individuals and cut-off values.

Results

BMI and W2C were significantly ($p < 0.01$) correlated to F%. Correlation diminishes as age increases. Also increased physical activity seems to diminish correlation, especially for BMI. Data mining produces good classification accuracy ($> 80\%$).

Conclusions

Rule-based algorithms proved to be effective means of knowledge discovery. New cut-offs were found inductively in the data and the new anthropometric index improved both prediction and classification (as either normal or over fat) accuracy. Results suggest the benefits of a data-driven approach to body fat assessment. The methodology can be easily and cheaply applied on the field by sport practitioners, trainers and physicians.

The Correlation Between Health ,The Physical Strength and Physical Activity of Elderly People who Participated in Health Promotion Service of the local sponsorship

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Background & Aim

The purpose of this study was to examine the body composition, morphometry (girth / skinfold), physical strength, physical activity, for one and a half years for elderly residents living in the area. In addition, this study examined whether regular measurement effect on health promotion.

Methods

The area for our study was Kamisato, which located about 90km northwest of Tokyo. The ages of participants are 64 to 74 (10 males and 12 females). All participants were measured their body composition, body size and physical fitness tests in August 2016, January 2017 and August 2017. In addition, participants were measured physical activity with a pedometer, and joined regular exercise classes voluntarily. They also walked around by themselves and measured body composition measurement.

Results

The significant difference was not recognized between the body composition and the morphometry measurement time, and the BMI remained within the normal range. There was a gender difference in the change of waist and abdominal subcutaneous fat thickness. In the physical fitness test, both males and females improved significantly in 10 m faster steps. The participation rate of measurement decreased from the first time to the third time.

Conclusions

Their BMI was maintained but it is necessary to observe BMI sequentially. Because of the issue of the slimness for the elderly people as in recent years. From the result, this study suggested that voluntary walking and regular measurement effected on health promotion. However, future study could devise a method to increase measurement participation rate.

Key words

health promotion, voluntarily activities, walking, body composition, elderly people

The Fitness Level of Normal Weight Obesity patient (NWO) in a Sport Health Screening Program in Ministry of Higher Education

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Background and Aim

Normal-weight obesity (NWO) has recently been identified among normal-weight subjects whose amounts of fat stores (body fat percentage) are above the WHO recommendations. Despite their normal BMI, this group of people carries a significantly high risk of developing metabolic syndrome, cardio-metabolic dysfunction and high mortality. NWO is often overlooked as this group of people perceive themselves as healthy in view of their normal BMI. Up to date, there has been no research conducted to find the incidence of NWO in Malaysia and to know their fitness status. Therefore, this study is designed to show the cross-sectional incidence of NWO in a public sports health screening and to assess their fitness level.

Methodology

A cross-sectional study was conducted during a sports health screening program organized by ministry of higher education. All volunteers were assessed by trained medical officer for anthropometric measurement (Height, Weight, BMI, Body fat percentage) and their fitness level were evaluated by using 3 minutes step test (YMCA protocol) and Body Impedance Analysis(BIA) fitness score. All data was analysed and reported

Result

A total of 82 participants volunteered and consented for medical check-up and fitness testing. Total of 27 participants were identified to be under NWO group. From the BIA fitness score, 66.7% has normal and 33.3% has good fitness score. However, from YMCA step test, 42.3% has very poor fitness score, 23.1% was poor, 19.2% was below average, and 3.8% was in average, above average and excellent group. 3.8% didn't managed to complete the fitness test.

Conclusion

There is a significant number of NWO patient in public, and despite having normal BMI, they have high fat percentage, and low fitness score.

Keyword

Obesity, YMCA, BMI, Anthropometry, Fat

Effect of Resistance Training on Blood Glucose, HbA1c and Muscle Strength among diabetic patients: A Systematic Review and Meta- Analysis.

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Background and Aim

The occurrence of diabetes mellitus type 2 around the world is rapidly increasing. Numerous studies have been carried out to test the effectiveness of certain medication and exercise intervention in managing diabetes mellitus. Current meta-analysis and systematic review aimed to define the effectiveness of resistance training intervention in managing glycemic profile and improving muscular strength among diabetic patients.

Methods

The literature search was performed in PubMed, ScienceDirect and Scopus to identify studies that monitored the effects of resistance training on diabetic patients that were published between January 2002 and December 2016. The studies are selected based on the subjects, exercise intervention, and studies outcomes. Studies included in current meta-analysis determined the effects of resistance training on blood glucose, HbA1c and muscular strength among diabetes type 2 patients.

Data collection and analysis

Mean differences and standard deviations of blood glucose and HbA1c and standardized mean differences and standard deviations of muscular strength in pre and post intervention measures of studies in intervention and control groups were analysed. Fourteen studies with 1212 diabetic patients were selected in this meta- analysis. Resistance training showed a significant improvement in HbA1c -0.11% (95% confidence interval = -0.19, -0.02; P = 0.01) and blood glucose -0.58 mmol/L (95% confidence interval = -1.12, -0.03; P = 0.04) as compared to control group. Resistance training also showed a significant improvement in standardized mean difference of muscular strength as compared to control group (1.15, 95% confidence interval = 0.93, 1.37; P<0.00001) and aerobic training (0.66, 95% confidence interval = 0.45, 0.86; P<0.00001).

Conclusions

The findings show that resistance training is as useful as aerobic training in managing glycemic profile and improve muscular strength among diabetic patients.

Keywords

Resistance training; Type 2 diabetes mellitus; Blood glucose; Glycated hemoglobin A; Muscle strength

ORAL FP S3-08

How to get patients active – when buying a Fitbit is not enough.

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Australasian College of Sport and Exercise Physicians

The world, and particularly, South East Asia, is in the grip of a growing obesity epidemic. With many countries now having more than half of their population overweight or obese and childhood overweight and obesity rates approaching 25%, the prevalence of chronic disease in these populations is also occurring earlier and at an alarming rate. Regular physical activity, as per the WHO guidelines is one of the most powerful weapons we have in the fight against this growing health burden, and we must all educate and encourage, particularly the inactive members of the community to increase their activity rates safely.

Education and encouragement alone, however, will not lead to greater physical activity rates. Physical activity plans must be multi-faceted and we must aim to incorporate emerging technologies and the social and environmental aspects of humanity to improve how our communities move. As much as 15 minutes a day of physical activity can add three years to our lives. Even better, this will be at least 3 years of higher quality, healthier living that all can benefit from, including our straining health systems, that need to embrace exercise as the wonder drug it is.

Physical Fitness in Morbidly Obese Primary School Children

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Background & Aim

Morbidly obese population is concurrently rising in Malaysian population. Morbidly obese is defined by Body Mass Index (BMI) value of more than 27 kg/m³ or BMI for age (z-score) of > +3 standard deviation scores (SDS). It is assumed that with morbid obesity, the physical fitness of the individual would decline, as per shown in adult population study. This study was conducted to determine the correlation between the physical fitness and the body compositions in the morbidly obese primary school children.

Research Designs and Methods

248 morbidly obese school children, age between 9 to 11 years old participated in the study with written informed consent from the guardians and assent consent from the children. The BMI corrected for age based on WHO classification (BMI z-score) was calculated by measuring weight and height using stadiometer (SECA, Germany) and weighing scale (TANITA, America) and keying in the result in anthropometric calculator software (provided by WHO). The participants then underwent body composition measurements (body fat percentage and muscle mass) using BIA (Inbody 770, South Korea). Physical fitness was measured by modified Harvard Step Test. Each participant stepped up and down a step box (30cm X 42cm X 38cm) for 5 minutes guided by a metronome beating at 120 beats per minute. A series of heart rate was recorded at 1-minute, 2-minute and 3-minute post-test using pulse oxymeter (Nonin Go2 Achieve, America). The physical fitness score (PFS) was calculated by the formula: (Total of post exercise heart rate/Duration of exercise X 100) and then categorized them according to their PFS i.e.: ≤55 as poor, 55-64 low average, 65-79 high average, 80-89 good, and ≥90 is excellent.

Results

Among the morbidly obese participants, 16.5% had low average PFS, 82.3% high average PFS and 1.2% had good PFS respectively. None of the participants had poor or excellent PFS. The mean PFS was 68.30. The Pearson correlations of PFS with morbidly obese body components were -0.085 for height, -0.114 with weight, 0.002 with BMI for age, -0.064 with fat percentage and -0.081 with muscle mass. All these results were not significant.

Conclusion

Physical fitness has weak correlation with height, weight, BMI for age, percentage body fat and muscle mass, however all these value were not significant.

Keywords: Obesity, morbid obesity, physical fitness, children

ORAL FP S3-10

The lack of knowledge of physical activity and its impact on health amongst Singapore and UK undergraduate medical students

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Aim

With rising levels of physical inactivity globally, there is an increasing need to promote physical activity (PA) to patients. Nevertheless, levels of PA counseling remain low due to barriers such as a lack of knowledge, education and information. This study aims to evaluate the knowledge of WHO PA guidelines and the understanding of the impact of PA on health amongst Singaporean and UK undergraduate medical students.

Methods

Students from six undergraduate medical schools from Singapore and the UK were invited to complete a fourteen-item survey. They were from the National University of Singapore, Yong Loo Lin School of Medicine, the Nanyang Technological University of Singapore, Lee Kong Chian School of Medicine, and the Universities of Cardiff, Leicester, Oxford and Birmingham. The survey assessed their knowledge of WHO international PA guidelines and understanding of the impact of PA on health.

Results

633 (14.3%) medical students completed the questionnaire. Students believed that PA was important in preventing disease (95.1%), but less important in treating disease (70.9%). Smoking (37.4%) was identified as the most significant health risk factor, followed by obesity (31.4%) and physical inactivity (11.1%). Comparing Singapore and the UK, students' understanding of the impact of PA on health did not differ significantly.

Meanwhile, general understanding of WHO international PA guidelines was poor - more than half (53.2%) of students were unable to provide at least a single correct response. Only 3 students (0.47%) identified more than one way of accumulating the recommended levels of PA for adults aged >18. Familiarity with guidelines amongst Singaporean and UK students did not differ significantly.

Conclusions

There is room for improvement in the knowledge of PA guidelines and the understanding of PA's role in health. PA education should begin during the undergraduate phase so that future doctors are more comfortable with providing advice to patients.

ORAL FP S4-01

Elite Sports Conditioning

Mariko Nakamura
Japan Institute of Sports Sciences

Athletes repeat exercise training and match/race and they are exposed to intense physical and psychological stresses during competition season. For example, football players are supposed to play 3 matches in 7 days in the Summer Olympic Games, thus having only 3 days (72 hours) of recovery between the matches. Excessive stress from exercise training and competition might lead to impairment of the athletes' physical conditions. To prevent the development of an overtraining and underperformance, it is essential for athletes to monitor and evaluate their daily change in physical condition. In general, athletes' physical conditions are evaluated and examined from both of external and internal factors that affect the condition of athletes. External factors are shown by external load such as total running distance, acceleration and deceleration during the match. Internal factors are shown by internal load include objective indicators obtained from subjective condition (assessed by visual analogue scale; VAS), physiological and biochemical data. Moreover, non-invasive measurements are useful for assessment of the athletes' physical conditions. Experimental evidences suggested that measurement of salivary hormones (e.g. cortisol, dehydroepiandrosterone sulfate (DHEAS), and salivary secretory immunoglobulin A (SIgA)) and heart rate variability might be useful in evaluating the athletes' physical conditions. In this session, we will introduce the data verified about the physical condition evaluation of the athletes during the competition season by using non-invasive measurements tool such as salivary hormones and heart rate variability by the Japan Institute of Sports Sciences.

ORAL FP S4-02

Heat Adaptations: Implication on Exercise Performance

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The detrimental effect of heat stress on endurance exercise performance has been well documented. The combination of heat production in the working muscle and a reduction in heat loss capacity due to high humidity such as in the tropics leads to an exacerbated rise in body temperature. Human has a remarkable ability to adapt to heat stress. These adaptations include improved thermoregulatory sweating and cutaneous blood flow capacity. In addition, heat adaptation will result in reduced circulatory stress, enhance fluid balance as well as maintain a stable metabolism rate. While these adaptations enhance tolerance to heat stress, it also improved aerobic exercise capacity. Recent studies have demonstrated training in the heat increases aerobic exercise capacity by increasing circulatory functions and metabolic responses. This presentation will discuss how heat adaptation potentially enhances endurance exercise capacity.

ORAL FP S4-03

Kinematics, Kinetics and Metabolic Responses for Performance Monitoring in Strength and Conditioning

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Exercise and training program prescription is a longitudinal and continuous process. It is suggested that the prescribe program's effectiveness and correction measures should be based on systematic assessment done from time to time. This assessment is the foundational basis for performance monitoring in strength training and physical conditioning program. This presentation will describe applied kinematics, kinetics and metabolic responses assessment and output interpretation for the purpose of physical performance monitoring. Discussions based on research findings will be presented, especially on how coaches and trainers able to utilize kinematics assessment to assist technical and skills aspects; kinetics assessment for strength monitoring; and metabolic assessment for metabolic capabilities.

Heart Rate Values during Shooting as a Performance Gauge in Indian Archers: Elementary Findings

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Background & Aim

Various researchers have correlated heart rate during different archery shooting phases with the performance scores. An elementary study was conducted among Indian archers of a Sports Institute with an aim to objectively assess training status and performance in the field.

Methods

Twelve archers including 3 of Elite Recurve, Elite Compound, Non-elite Recurve and Non-elite Compound archers with a mean age of 23.8 ± 2.39 years and sports age of 9.2 ± 3.46 years volunteered and shot 30 arrows each (n=360) in a standard Indoor Archery hall. Concurrent recording of heart rate, score, and arrow shooting was done. Kinovea Slow motion analysis was used to identify the release frame, heart rate values during release (0s), every second for 5 seconds before and after the release of the arrow (11 time-points) and were analyzed. Kruskal-Wallis One-way ANOVA test and Friedman's Two-way ANOVA test were used for between groups and within group differences in heart rate values at 11 time-points respectively.

Results

Mean heart rate values at total 11 time-points between groups namely Elite compound, Elite Recurve, Non-elite Compound and Non-elite Recurve archers showed significant differences ($p < 0.0001$). Heart rate values at score 8 were higher than score 9 and 10. Friedman's test showed Mean heart rate value decreased significantly from -5s to +2s and increased further within each group ($p < 0.0001$)

Conclusions

Indian archers, irrespective of performance level and type of archery, exhibited a specific deceleration pattern in heart rate values during shooting. Elite archers tend to have significantly lower mean heart rate values than their non-elite counterparts and HR values of the lower score were higher compared to a higher score. The elicited change in the trend of heart rate values can be used as a field performance gauge for training archers.

Keywords

Heart rate, Performance, Archers, Archery, Arrow

Effects of High Intensity Short Duration Youth Soccer Fatigue Simulation on Muscle Strength Imbalances Markers of Anterior Cruciate Ligament Injury Risk

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Background

Hamstrings and quadriceps strength impairment during fatigue were previously identified as a possible risk factor for anterior cruciate ligament (ACL) injuries in soccer. This study aimed to investigate the effect of a newly developed high-intensity short duration Youth Soccer-Specific Fatigue Simulation (YSFS5) on muscle strength markers of ACL injury risk.

Method

Thirty-one (n = 31) healthy recreationally trained male youth soccer players (age = 16 ± 0.8 years; height = 167 ± 0.1 cm; mass = 54 ± 8 kg) completed a 5 minute of YSFS5. Before fatigue simulation (time 0 min), immediately following simulation (time 5 min), after 15 min of passive rest (time 20 min) and after 30 min of passive rest (time 35 min) players performed five maximal dominant-limb isokinetic contractions for concentric quadriceps (Qcon), concentric hamstrings (Hcon) and eccentric hamstrings (Hecc). A one-way repeated measures ANOVA was used to identify significant differences over time, with $\alpha=0.05$.

Result

A significant reduction in Qcon and Hecc were observed at time 5 min compared to pre-simulation values. No significant changes were observed in Hcon, conventional and functional HQ ratio.

Conclusion

Reduced eccentric hamstring strength and concentric quadriceps muscle suggested a greater risk of ACL injury during fatigue in youth players. Injury screening by utilizing fatigue simulation may be more effective in identifying increased ACL injury risk in youth soccer players.

Keywords

youth soccer, fatigue, eccentric

The Relationship Between Unilateral Dominant Limb Muscle Strength and Functional Stability in Recreationally Trained Soccer Players

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Background

Evidence has demonstrated the importance of muscle strength and stability which contribute a significant role in improving performance and reducing the risk of sport related injury. However, whether there is a relationship of these components in the dominant limb is still unclear. The main aim of this study was to describe the degree of relationship between muscle strength and functional stability of the dominant limb among recreational soccer players.

Methods

Thirty-one recreational soccer players (n=31) (mean \pm SD; age=22.9 \pm 0.97 years; height=167.3 \pm 17.9 cm; weight = 62.1 \pm 7.7 kg; BMI= 21.3 \pm 2.3) performed two different test to measure their dominant limb functional stability (stabilometer) and muscle strength (one-repetition maximum leg press).

Results

Pearson's correlation analysis revealed a low correlation among muscle strength and overall stability (r(31)= 0.037, p-value <0.005), anterior/posterior (r(31)= 0.016, p- value <0.005), and medial/lateral is (r(31)= 0.037, p-value <0.005) stability test.

Conclusions

These finding suggest the importance of performing unilateral exercises as a primary consideration in prescribing an injury prevention program.

Keywords

muscle strength, functional stability, soccer

ORAL FP S4-07

Effects Of A 6-Week Plyometric Training On Cardiovascular Endurance Performance In Silat Olahraga Athletes

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Background & Aim

The effectiveness of plyometric training towards achieving certain goals in sport achievements is the reason why it was applied in the exercise training program in all sports. The effectiveness of plyometric training to improve muscular strength have to be prove as a demand exercise training in combat sports, instead of normal conventional combat sports training alone. The aim of the present study was to investigate the effect the 6-week of plyometric training on cardiovascular endurance in *silat olahraga*.

Method

Thirty-four ($n=34$) male *silat olahraga* athletes who have less than 2-years' experience (mean age 14 ± 3.22), mean weights (42 ± 10.89 kg), mean heights (148 ± 8.792 cm) were randomly assigned into two group after underwent a pre-intervention test. Seventeen athletes ($n=17$) in the experimental group were participated in the conventional *silat* workout routine and the plyometric training. The conventional *silat* workout routine for the experimental group were set up for 3 times a week for 1-hour session and the plyometric training were set up for 2 times a week for 1-hour session. The control group ($n=17$) was only performed the conventional *silat* workout routine for 3 sessions per week, for 1 to 2-hours session. The cardiovascular endurance was measured by the Yoyo Intermediate Endurance Level 1 (Yoyo IE1). The test involved of continual 20-m shuttle runs back and forward between the starting, turning and finishing line at a gradually increased speed orderly by audio bleeps from a cd recorder. Participants' performance in the yoyo IE1 was defined as the maximum distance covered. The subjects were required to attend the pre-test on a week before the intervention for pre-test session, mid-test on the third week of the intervention training, and post-test session on the end of intervention week.

Results

The repeated measure mixed between-within ANOVA was utilized to analyze the results. End of the 6-week intervention, the results revealed that athlete's cardiovascular endurance performance achieved a significant difference ($p<0.05$) on all test except between mid-test to post-test session on the observation in the experimental group. The mean score on the total meter covered reported by the experimental group was at 1150.59 ($SD = 535.26$) on the pre-test, 1416.47 ($SD = 600.17$) was reported on the mid-test and 1583.53 ($SD = 678.09$) was reported on the post-test. The improvements in the experimental group was reported at 2.6% between PRE and MID were witnessed. Results constantly increase between PRE and POST, by 4.3%.

Conclusion

Based on the results of the present study, plyometric training program was determined very effective to enhance the cardiovascular endurance performance in *silat olahraga*. This positive finding proved the efficacy of plyometric training on the cardiovascular endurance on the *silat* athletes.

Keywords

Plyometric training, Combat sports, Cardiovascular Endurance.

ORAL FP S4-08

Balanced Resistance Training Program – an overlooked issue?

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Resistance training has gained a solid ground in the training for high performance sports, health and general wellbeing. It is also universally accepted to assist in realizing optimal performance potential in sports. Sports performance outcomes must be balanced with injury prevention and health optimization. Precise exercise prescription based upon sound principles would yield positive acute changes and long-term adaptations. Programs designed must fulfill to the specifics of the needs of the sports and individual complexities. On the other hand, exercising without conforming to sound guidelines may not only be a wasteful effort but may invite injuries and serious physiological implications. It is a challenge to design and implement a simple and practical program for individuals which can provide the proper amount of physical and physiological stress to attain maximal benefit with the lowest risk. The task at hand is to ensure 'balanced' development of the whole body; from the perspective of strength ratio and symmetrical balance.

Importance of self-monitoring of physical activity and other health conditions

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Physical activity (PA) accounts for approximately 30% of total energy expenditure and the most variable component. PA consists of exercise and non-exercise activity thermogenesis (NEAT). NEAT is much larger than that of exercise-induced energy expenditure, and varies substantially between individuals. Accelerometers are objective, small, non-invasive tools for measuring PA intensity. Most NEAT is non-locomotive activities (Ohkawara et al., BMC Res Notes, 2011), and NEAT, especially NEAT due to non-locomotive activity, is difficult to measure under free-living conditions (Matthews, Med Sci Sports Exerc, 2005; Hikiyama et al., J Phys Act Health, 2012). As a result, most accelerometers for consumers and even for researchers tend to underestimate total energy expenditure in free-living conditions (Murakami et al., JAMA Intern Med, 2016). Accelerometers can be used to study patterns of activity across time. New generations of accelerometers will provide information on body posture and activity recognition to allow objective assessment of subjects' habitual activities. Accurate estimation of sedentary behavior and the breaks is important also, because many people spend almost 10 hours/day in sedentary behavior and sedentary behavior has an independent influence on obesity and morbidity. Based on such development, new strategies for the treatment of diabetes is now required. It is widely accepted that behavioral changes play an important role for the efficacy of treatment and patient-education of lifestyle-related diseases such as diabetes. With the technological advent of internet of things (IoT), several recent studies showed that the activation of self-monitoring using IoT can accelerate behavioral changes related to exercise and diet, leading to the improvement of glycemic control. In Japan, a large-scale RCT is starting to investigate whether the improvement of both behavioral changes and glycemic control could be achieved by the intervention via messages which are generated based on the health-related information obtained from wearable devices.

Evolution of Information Technology in Sport

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The correlation between sports and Information Technology is indeed significant and of high impact. The realization of an idea is largely attributed to the ability of a researcher to deploy strategies to evaluate and gauge the actual performance of this idea. The field of computer networks encompasses a fundamental platform of governance for complementary embedded areas of research in sports. The graceful evolution and co-existence of Information Technology has also shown a tremendous impact on sports performance analysis strategies that are developed and deployed. Sports performance analysis strategies which have dominantly focused on measurement, analytical and simulation are constantly being enhanced and elevated to meet the evolving areas of sports. The wide spectrums of sports areas are imposing multiple pre-requisites in developing the performance analysis strategies. These include the abstractions of systems and their respective mapping to performance analysis methods such as Discrete Event Simulation, mobile applications, the Internet of Things (IoT), the attributes of components, the coherence of the multiple layers relevant to the domain, mobility preferences and other elements. Performance analysis in sports strategies need to engage into depicting these evolving features and strategies to represent them must always be pursued. This talk will discuss the evolution of the multitudes of Information Technology developed to furnish the world of sports.

From Rehabilitation to Sport Performance: An Approach of Neuro Physical Training

Stephen Chung
Recovery Science, DJO Asia Pacific

Many researches had shown that core stability is an essential elements for movement control in rehabilitation, injury prevention and sport performance perspective.

It is common for professionals to prescribe many core exercises and instruct patient how to improve movement control. However, challenges still remain on how to automate patient movement control. Some research had found that conscious level of movement control may put patient at more risk of re-injury.

Neuro Physical training is a new approach. The neuro aspect of this training adopts visual feedback of centre of pressure during training as an external focus target for patient to stay in target during functional movements. The visual feedback provides affluent information for movement control to facilitate neuro plasticity.

The physical aspect includes training on a motorized platform offering controlled perturbation to challenge patient's ability to remain stable on an unstable environment engaging core stability as well as offering challenges to proprioception system.

According to pathologies of patient or specific skills of various types of sports, different functional tasks could be trained using this approach to automate patient's movement control. Thus, improving patient's quality of life or reducing risk movement for injury prevention.

Keywords:

external focus, movement control, perturbation, neuro physical training

The Role of Platelet-Rich Plasma (PRP) and Hyaluronic Acid (HA) for Knee Osteoarthritis: A Systematic Review.

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Background & Aim

Knee osteoarthritis (OA) is a progressive disease and a leading cause of lower extremity disability among adult age more than 40 years. Over the last decade intraarticular hyaluronic acid (HA) and platelet-rich plasma (PRP) injections received a lot of attention among clinicians despite limited clinical evidence to support its use for knee OA. The aim of this study was to assess the efficacy of intraarticular HA and PRP injections on knee pain and functional outcome among patients with knee osteoarthritis.

Methods

A systematic review using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines was performed. A structured search strategy was used to identify randomized controlled trials (RCT), experimental and cohort studies that assessed the efficacy of PRP and hyaluronic acid in knee osteoarthritis treatment from 2010 to 2016. Methodology evaluation and data extraction were based on Cochrane Collaboration guidelines. Meta-analyses were performed using mean difference or standardized mean difference (SMD) as effect size. This review protocol was registered under the International Prospective Registry of Systematic Review (PROSPERO) National Institute for Health Research (Ref no: CRD42016037844).

Results

Seven (7) RCTs and one (1) cohort studies were included and analyzed. Meta-analysis at early follow up (2 to 3 months) showed no significant difference in functional score (SMD=7.9, $p=0.008$, $I^2=61\%$) between HA and PRP group. A significant improvement in pain score was observed in PRP (SMD=-1.82, $p=0.0001$, $I^2=83\%$) compared to HA. Significant improvements in functional scores; WOMAC (SMD=-23.3, $p<0.0001$, $I^2=95\%$), KOOS (SMD=3.93, $p=0.0004$, $I^2=87\%$) and IKDC (SMD=6.91, $p=0.0002$, $I^2=80\%$) and significant pain reduction (SMD=7.37, $p<0.009$, $I^2=9\%$) were reported in PRP compared to HA at 6 months. Only few studies showed significant superiority of PRP than HA in functional outcome (SMD=-5.92, $p<0.0001$, $I^2=92\%$) and pain score (-0.84, $p<0.0001$, $I^2=88\%$) beyond 12 months follow-up.

Conclusion

PRP showed superiority over hyaluronic acid on symptoms of pain and functional outcome among patients with knee osteoarthritis after 6 months with effects lasted up to 12 months. PRP does improve joint metabolism thus increase in cartilage synthetic activity and stimulate endogenous HA production

Keywords

Platelet-rich plasma (PRP), hyaluronic acid (HA), knee osteoarthritis.

Competing interest

None

High Grade Acromioclavicular Joint Distruption Reconstruction: A New Technique

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Background

Injuries to the acromioclavicular joint usually are the result of a force applied downward on the acromion. In Rockword types IV, V, and VI injuries, open reduction and internal fixation are indicated.

Aim is to offer patient with unstable ACJ distruption a stable fixation to allow early range of motion.

Method

40 year old gentleman with no comorbid, involved in a motorvehicle accident with direct impact to right shoulder. Physical examination revealed bony prominent over right ACJ and mobile distal clavicle. Xray shows right acromioclavicular joint is displaced > 100% with CC distance of 22mm and a gross separation between the clavicle and the acromion indicating Rockwood type V injury. Intraoperatively, the coracoclavicular ligament was reduced and reconstructed using 2 tight ropes consisting of 2 button and 2 Dog Bone. Both cortices of clavicle and coracoid process was drilled using cannulated drill. Wire loop was then pass through the cannulated drill and clip in to the slot of a Dog Bone Button. Slide the button to the base of coracoid process and flip the second button intraosseously to superior surface of clavicle. The AC joint was reduced and wire lope was tightened into knot. The acromioclavicular ligament was reconstructed using figure of eight anchor suture started with drill over acromion and lateral end of clavicle. Peg button with anchor suture was inserted and flipped intramedullary and the Peg Button was tightened up.

Results

Stable acromioclavicular joint reconstruction was achieved. Arm sling in 30° abduction was applied. Passive assisted ROM started early and continue with passive and active ROM exercises. Patient was able to regain pretrauma shoulder status with minimal pain over injury site.

Conclusions

Compared with single stand and double stands reconstruction, this new technique of ACJ reconstruction offer a more stable fixation which allow early range of motion exercises with less pain experience by patient.

Keywords:

Acromioclavicular joint distruption, reconstruction, early range of motion exercise, Rockword classification, Shoulder

Predictors of Lifting Performance Among Malaysian Men Paralympic Power-Lifters

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Background & Aim

Studies on lifting performance among men Paralympic powerlifters is limited. This study aimed to determine the predictors of lifting performance among men Paralympic power-lifters in Malaysia.

Methods

Data analysed for this study was extracted from a cross-sectional study conducted at the Kampung Pandan Sports Complex, during a Powerlifting Workshop and National Championship Circuit 1 from the 22nd to 27th of April 2016. Participants included national and state level power-lifters throughout Malaysia. A structured questionnaire was used to collect data on athlete's socio-demographic, sports participation history and medical information. All participants underwent a structured physical medical examination, anthropometric, upper body strength and handgrip strength assessments. In this study lifting performance was defined as the athlete's best lift performed during the championship. Data were analyzed using SPSS version 24.0. Data were analyzed descriptively and analytically. Predictors of lifting performance were determined through multiple linear regression modelling. Statistical significance was set at p -value <0.05 . This study was approved by the University of Malaya Medical Centre Medical Ethics Committee (MECID No: 20164-2361).

Results

A total of 43 men power-lifters participated in this study. Mean age of participants were 25.05 \pm 8.25 years. Majority of participants were and most had spinal cord injury (34.9%) or amputation of the lower limbs (30.2%). Most powerlifters participated at state (42.2%) or international (27.9%) level of championship; and trained four times a week (46.5%). Athletes' in higher weight category achieved higher best lift result. The predictors of lifting performance among men Paralympic powerlifters were level of participation and arm circumference.

Conclusion

Level of participation and arm circumference significantly predicts lifting performance among men Paralympic power-lifters in our study.

Keywords

power-lifters, lifting performance, paralympic, men, Malaysia

Competing interest

None

Navigating Emerging Biotechnology interventions in Sports and Exercise Medicine - Where Innovation Meets the Evidence and the Patient

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Background

With Sport and Exercise Medicine a relatively new medical specialty and a desire for our community to age healthier, longer and more active, the onus is now on Sport and Exercise Medicine practitioners and the multidisciplinary team to help the community achieve these goals. New advances in biotechnology have given hope to both practitioners and patients to be the magic bullet for degenerative musculoskeletal conditions such as osteoarthritis and tendinopathy. But whilst these emerging interventions show promise, the evidence base is yet to back these claims up. I will explore the history behind autologous interventions for such conditions including blood, platelet rich plasma, tenocyte implants and stem cell interventions for musculoskeletal interventions and the role and challenges the Australasian College of Sport and Exercise Physicians (ACSEP) has had in the evolution of these in current clinical management paradigms.

Methods

I will cover the recent research around the use of Platelet Rich Plasma and Autologous Blood Injections and Tenocyte implants for various musculoskeletal conditions.

I will also cover the development of the ACSEP Position Statement: The Place of Mesenchymal Stem/stromal cell therapies in Sport and Exercise Medicine.

Results

I will present the latest Systematic Reviews of all four interventions, as well as the latest update of the ACSEP Stem Cell Position Statement and the first Australian Commission on Safety and Quality in Health Care Osteoarthritis of the Knee Clinical Care Standard, released in mid 2017.

Discussion

I will discuss where these interventions, if at all fit into current musculoskeletal management paradigms and future directions for such interventions.

A Correlation of Quantitative Ultrasound (QUS) and Dual X-Ray Absorptiometry (DEXA) For Predicting the Diagnosis of Osteoporosis from Hip and Spine Bone

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Background & Aim

Osteoporosis is characterized by a reduction in bone density that is associated with increased risk of fragility fracture. Thus, bone screening important as an assessment of risk of poor bone health in large populations. Dual X-ray absorptiometry (DEXA) is the gold standard diagnostic technique. However, the cost is relatively high, and limited numbers of DEXA machines throughout most of the developing Asians countries because most of the machines are located in urban areas. Quantitative Ultrasound (QUS) may offer an alternative tool for early screening the risk of poor bone health. Aim of the study was to determine the efficiency of QUS in direct comparison with DEXA for bone mineral density (BMD) monitoring.

Method

Subjects had their BMD at the hip and spine measured by DEXA (Hologic Inc., Waltman, MA, USA) and left heel measured by QUS (Achilles Express II, GE Lunar Healthcare, Madison, WI, USA). Correlations between both devices parameters were calculated using Receiver Operator Characteristic (ROC) curves that were plotted for T-score and used to define cut-off points. BMD in hip area was applied as the standard for diagnosing osteoporosis ($T \leq -2.5$) and osteopenia ($T > -2.5$ and ≤ -1) by WHO criteria.

Results

T-scores for QUS classification for osteopenia and osteoporosis were -1.08 with areas under the ROC curves (AUC) of 0.72 and -2.5 with AUC of 0.713 respectively, at hip area (neck of femur). By multiple regression model, age, Indian ethnic, overweight of the body mass index (BMI) subjects were independent determinants of QUS T-score.

Conclusions

QUS was able to produce fair to good ROC equivalent characteristics for diagnosing osteopenia and osteoporosis when compared to DXA especially at hip area but not at the spine area and has been shown to be a useful tool for screening bone density in large screening population and in area with limited availability of DEXA.

Differences In Selected Performance Indicator Between Winning And Losing Team In Rugby Seven: Case Study On Vancouver World Rugby 7 Series

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Background & Aim

Performance analysis in sport is an objective way to quantify the improvement of sport performance. The aim of this study is to investigate the differences on selected tactical parameters between winning and losing team in rugby seven.

Methods

This study specifically attempts to analyze the selected performance indicators (successful ball carry, unsuccessful ball carry, successful pass, unsuccessful pass, effective tackle, ineffective tackle, successful ball rolling and unsuccessful rucking) between winning and losing teams.

Results

The paired sample t-test was used to measure the HSBC World Rugby Sevens Series Vancouver 2016/2017 with significant level is set at $p < 0.05$. Notational analysis was performed on a video retrieved from official website of world seven. The independent variable (IV) is representing the team which are win and lose team from the Vancouver rugby series whether suitable or not and for the dependent variable (DV) is the tactical parameters after each match. Total match analyzed is 35 matches and involved 16 teams, which compete in Vancouver rugby seven series 2016/2017. There are a significant differences between winning and losing team in successful ball carry ($p < 0.05$, $p = 0.012$), successful pass ($p < 0.05$, $p = 0.004$), effective tackle ($p < 0.05$, $p = 0.005$), ineffective tackle ($p < 0.05$, $p = 0.04$), successful ball rolling ($p < 0.05$, $p = 0.024$) and successful rucking ($p < 0.05$, $p = 0.021$). There are no significant different in unsuccessful ball carry ($p > 0.05$, $p = 0.162$) and unsuccessful pass ($p > 0.05$, $p = 0.244$).

Conclusion

Finding from this research will be suggested to coach to be implemented in training. Rugby seven is a technical sport, therefore, the training must be planned prior in order to achieve the target points. The performance analyst is required position for all technical games.

Keywords

Rugby 7, Tactical Parameters, Notational Analysis, Performance Analysis, Performance Indicator.

Attempt to Make an Appropriate Decision for “Return to Play” in Muscle Strain Injury.

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Background & Aim

Muscle strain injury, as we know it is one of the bothersome problems in whole sports injury as same as stress fracture and ligament tear in extremity from their frequency of occurrence. With the application of imaging techniques such as using MRI or ultrasonography, it has become possible to precise identification of location and severity of muscle strain injury. Conventionally, it was revealed that some of the muscle strain injury that conservative treatment was regarded as the first choice, such as disruption at the tendon attachment, also exist as indication for surgical treatment.

Even though the use of MRI in prediction of “return to play” and prognosis of muscle strain still remains controversial, we continue to observe a number of cases, believing that these are possible by performing precise MRI examination at an appropriate timing.

Methods

There were 1085 athletes who visited our clinic with chief complaint muscle pain or problems from 2001 to 2016. We had confirmed “muscle strain injury” as definitive diagnosis for 959 cases by using MRI which had examined immediately after injury. Consequently, we divided 265 cases muscle strain injuries to 3 types of location of injuries from their MRI findings; muscle injury has occurred at Type **I**= myofascial part or muscle fiber, Type **II**=intra muscular tendon or muscle tendon junction, Type **III**= insertion or attachment to bone, respectively. And evaluated their course of RTP retrospectively.

Results

The mean length of RTP were significantly difference in Types **I**, **II**, **III** which were 1.8 weeks, 5.8 weeks, 20.4 weeks, respectively.

Conclusions

In this session, we would like to introduce our further advanced newly classifications “typing and grading” to muscle strain injury.

Keyword

muscle, strain, MRI, RTP, classification

Changes in Markers of ACL Injury Risk During Fatigue: A Biomechanic and Isokinetic Investigation with Rehabilitation Implications

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A variety of risk factors can be attributed to the occurrence of non-contact anterior cruciate ligament (ACL) injuries in sport. Improper movement mechanics have been reported to place significant load on the ACL. Particularly, the notion of increased knee extension at initial contact and increased external abduction moments during initial weight acceptance have gained considerable support as markers of ACL injury risk. In addition, reduced eccentric hamstring strength and muscle strength imbalance between the hamstrings and quadriceps also has been recognised as a risk factor for ACL injury. Another important observation is that ACL injuries are most frequent during the latter stages of match-play and this suggests that fatigue may further increase the risk. The primary aim of this presentation was to investigate the effect of fatigue induced by match-play simulations on biomechanical and muscle strength imbalance markers of ACL injury risk, and to identify opportunities for rehabilitation and injury prevention programmes.

Platelet-rich plasma (PRP) for muscle injury: A randomised control trial (RCT) study protocol

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Background & Aim

Muscle injuries are one of the commonest injuries among athletes accounted for up to 50% of injuries sustained during sports events. Despite its frequent occurrence, the best treatment for muscle injuries is still not clearly defined. In professional sport, muscle injuries often lead to significant pain and disability causing loss of training and competition time. Despite various approaches used, the duration to return to sports (DRS) ranges from 6 weeks to never, with large variability based on severity of the injury. More recently autologous biological substances including platelet-rich plasma (PRP) received a lot of attention for its potential in accelerating muscle injury despite limited clinical evidence. Inconsistencies in findings between several studies could be attributed to lack of standardisation in study protocols. Therefore, more studies using a standard and robust clinical design are required to shed further light on PRP use for muscle injuries.

Methods

A parallel group, block-randomised, double blind, placebo controlled trial study will be conducted at the National Sports Institute of Malaysia from May 2018 – May 2021. Eligible participants diagnosed with grade-2 hamstring injury will be randomised into intervention group (PRP) and control (normal saline (NS)). Following ultrasound guided intralesional injection of either PRP or NS all participants are required to adhere to a standardised hamstring rehabilitation program supervised by a physiotherapist. All participants will be clinically assessed by a sports physician who is blinded to treatment allocation once a week. Participants will be allowed to resume their preinjury activities level once all the RTS criteria are met. Participants will be contacted via telephone monthly for the next six months following RTS. This study was approved by the University of Malaya Medical Centre Medical Ethics Committee (MECID No: 20166- 2533), National Sports Institute of Malaysia Research Committee (ISNRP: 002/2017) and registered under the National Malaysia Research Registry (NMRR-16-2266- 32005).

Keywords:

autologous biological, muscle tear, return-to-play, management

Competing interest:

None

Integrated Approach in Sports Injury Management

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High performance sport is governed by a diverse range of factors that influence an athlete's performance in training and in competition. The age-old principle of adaptation to overload still applies to the application of these physical, physiological, biochemical, psychological, and even spiritual and sociological elements that would make or break an athlete. The importance of recovery is often forgotten as the key element that allows that adaptation to be achieved. The periodisation of the training programme and how well the various elements and their respective intensities are applied is also of great importance, as are specificity and catering to individual needs and requirements ; even in team sports. The pursuit of small marginal gains that could well be the difference between victory and defeat is a complex endeavour that requires skillful balancing and adept management. Intelligent facilitation and intensive support towards the attainment of the athlete's peak performance requires that balancing act by a team of dedicated experts who would strive to measure progress and titrate further loads against the athlete's response. This is of paramount importance in enhancing performance and avoiding injuries in the pursuit of those marginal gains towards achieving victory.

The provision of sports medicine and sports science support services had already been introduced in earnest from the mid-1980's by the Sports Science Division of National Sports Council of Malaysia. Conceptualized initially as the National Sports Institute, via recommendations from a team of German consultants headed by Professor Helmut Diegel, it was placed under the organizational structure of the NSC when it was activated in 1982. It was strongly felt at the time that since the nation was lacking in the necessary local expertise, it would be best to start by sending Malaysians to study in sports science disciplines such as Physiology, Psychology, Nutrition, Biomechanics, Conditioning and Clinical Sports Medicine. The local staff would also benefit from the tutelage of foreign experts in psychology and physical conditioning, for example.

The development of this vital and critical area of the systematic and scientific preparation of athletes, was quite under-resourced from the outset but then took an upward turn in 1992 with Malaysia winning the bid to host the 15th. Commonwealth Games 1996.

The National Sports Institute (Institut Sukan Negara or ISN) initiative was revived but still placed under the NSC as a Division. In that reorganizational transformation, ISN gained two additional units i.e the Sports Library and the Coaching Development Unit. The sports science and medical services began to improve in terms of staffing and budget but still labored under the same ad hoc approach with separate and discrete Units running without the close coordination and continuous monitoring of the athletes in a collaborative fashion.

It soon became apparent that it was necessary to instill an *integrated multidisciplinary* approach that required the support services to be provided specific to the needs of the various sports and to even provide them specific to the needs and requirements of the individual athletes in those key sports that were targeted to garner medals.

A system that emphasized integration of all those key medical and scientific elements was set up in earnest in the wake of the Commonwealth Games and by the new millennium in 2000, was established as the philosophy and practice of providing the medical scientific services. The high performance support service was rapidly growing into its proper role as *central and core* to achieving an athlete's optimum performance.

It was quickly shedding its bridesmaid role, as previously regarded by the majority of the sports community and industry. This was indeed a paradigm shift.

To understand the positions and relationships between all the various components that serve the achievement of the athletes' best performance, it is imperative that the breadth and depth, and intensity of the application of the medical and scientific components, via principles of best practice and benefit of an evidential approach, be fully understood and accepted.

Ulnar Collateral Ligament Injury in Adolescent Pitcher

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Background and aim

The UCL is the primary stabilizer against valgus stress during the pitching motion. The UCL has three parts of which the anterior bundle may be subject to stresses of up to 2500 degrees/second leading to catastrophic failure. Current research indicates there are approximately 1.9 injuries per 1,000 athlete practice/game exposures. Pitching related injuries are relatively low; however 56-75% of injury requires time loss from the sport. Additionally 25% of pitching injuries require 10 or more days of time loss from sport. Based on MLB data 16% of all injuries are elbow related. Pitchers account for 25% of all elbow injuries. Current trends indicate 26% of secondary school pitchers are having UCL reconstructions. This case study presents a UCL protocol which resulted in successful rehabilitation.

Methods

The patient is a 16 year old professional prospect whom incurred a UCL injury and associated avulsion fracture. Prior to injury the patient's velocity was 143-149 km/hr. At point of injury both velocity and pitch location suffered dramatically. Imaging and physician diagnosis provide platform for treatment, rehabilitation and return to play.

Results

The graduated functional progression including increasing distance, number of throws, increases in velocity and location. Progression was quantified via radar gun, pitching coach monitoring of location, mechanics and pain free post exercise bout. Patient progressed from point of injury to pitching in simulated game conditions for MLB scouts in 4.5 months.

Conclusion

UCL reconstruction of Grade 2 and 3 tears results in 95% of pitchers returning to play within 2 years of injury. Research indicates 82% of patients using conservative rehabilitation return to play however only 33% of pitchers return to pre-injury levels. Surgical intervention may be avoided with conservative rehabilitation of Grade 1 UCL tears.

Enhancement Of Human Natural Killer Cell Activity By Probiotics

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Introduction

Supplementation of live beneficial bacteria has been found to promote health and reduce the risk of various diseases, and these beneficial bacteria are now called as Probiotics. Oral administration of some probiotics, some kampo and some mushrooms is reported to augment natural killer (NK) cell activity that plays critical role for immune surveillance against cancer and various infectious diseases.

Objectives

To investigate the mechanisms of NK cell activation by probiotics, we orally administered these materials to several strains of mice. And, human peripheral blood mononuclear cells were cultured in the presence of heat-killed *Lactobacillus casei* Shirota (LcS) under the several experimental conditions.

Results

NK cell activity was increased by the oral intake of the probiotics for 2 weeks in the wild type mice and the RAG-2 knock out mice that are impaired acquired immune cells, but not by the control ingestion. Probiotics-induced NK cell activation was almost completely reduced in interferon (IFN)-gamma knock out mice. Moreover, anti- interleukin (IL)-12 monoclonal antibody reduced the enhancement of human NK cell activity by LcS in vitro. Experiments using kampo, propolis and mushrooms also presented similar results in the mice models.

Conclusions

These results demonstrated that probiotics enhances NK cell activity depending on IL- 12 and IFN-gamma and acquire immune cells (T cells and B cells) are dispensable for this NK cell activation.

ORAL FP S7-02

Electrolytes Drink On Subsequent Endurance Performance In Healthy Thai Males After Glycogen Depletion.

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Background & Aim

To examine the effects of electrolytes drink on subsequent endurance performance, in concomitant with cardiorespiratory, blood chemistry, and metabolic variables.

Methods

Fourteen healthy males, ages ranged from 18-25 years old, voluntarily participated in 3 randomized trials, with 1 week apart. On each visit, three consecutive work-rest- work, including glycogen depletion exercise, recovery period and endurance exercise (cycling at 70% $\text{VO}_{2\text{peak}}$), were employed. During 2 hours recovery period, subjects were randomly assigned to three kinds of fluid intake including sports drink (SD, 10% carbohydrate, 0.16% electrolytes), placebo (PL, 10% carbohydrate); and plain water (WT). Time to exhaustion (TTE), work done, cardiorespiratory, blood lactate and glucose concentrations and metabolic variables were recorded.

Results

The results showed tendency of longer TTE in SD (52.93 ± 6.98 min) than PL (45.05 ± 4.47 min) and WT (37.95 ± 4.92 min), but significant difference was only observed between SD and WT ($p < 0.05$). Significantly higher work done under SD and PL ($p < 0.05$) compared with WT, significantly higher ejection fraction (EF) ($p < 0.05$) in SD than WT. Moreover, significantly lower minute ventilation under SD than PL ($p < 0.05$) and WT ($p < 0.05$). There was no difference in blood lactate, blood glucose among three groups.

Conclusion

It can be concluded that carbohydrate with electrolytes did not affect cardiorespiratory function, as well as blood chemistry profiles. However, additional electrolytes in sports drink tend to exhibit longer performance.

ORAL FP S7-03

Nutritional supplements and Doping

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Achievement of an athlete is dependent primarily on genetic endowment in athletes with morphologic, physiologic, psychological and metabolic traits specific to performance characteristics vital to their sport. Such genetically endowed athletes must also receive optimal training to increase physical power and enhance mental strength. However, athletes often attempt to go beyond training and use substances and techniques, often referred to as ergogenics. Modulation of dietary composition and/or supplementation with specific nutrients with the intent of improving physical performance is a working definition of nutritional ergogenic. Nutritional ergogenic can be classified as macronutrient (water, electrolytes, carbohydrate, protein and fats) and micronutrient (essential vitamins and minerals). Foods and pharmacological agents, such as carbohydrate, protein, creatine monohydrate, amino acids, vitamins, minerals have been used.

Creatine is one of the most thoroughly studied and widely used dietary supplements to enhance physical performance. Creatine is obtained from the diet in small amounts. It helps generate ATP and thereby supplies the muscles with energy, particularly for short-term events. *Beta-alanine*, during high-intensity activity, body accumulates hydrogen ions, causing a drop in your pH level, ultimately resulting in fatigue. Beta- alanine supplementation has been shown to increasing the body's ability to buffer hydrogen ions and delay fatigue.

Protein is necessary to build, maintain, and repair muscle. Adequate protein in the diet is required to provide for muscle-protein synthesis and to minimize muscle-protein breakdown, but consumption of protein supplements which contains androstenedione is an anabolic steroid precursor, that the body converts to testosterone aim induces muscle growth, is prohibited by World Anti-Doping Agency.

Consuming *ephedra* also known as ma huang, a plant native to China, contains ephedrine alkaloids, which are stimulant compounds also is prohibited by World Anti- Doping Agency

Anthropometric and Physical Characteristics of Malaysian Paralympic Power-Lifters

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Background & Aim

Anthropometric studies on Paralympic power-lifters have yet to be reported. The physical and physiological characteristics among Malaysian disable power-lifters are also limited. The objectives of this study were to determine the sociodemographic, clinical information and anthropometric physical parameters of Paralympic power-lifters in Malaysia.

Methods

A cross-sectional study was conducted at the Kampung Pandan Sports Complex, during a Powerlifting Workshop and National Championship Circuit 1 from the 22nd to 27th of April 2016. Participants included national and state level power-lifters throughout Malaysia. A structured questionnaire was used to collect data on athlete's socio-demographic, sports participation history and medical information. All participants underwent a structured physical medical examination, anthropometric, upper body strength and handgrip strength assessments. A resting electrocardiogram (ECG) was performed. Data were analyzed using SPSS version 24.0. Data were analyzed descriptively and analytically. Comparison between gender were performed using independent t-test for the physical characteristics and anthropometric assessments. Statistical significance was set at p -value <0.05 . This study was approved by the University of Malaya Medical Centre Medical Ethics Committee (MECID No: 20164-2361).

Results

A total of 52 powerlifters participated in this study. Mean age of participants were 24.50 ± 8.25 years. Majority of participants were men (82.7%) and most had spinal cord injury (34.6%) or amputation of the lower limbs (26.9%). Most power-lifters participated at district and state level championship and 42.3% had represented at international competitions. The median duration of powerlifting participation was 2.00 ± 3.75 years. An inverted T-wave were found in two power-lifters during ECG testing. Women powerlifters had higher amount of body fat compared to men ($p < 0.05$). Men power-lifters had significantly longer arm and forearm length, stronger handgrip strength and stronger non-dominant elbow flexion compared to women ($p < 0.05$).

Conclusion

Compared to men, women power-lifters had significantly higher body fat and lower handgrip strength and elbow flexion.

Keywords

power-lifter, anthropometric assessment, physical characteristics, Malaysia

Competing interest

None

The Effects of Chocolate Milk Ingestion During Recovery on Creatine Kinase, Lactate Removal and Soreness in Male Runners

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Background & Aim

A post-exercise beverage that can enhance recovery in short period is highly desired by athletes. This study was conducted to determine the effects of chocolate milk ingestion during post-exercise recovery on lactate removal rate, creatine kinase levels, rate of muscle soreness and fitness levels of amateur male runners.

Methods

Eleven university runners performed three sessions of incremental exercise test until volitional exhaustion followed by 2 hours of recovery period before performing a 2.4 km run test 24 hours later. In each session, mineral water (MW), carbohydrate beverage (CB) or chocolate milk (CM) was given to runners immediately after incremental test and followed by another 4 ingestions at 30-minute intervals. Blood was taken for lactate measurement once immediately after test and four times afterwards at 30-minute interval. Creatine kinase and muscle soreness were determined 24 hours after test before subjects assigned for 2.4 km time trials. Carbohydrate beverage and chocolate milk were isocaloric and provided 0.5 g carbohydrate/kg body weight in each serving. Results show CM as recovery beverage had significantly lower creatine kinase level than MW after 24 hours.

Results

CM runners recorded better muscle soreness rating and lactate removal rate as compared to MW and CB. However, there is no difference in 2.4 km time trial performance between all beverages.

Conclusion

This study shows chocolate milk can be considered as effective post-exercise beverage for faster recovery following an endurance exercise.

ORAL FP S7-06

Dietary intakes among UiTM Football Club Players.

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Background & Aim

Football was a game of strength, speed and skill, therefore, proper nutrition is extremely important for football players. However, players sometimes disregard the importance of nutrition, which can result in poor performance especially in the later stages of the game when deterioration in function can affect the match outcome and also the risk of injury. This study was carried out to investigate the dietary intake practices among Universiti Teknologi MARA Football Club (UiTM FC) football players. **Methods**

Participants of this study are UiTM FC football players (n=10) who were instructed to record a 3 day diet intake (consisting of 2 weekdays and 1 weekend day) in a Diet Diary Record. Nutrients analysis were carried out by using Diet Plus Software in comparison with Recommended Nutrient Intake (RNI).

Results

Energy intake of football players was 16% more than the recommended intake (RNI) (2849 kcal \pm 691.09). Majority of energy sources came from protein (118g \pm 32.67) which was 90% more than what has been recommended (RNI); and from fat (97g \pm 38.99) which was 21% more than RNI. Meanwhile the carbohydrate (373g \pm 92.67) consumption was 12% less compare to what have been recommended. The intake of refine sugar (150g \pm 119.37) was 64% higher from the RNI. Moreover the fiber intake (18g \pm 4.4) were 40% less than RNI. The intake of Omega-6 (14g \pm 8.67) was 26% less than RNI and Omega-3 (0.7g \pm 0.86) was 79% less than RNI. Meanwhile the intake for trans-fat (0.1g \pm 0.15) was 96% less than RNI.

Conclusion

Energy consumption of UiTM FC player exceeded the requirement set by Ministry of Health/ RNI. The specific macronutrient components which exceeded the RNI guidelines taken by the athletes included protein, fat, and refines sugars. While total carbohydrate and fiber intake shows that the athletes did not meet the RNI requirements.

Key words

Dietary intake, football player, energy, carbohydrate, protein

Energy Intake As Dominant Factor To Fitness Level Among Rugby Athletes At Universitas Negeri Jakarta

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Background & Aim

Rugby is a sport that requires good cardiorespiratory endurance. Intake of nutrients and physical activity are a few factors that can support fitness. Consuming adequate intake of nutrients can be a energy reserves so there will be no significant fatigue during daily tasks and low physical activity is one factor that can decrease the resistance of cardio respiratory.

Methods

This research used a quantitative research design with cross sectional study design. Population in this research is all university students KOP Rugby University of Jakarta with sample counted 25 respondents. Data analysis in this study used Pearson and Spearman test for bivariate test and Analysis Regression for multivariate test.

Results

The results from multivariate analysis showed that there is a relation between energy intake ($p=0.0001$, $r=0.702$), protein intake ($p=0.001$, $r=0.644$), lipid intake ($p=0.0001$, $r=0.656$), carbohydrate intake ($p=0.001$, $r=0.613$) with university student KOP rugby fitness.

Keywords

energy intake, fitness, macro nutrients intake, physical activity

Nutritional Status, Energy and Macronutrient Intake of Indonesian Elite Female Futsal Player

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Background & Aim

Adequate consumption of energy and nutrients is essential for body build and to optimize sports performance. Sufficient consumption of energy maximizes glycogen store. Futsal is a team sport often recognized as a mini-soccer or indoor soccer. However, futsal will be played in a smaller field size, has shorter periods of play and has no restriction in a number of substitutions. Such differences in rule influence physiological abilities required by players of different sporting events thus influence the nutrient intake as well. This study aimed to examine nutritional status, Energy and Macronutrient Intake of elite professional Female futsal players at Jaya Kencana Club Tangerang.

Methods

Anthropometric and dietary assessments using 24 Hours Food Recall were conducted on 14 elite female futsal players.

Results

On Average, all samples had 22.55 ± 4.2 kg/m² Body Mass Index with Percent body fat of $26.14 \pm 5.2\%$ and muscle mass 26.9 ± 2.5 . Energy intake among all samples were 1799.8 ± 194.2 kcal, Carbohydrate 272.4 ± 39.3 g, Fat intake 47.4 ± 7.4 g and Protein intake 67.10 ± 9.1 . There is significant positive correlation between Energy and macronutrient intake and Body Mass Index ($p < 0.05$), while there is negative correlation between Energy and carbohydrate intake with Muscle Mass ($p < 0.05$). And there is significant positive correlation between energy and macronutrient intake with percent body fat ($p < 0.05$).

Conclusion

This study suggests that increment of energy and macronutrient intake will increase BMI and Percent Body Fat, in the other hand the lower energy and macronutrient intake the greater Muscle mass.

Keywords

Energy, Futsal, Macronutrient, Nutritional Status

ORAL FP S7-09

Nutritional Knowledge and Practices Amongst Elite Junior Footballers in Singapore

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Background and Aim

Nutrition is important for sporting performance and recovery. Without sufficient education, elite athletes will be ill-equipped to optimise their sporting abilities. Previous studies considering nutrition in elite sports were based on non-Asian countries or were not specific to football (Manore *et al*, 2017; Folasire *et al*, 2015; Nazni *et al*, 2010; Montecalbo *et al*, 2015). Validated questionnaires with over 60 questions have been developed to determine nutritional knowledge, but are impractical to employ (Callela *et al*, 2017; Trakman *et al*, 2017). In Southeast Asia, football represents one of the most popular sports and there is increasing global participation amongst females (UEFA, 2015). This pilot study aims to assess the nutritional literacy and practices of female junior elite Southeast Asian football academy footballers.

Methods

Structured face-to-face surveys using visual pictorial resources were conducted with elite football academy players. Responses were documented by the research team to ensure accuracy. The questions focused on balanced diets, healthier cooking methods, and food groups.

Results

29 players (aged 12-16) were surveyed. 12 players (12/29;41%) felt they consumed a balanced diet but only 6 (50%) were able to correctly identify this on a chart. Overall, 16 players (16/29;55%) were unable to identify which meal represented a balanced diet. 19 players (19/29;66%) provided incorrect responses for healthier cooking methods. Only 2 players (2/29;7%) correctly identified examples within the different food groups

Conclusions

In general, there is inadequate knowledge about what constitutes a balanced diet, healthy cooking methods, and specific examples from food groups. This is concerning amongst developing athletes as they represent future talent pool. If this remains uncorrected, it is likely this will persist into adulthood and can subsequently lead to nutritional deficiencies. In turn, this may impair sporting performance, recovery strategies and lead to an increased risk of injury.

Keywords

Diet, Malnutrition, Soccer, Sports, Athletes

Psychosocial intervention strategies to enhance Injury prevention and Rehabilitation programs

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Background and aim

The aim of this article is to discuss the psychosocial intervention strategies used to enhance prevention of injury and rehabilitation programs. This article highlights the vital role of sport physicians in counseling injured athletes because they often represent the first line of defense in the identification of psychological conditions. Sports medicine experts are often viewed with respect, authority and trust Hence physicians are able to facilitate the treatment of the injury and the rehabilitation process more effectively. In order to understand the prevention and treatment of injuries , it is important to be aware of the precursors to sport injury

In addition, theoretical models contextualizing the sport injury, the motivational process underlying the recovery, and the influence of psycho social factors related to adherence to rehabilitation programs are discussed. Several psychological models have been proposed in order to contextualize the rehabilitation process following sport injury. For example, the bio psychosocial model (Brewer, 2009; Brewer, 2007) considers the factors influencing the rehabilitation process, and the intermediate and final outcomes of the rehabilitation. Secondly, cognitive appraisal models explain how cognitive appraisal is related to other psychological and contextual factors. Finally, stage models explain the stages of the athlete's psychological reaction to the injury, and how they are related to the phases of physical rehabilitation.

The second part focuses on the possible psychosocial interventions and their effect on injury prevention and the rehabilitation process. A variety of psychosocial interventions may be useful during the rehabilitation and in the re-entry period. The following types of interventions are described namely, educational interventions, goal setting, imagery, self-talk based interventions, biofeedback, and social support based interventions.

Key words

Sport, injury prevention, psychosocial rehabilitation, intervention

ORAL FP S8-02

DR ABCDE: The Application of Psychology in Sports, Health And Rehabilitation

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There has been a massive interest and considerable attention in the field of sport and exercise psychology. Sport and exercise psychology involves scientific study, theoretical background and the professional implementations of the psychological factors that are associated with participation and performance in sport, exercise, health and injury rehabilitation. The implementation of psychological elements by applied practitioners in (a) helping athletes use psychological principles to achieve optimal mental health and to improve performance (Cox, 2011; *Weinberg & Gould, 2007*), (b) understanding how participation in sport, exercise and physical activity affects an individual's psychological development, health and well-being (Acevedo, 2012; Lox, Martin Ginis, & Petruzzello, 2010) and (c) the advantages of incorporating psychological interventions into the rehabilitation process (Rees, Mitchell, Evans & Hardy, 2010) are also being highlighted. The psychology support service provided in the field of sport, health and rehabilitation is best described by using the acronym, DR ABCDE, which was represented by D = Distraction, R = Reaction, A = Acceptance, B = Belief, C = Control, D = Decide and E = Enjoy. Through the reflective practice presented in the case studies, it emphasized on the effectiveness and competency of DR ABCDE as a relevant approach to provide a conceptual framework for the psychology practitioner in administering suitable psychometric evaluation, implementing customized interventions through psychological skills and monitoring the program scientifically in ensuring ideal psychological state is maintained for producing optimal performance throughout the process.

Psychological Responses of Injured Athletes and Relaxation Techniques

Lim Boon Hooi

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Sport injuries threaten athletes' career and success. An injury does not affect exclusively physical capabilities, but also contextual and psychological aspects. An injured athlete will experience a range of stressors associated with the competitive and organizational environment. These stressors can be temporally defined across three phases of injury: onset, rehabilitation, and return-to-play. Athletes may experience similar psychological reactions similar to Kubler-Ross's FIVE stages of grief: Denial, Anger, Bargaining, Depression and Acceptance. Relaxation techniques such as breathing, progressive muscle relaxation, and meditation are useful strategies to help with emotional regulation and hereby promoting optimal healing and timely return-to-play. The new invented relaxation technique: Aqua Relaxation Technique will be another option to help the athletes to speed up the healing process by reducing pain and stress. Recommendations and practical application for the sport medicine professionals were presented at the end of this paper.

ORAL FP S8-04

The Power of Music: A Holistic and Innovative Method in Integrating Music into Health and Medicine.

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Researchers have suggested that music can be carefully selected to match the requirements of activities and characteristics of both individuals and groups, to produce significant impacts on performance enhancement and motivation. Also, music has been shown to have psychophysical effects of lowered perceived effort and arousal control, and improved affective states and synchronisation effects. There is increasing evidence to suggest that the “right” music, can lead to greater frequency, intensity, and duration of exercise behaviour and motivation, which could then lead to enhance sports performance. This presentation will focus on the present research using validated holistic and innovative method in integrating music for enhancing sports performance, promoting holistic health, and promoting positive mood in the hospital settings. I will report on the use of synchronous music in enhancing exercise performance and the use of music for enhancing imagery in sports. Next, I will consider issues related to the understanding of how music works, the selection of music and the practical application of integrating music to enhance positive mood, and pain reduction. Then, I will discuss some innovation of using technologies in helping our national athletes to achieve success in the International sporting arena. Finally, I will conclude by noting how, in all of this research, have contributed to new knowledge to enhance the understanding of the ubiquitous of integrating music into holistic health and medicine.

Human Immune Deficiency Virus (HIV) Knowledge And Safe Sex Practice Among Southeast Asian Games (Sea Games) Athletes

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Background & Aim

HIV or known as 'Human Immunodeficiency Virus' will weaken the human immune system by eliminating the crucial cells that fight the disease and infection, can be transmitted through unprotected sex. The total number of reported HIV cases in Malaysia between 1986 till 2016 were 111,196. The increase number of HIV infections, AIDS related deaths and the low level of willingness to practice safe sex showed that the knowledge of AIDS prevention especially in utilizing condoms still fail to reached the society. It is very important to assess the knowledge on HIV, safe sex practice and prevention awareness among athletes. This is because, they could be the highest risk population due to frequent overseas trips in participating various sports competitions worldwide. Furthermore, it is a belief among many athletes that sex before competition can enhance their performance in sports.

Methods

Therefore, the purpose of this study is to assess the knowledge of AIDS and the awareness to prevent it by practicing safe sex, among athletes of 11 countries in 15 sports. The samples consist of 275 Southeast Asian Games athletes. HIV/AIDS Questionnaire, which consists of 29 items was used in this study.

Results

The result showed that the willingness to associate with HIV/AIDS-infected person, $F(14, 275) = 17.218, p < .01.$, interest in HIV/AIDS educations, $F(14, 275) = 12.112, p < .01.$, the knowledge of HIV/AIDS transmission modes, $F(14, 275) = 14.774, p < .01.$, and understanding of HIV/AIDS risk behavior, $F(14, 275) = 18.112, p < .01.$, was higher among badminton athletes. However, those components were lower on Futsal athletes. Furthermore, the willingness to practice safe sex, $F(14, 275) = 15.001, p < .01.$, were lower among football athletes.

Conclusions

Many research showed that condom usage is the best method to create barriers between the sperms and the internal tissues of sexual partners in reducing the risk of HIV infection. Therefore, sports psychologist, coaches and condom companies in Malaysia can use the result of this study to provide HIV knowledge and promote condoms to athletes in order to prevent AIDS more effectively.

Key Words: AIDS, HIV, safe sex, condom, prevention.

The Association between Stress, Body Weight and Physical Activity among Malaysian Adolescents

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Background and Aim

Inadequate physical activity and growing obesity levels among Malaysian adolescents are becoming a public health issue. Their lifestyle normally been altered with their daily routine to the schools and preparing themselves for academic achievement and potentially some sports performance. This study aims to investigate the level of stress experienced by Malaysian adolescents and its association with their body weight and physical activity.

Methods

A cross sectional study was conducted among 427 multi-ethnic 17 years old Malaysian adolescents from both urban and rural areas. The stress level was assessed subjectively by using a validated Cohen Perceived Stress Scale (CPSS) questionnaire and objectively by using the saliva cortisol level of a subsample of 261 participants. Height and weight were measured using calibrated instruments. Self-reported physical activity levels were assessed using the validated Physical Activity Questionnaire for Older Children (PAQ-C). Pearson's correlation analysis were applied to collected data.

Results

About 23.7 % of the adolescents in this study were overweight/obese. The mean CPSS Score was 18.6 (95% CI: 18.2, 19.0) reflecting moderate stress level while the mean saliva cortisol was 2.84 nmol/L (95% CI: 2.37, 3.32). Physical activity score significantly differ only between genders ($p < 0.01$) but not between the school location, the ethnic groups or the BMI category ($p < 0.05$). There was a significant but weak negative correlation between physical activity score and CPSS score ($p < 0.01$); significantly stronger among the male ($r = -0.23$), the urban ($r = -0.17$) and the normal weight ($r = -0.19$) adolescents. There was no significant correlation between the physical activity score and the saliva cortisol level.

Conclusion

It is interesting to discover that physical activity may play a role in minimising stress in this population. It should be promoted to the schoolchildren that being physically active is good in minimising stress even during the preparation of main school examinations.

Comparison of the Effects of Two Types Progressive Muscle Relaxation on Psychophysiological and Psychomotor Parameters Following Repeated Sub-Maximal Intensity Exercise

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Background & Aim

Positive implications of Progressive Muscle Relaxation in various settings have been generally acknowledged. Despite all the convincing benefits, there is no concrete guideline on the optimal duration and frequency of this relaxation training response. This study compared the effectiveness of different procedures of Progressive Muscle Relaxation (7 and 16 muscles groups) on choice reaction time, concentration, rating of perceived exertion, heart rate and VO_2 following repeated sub-maximal intensity exercise.

Methods

Twenty six young football male athletes (N=26) were randomly assigned to either 7 or 16 muscle groups or a control group. The experimental protocols consisted two testing sessions (pre and post PMR) and four-weeks PMR training. In each testing sessions involved 4 bouts of intermittent exercise, consisting of running at 60% VO_{2max} for 10 minutes followed by 90% VO_{2max} for 2 minutes.

Results

The results of mixed between-within ANOVA revealed a significant ($p < 0.05$) interaction between groups across the experimental sessions for heart rate, CRT and concentration test. Pair wise comparison analysis revealed a significant improvement in heart rate and concentration level for both intervention groups compare to control group.

Conclusion

Participant benefited more from the full version of PMR training compared to the abbreviated version.

Keywords

VO_2 , heart rate, RPE, reaction time, repeated sub-maximal exercise

Knee and Hip Flexion Deterioration Following Soccer Match-play with Extra Time

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Background & Aim

Non-traumatic Anterior Cruciate Ligament (ACL) injury has been a subject of interest in clinical sports biomechanics recently and a newly proposed mechanism of the injury have included hip flexion as a combination factor with knee flexion for injury concoction. This study aimed to investigate the changes of the hip flexion angles following exertion from extra time during overground simulated soccer match-play.

Methods

Sixteen male recreational players consented to this study and completed a 120 minutes of simulated soccer match-play. Knee and hip angles were measured at initial contact during 45° anticipated side-cutting tasks performed prior to the simulation (time 0 min), and at selected time points throughout the simulation. A two (group: dominant, nondominant) × seven (time: 0 min, 45 min, 60 min, 105 min, 110 min, 125 min and 140 min) *Split-Plots* ANOVA was utilized.

Results

Both knee and hip flexion angles were significantly altered over time ($p < 0.05$), however no significant differences were observed between dominant and nondominant sides ($p > 0.05$). The knee appears to be more extended (less flexed) post-extra time exertion (time 125 min, 140 min) and the hip is more extended (less flexed) post-exertion (time 60 min, 105 min, 125 min, 140 min), compared to pre- exertion conditions (time 0 min).

Conclusions

The more extended knee and hip landing postures suggested a greater risk of ACL injury during the latter stage of each halves of match-play, supporting epidemiological observations. Unlike the existing consensus, our findings suggest that the nondominant limb is as likely to be suffer non-traumatic ACL injury as the dominant limb. The hip is found to show an earlier response of fatigue from soccer specific match-play exertion compared to the knees. The mechanism of fatigue in hip flexion in comparison to the knees is still unclear and warrants further investigation.

Keywords

ACL Injury, Soccer, Fatigue, Knee Biomechanics, Hip Biomechanics.

ORAL YRA-02

The Outcome Of Early Balance Exercises And Agility Training In Sports Rehabilitation For Patients Post Anterior Cruciate Ligament (ACL) Reconstruction.

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Background & aim

It is generally known that the rehabilitation process is as important as the reconstruction surgery. The main objective is to study and evaluate the outcome of early balance exercises and agility training in sports rehabilitation for patients post ACL reconstruction.

Methods

Post-operative ACL reconstruction patients performed in Selayang and Sg Buloh Hospitals from 2012 to 2015 were selected for this study. They were taken from Malaysian Knee Ligament Registry (MKLR) and all patients had single bundle reconstruction with autograft hamstring tendon (semitendinosus and gracilis). Subjects performed various type of physical activity for rehabilitation in every 24 week for different type of rehab activity. Evaluation format were based on clinical assessment (anterior drawer, Lachmann, pivot shift, laxity with rolimeter, end point and thigh circumference) and scoring (Lysholm Knee scoring and Tegner Activity Level scale).

Results

After completed 24 weeks of exercises, of material group maintained 90% grade I laxity with 100% with firm end-point, Lysholm score increase 91% (excellent) and Tegner activity level 7/10 comparing non-material group who had 69% of grade I laxity but maintained 54% of firm end-point, Lysholm score 76% (fair) and Tegner activity level 5/10. These showed the improvement were achieved fast on material group who have achieved satisfactory level after 9th cycle of exercises 75% (15/20) comparing non- material group who only achieved 54% (7/13) after completed 24 session. Most of them were grade I.

Conclusions

The basic approach in ACL rehabilitation is to ensure return to sports at post-operative 6 month. Grade I and II laxity has favourable and early satisfactory outcome base on clinical assessment and Lysholm and Tegner scoring point. Reduction of laxity grading indicates satisfactory outcome.

ORAL YRA-03

Relationship Of Nutritional Status, Physical Activity Level And Knowledge With VO2max Of Female Elite Athlete Futsal

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Background & Aim

The objective of this study was to analyze the relationship between nutritional status, physical activity and knowledge with VO2max of female elite athlete futsal player at Jaya Kencana Club Tangerang, Indonesia.

Methods

The design of this study was cross sectional. The research was conducted between May and June 2017. Subjects were 14 elite female elite athlete futsal player at Jaya Kencana Club. The mean of Body Mass Index (BMI) ($22.55 \pm 4.2 \text{ kg/m}^2$), percent body fat (PBF) ($26.14 \pm 5.2\%$), muscle mass ($26.9 \pm 2.5\text{g}$), physical activity (PA) (1.6 ± 0.1), nutrition knowledge (65.1 ± 11) and VO2max ($34.7 \pm 5.1 \text{ mL/kg/minute}$).

Results

There is significant positive correlation between muscle mass with vo2max ($p < 0.05$) and significant negative correlation between BMI and PBF with VO2max ($p < 0.05$). There is no correlation between physical activity level with VO2max ($p > 0.05$).

Conclusions

This implies that nutritional status and nutrition knowledge at female athlete is important to improve performance.

Keywords

Female athlete, Nutritional Status, Physical Activity Level, VO2max

LIST OF ABSTRACTS FOR POSTERS

POSTER S1-01

Traumatic Bicipitoradial Bursitis Masquerading As An Agressive Soft Tissue Neoplasm Of The Cubital Fossa

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This report discusses a sudden forearm swelling in an otherwise healthy elderly lady, of which was initially thought to be malignant following clinical examination and imaging studies. An incision biopsy showed native bursal tissue. A diagnosis of bicipitoradial bursitis was made only after establishing a prior history of repeated pronation-supination type activities.

Patients with bicipitoradial bursitis often present with a tender, cystic swelling in the cubital fossa accentuated with pronation as the space between the biceps insertion and radial tuberosity reduces. Further enlargement may not only impair normal elbow flexion and extension but may also compress adjacent nerves due to mass effect. Sensory-related symptoms predominate in compression of the superficial radial nerve or the lateral cutaneous nerve of the forearm whilst motor deficit occur if the posterior interosseous nerve is involved.

Though rare, this presentation is a recognisable repetitive stress injury of the forearm. Understanding the regional anatomy and the typical ultrasonographic appearance of a bicipitoradial bursitis together with a known precipitating traumatic event is sufficient to diagnose without the need for further imaging. Conservative therapy remains the mainstay of treatment.

Key words

Bicipitoradial bursitis, cubital fossa, forearm swelling.

POSTER S1-02

Knowledge and Attitude toward First Aid Management among the Undergraduates Trainee Teachers: A Preliminary Study

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Background & Aim

Accidents and incidence of injuries are common at schools. Teacher need adequate knowledge of first aid and basic life support (FA-BLS) before be able in handling any injury or emergency that happens to school children under their supervision. The aim of this study is to evaluate the level of knowledge and attitude of trainee teachers toward first aid management.

Methods

This cross-sectional study using a convenience sampling recruited 70 volunteers of undergraduate trainee teachers from Universiti Pendidikan Sultan Idris (35 Sports Program; 35 Non-Sports Program). Data were collected using a self-administered questionnaire; consist of three parts (General Knowledge, First Aid Management, and Attitude toward First Aid) covering major topic for FA-BLS. Descriptive and Independent t-test was used to identify the level of knowledge and attitude toward first aid.

Results

In this study, 88% of trainee teachers had previously exposure for FA-BLS, but only 43% of them have confidence to deliver the first aid treatment in emergency. Overall, most of the trainee teachers have inadequate knowledge, but 70% have favourable attitude toward FA-BLS. The knowledge level of FA-BLS were adequate 5%, moderate 31% and inadequate 64%. A significance difference were noted in knowledge of FA- BLS between sports and non-sports program trainee teachers. Both groups of trainee teachers showed a similar favourable attitude toward first aid.

Conclusions

The level of knowledge of first aid treatment is not enough among majority of trainee teachers. Most of the trainee teachers have less self-assurance in handling injury and emergency. This study indicated the importance to re-educating Universiti Pendidikan Sultan Idris trainee teachers about first aid care before their enrolment in schools. In addition, there is a need to conduct first aid training as a compulsory added-value course for undergraduate trainee teachers in all the higher education institutions.

Keywords

First aid; knowledge; attitude; injury; emergency treatment

POSTER S1-03

Benefits of High Ankle Support In Reducing The Severity of Complex Ankle Injuries In Athletes

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Background and Aim

Foot and *ankle* are among the *most common* sites of injuries in *athletes*. The aim of this study was to conclude the benefits of ankle-guarded footwear above the syndesmotoc joint of distal tibia fibula and the severity of the injury compared to unguarded ankle footwear in athletes.

Methods

A randomised study of athletes (n = 21) whom were treated under the care of the Orthopaedic Department of Hospital Putrajaya, aged from 15 to 39 years old. All athletes in this study suffered Complex Ankle Injuries, (n = 6) only were restrained to ligamentous injury and (n = 15) involving Complex fracture with ligamentous involvement. All the above collected cases involved actions of jumping, landing and rotational and eversion. All fracture dislocation and non-sports related injuries cases were excluded from this study. The cases were closely treated and observed till discharge (return to play).

Results

There were no significant differences in the type of sports involved, however, ankle injuries in rotation and eversion had significantly increased the complexity of injuries to the ankle (p<0.05). Significant differences were noted in the type of shoes and ankle support used to the severity of the complex ankle injury, with 15 cases of low cut shoes causing bimalleolar fractures and ligamentous involvement compared to 6 with secured ankle footwear with only complex ligamentous ankle injury.

Conclusion

Footwear with higher ankle support enclosing the syndesmotoc joint resulted in lesser severity of complex ankle injuries and minimizing it from severe fractures.

Keywords

Ankle support, syndesmotoc joint, rotation, eversion, complex ankle injury

POSTER S3-01

Sitting time and cardiorespiratory fitness: Cross sectional study among health care workers attending a Sports Medicine course, in Sabah.

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Background & aim

Sedentary behavior, measured as sitting time, is define as low energy expenditure behaviors of less than 1.5 Metabolic Equivalent Task (METs). Physical fitness is the capability to do daily activity with vigour and alertness without profound fatigue, and capable to carry out leisure time pursuits and prepare for any emergencies. Sitting time and physical fitness are known risk factors for all-cause mortality. The primary aim of this study is to determine the level of sitting time and physical fitness, among health care workers in Sabah, Malaysia

Methods

The participants consist of 59 health care worker attending a Sports Medicine course in Sabah. International Physical Activity Questionnaire BM (IPAQ-BM) was used to determine the weekday and weekend sitting time, while the 3 minutes Young Men Christian Association (YMCA) Step Test was used for physical fitness assessment. Cross tabulation analysis was carried out to determine the association of sitting time and physical fitness,

Results

It has shown 45.9% of the participants sit less than 4 hours, 20.3% sits between 4-6 hours and 33.8% sits more than 6 hours. This study also shows 66.1% of the participants scored less than average for physical test and 33.9% achieved average and above. There was no significant relationship between sitting time and physical fitness.

Conclusions

Majority of participants, 45.9% sit for less than 4 hours and 66.1% has fitness level of less than average. There was no association between sitting time and physical fitness in this study. However, this could be due to the smaller sample group. Further studies with bigger sample group is needed as health care workers are the forefront in leading by example in healthy living among general population.

Keywords

cardiorespiratory fitness, sedentary lifestyle, exercise test, questionnaires, medical staff.

No competing interests.

POSTER S3-02

Prevalence of Overweight Among House officers in Kelantan State Hospital according to Body Mass Index (BMI) and Percentage Body Fat

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Background & aim

The increasing prevalence of overweight and obesity among Malaysians, especially the younger adult population has become a serious concern as it links to higher risk of earlier onset metabolic disorders. Traditionally, the Body Mass Index (BMI) has been used as screening tool for adiposity. However there is increasing interest to classify metabolic health according to other measurements such as percentage body fat.

Methods

Ninety-four (n = 94, 34 males, 60 females) House Officers, age range 24 until 29 years, from Kelantan State Hospital (Hospital Raja Perempuan Zainab II) were voluntarily recruited and adiposity was measured using both Body Mass Index (BMI) and Percentage Body Fat (PBF%).

Results

Mean body weight for males: 72.976 (SD 15.131) Mean

body weight for females: 55.160 (SD 12.185) Mean

height for males: 169.16 (SD 5.395)

Mean height for females: 155.02 (5.506)

male overweight BMI: 67.6% (n = 23)

female overweight BMI: 40% (n = 24) male

overweight PBF: 47.1% (n = 16) female

overweight PBF: 70% (n = 42)

The median body weight of the participants was 61.604 (standard deviation [SD] 15.796), the mean body height was 160.14 (SD 8.729), and the mean Body Mass Index (BMI) was 22.838 (SD 5.627). Based on World Health Organization (WHO) BMI cut off for Asian population who are overweight or obese is a BMI equal or greater than 23.0kg/m². 67.6% of male participants were Overweight or Obese (n = 23), while 40% of female participants were (n = 24). However based on Percentage Body Fat which considers above average for males is equal or greater than 25%, while for females is equal or greater than 32%, there were 47.1% of male participants who were overweight (n = 16) while there were 70% of females who were overweight (n = 42).

Conclusion

BMI may not be the best indicator for adiposity. Overweight and Obesity remains a problem among junior doctors undergoing their Housemanship training in Kelantan. If left unmanaged, this will lead to early onset of metabolic diseases among doctors.

POSTER S3-03

The Association Between Physical Activity And Shift Work Among Hospital-Based Nurses – The Ummc Experience

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Background & Aims

Nurses play an important role in inculcating healthy lifestyle behaviour among patients. Those who are physically sedentary and overweight may appear as less credible role models. Shift work negatively affects physical activity participation whilst physical inactivity strongly correlates with high BMI. Hence, it is crucial to examine this association among nurses to their risks of working shifts. To determine the level of physical activity among shift and non-shift working nurses in a tertiary hospital and to explore the association between their demographic background, body mass index, and nature of work with their levels of physical activity.

Methods

This research was conducted via a census sampling among all nurses in UMMC. Those employed less than 6 months, on long-term maternity leave or suffer from chronic medical and/or musculoskeletal conditions that limit physical activity were excluded. Research tools utilised were the Long-IPAQ Malaysian questionnaire and a demographic data-set, administered in small groups.

Results

A response rate of 70.12% (1504 nurses) was achieved. Based on IPAQ scoring, 87.4% (1315) of the respondents were deemed highly active, whilst 10.2% were moderately active. 76.5% (1150) of nurses worked shifts. Upon stratifying into shift- work, significant differences were observed between most demographic parameters ($p < 0.001$). Significant differences were also observed in the domains of work and domestic chores ($p < 0.05$), and in intensity-specific walking and vigorous activities ($p < 0.05$). There was no difference among groups within categorically stratified physical activity ($p = 0.355$), while further covariate analysis showed no significant difference between groups for all types of physical activities except for average daily motor vehicle usage after removing the effects of covariates.

Conclusion

97.6% of all UMMC nurses were deemed sufficiently active. Differences within domains and intensities may be attributed to their respective cohort characteristics. Shift-work itself does not harm individual nurses' overall measure of physical activity.

Key words

IPAQ, nurses, physical activity, shift work

Competing interest

None declared.

POSTER S3-04

Relationship between Cardiorespiratory Fitness and Cardiovascular Diseases Risk Factors in Overweight and Obese Primary School Going Malaysian Children

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Background and Aim

The prevalence of childhood obesity has been increasing rapidly. Childhood obesity is said to be one of the risk factors for development of later heart disease and other chronic diseases such as hyperlipidemia, hyperinsulinaemia, and early atherosclerosis. A large body of high quality evidence has shown that childhood obesity is strongly associated with the presence and clustering of cardiovascular risk factors in childhood. The aim of this study is to determine the association between cardiorespiratory fitness and cardiovascular disease risk factors among the overweight and obese primary school children in Malaysia

Methods

It is a cross sectional study, looking at obese and overweight primary school children in Malaysia. The study utilized data from MyBff@school 2016, which is the interventional study at school, conducted in central zone (Selangor, Wilayah Persekutuan Kuala Lumpur and Negeri Sembilan) of Peninsular of Malaysia. The study population consisted of primary school students (aged 8-11) with BMI for age more than +1SD based on WHO 2007 Growth Reference.

A total of 674 overweight and obese students from primary school, consist of 52.8 % boys and 47.2% girls were involved in this study. The study showed, there is a significant difference seen in log Fasting triglyceride, average systolic blood pressure and average diastolic blood pressure between students of different categories of Physical Fitness Score. Cardiorespiratory fitness showed negative correlation with fasting LDL among overweight and obese primary school children in Malaysia.

Results

The results of our study could assist in the development of effective and innovative lifestyle intervention programs in the schools and adds supportive evidence to the body of knowledge suggesting that cardiorespiratory fitness in children is an important health marker.

Conclusion

As a conclusion cardiorespiratory fitness assessment should be implemented in all health settings in Malaysia.

POSTER S4-01

Effects of Music on Cardiovascular and Respiratory Function at High Altitude in a Simulated Environment : A Proposed Research

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Introduction

High altitude mountain climbers exceeding 2000 metres risk developing acute mountain sickness (AMS) due to low level of oxygen in the body (hypoxia). With prolonged hypoxia, AMS may also progress to deadly conditions called high altitude pulmonary edema (HAPE) and high altitude cerebral edema (HACE). We propose a study to examine the effects of high altitude on cardiovascular and respiratory function following hypoxia upon ascent to high altitude in a hypobaric chamber.

Methodology

24 volunteers shall be subjected to 'hypoxic state' in a hypobaric chamber which simulates a high altitude environment. Their cardiovascular function shall be assessed via echocardiogram while their respiratory function via spirometry and pulse oximetry. The data shall be recorded at sea-level, at 3,000 metres and 5,000 metres. Once this is done, volunteers are asked to return to the chamber after 'resting' for a minimum period of 3 days for similar intervention but with the addition of listening to music which are blindly randomized by each picking an MP3 player with an unknown content. Half of the MP3 players contain stimulating music while the rest relaxing music. The data collected shall be compared with the baseline to see any changes. 50% of the volunteers shall be among mountain climbers with experience of reaching high altitude (minimum of 2,000 metres).

Hypothesis & expected results

Our null hypotheses include no differences in terms of cardiovascular and respiratory parameters, no difference between listening to music or not and no difference between listening to stimulating or relaxing type of music. We expect that the null hypotheses would be rejected.

Conclusion

This is a first study conducted looking at music as a tool to improve state of hypoxia with improvement in terms of cardiovascular and respiratory function. This study also the first to engage echocardiogram study in a hypobaric chamber in order to study the heart function in a comprehensive manner with the ascent of altitude. We expect the findings will be beneficial for climbers and shed understanding among clinicians and researchers as well as climbers in terms of cardiovascular and respiratory function changes with the ascent of altitude as well as music effects on them.

POSTER S6-01

Association between BMI and Cheerleading Injuries in Singapore

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Introduction

Cheerleading injuries in the United States have been increasing steadily over the past few decades. Studies have reported that more days were lost per injury in cheerleading compared to any other sport. In this study, we aim to study our local Varsity cheerleading population for any association between gender and BMI of cheerleaders, and injuries sustained.

Methodology

5 teams across Polytechnic, University, and Open teams participated in the 2017 National Cheerleading Championships in Singapore. The coaches of all 5 teams were contacted, and willing participants consisting of both current and retired cheerleaders were recruited. Demographic information on gender, current age and BMI, was collected. Specific questions pertaining to the mechanism of injury, as well as body part injured were evaluated.

Results

Males were more likely to be injured while tumbling ($p=0.018$) and basing ($p=0.025$), while females were more likely to sustain injuries resulting from falls from stunts ($p < 0.001$). The BMI was significantly smaller for cheerleaders who suffered injuries resulting from falls from stunts compared to those who did not ($p = 0.001$). On the other hand, cheerleaders who suffered basing and collision injuries had significantly larger BMIs ($p=0.015$ for basing injuries, $p=0.029$ for collision injuries).

There were no statistically significant associations between gender and body part injured, and BMI and body part injured.

Discussion

that a higher BMI is related to injuries sustained while basing and in collisions, while a smaller BMI is significant in cheerleaders who were injured from falling from stunts. This emphasizes the importance of a varied training program tailored to suit the demands of the cheerleader specific to his/her position on the team. Cheerleaders involved in basing should be advised on maintenance of a lower BMI, while those participating as flyers in a stunt should maintain a higher BMI.

Recommendations

We hope that by identifying the relationship between BMI and the prevalence of cheerleading injuries sustained, as are better able to tailor training programs targeted for participants in the sport involved in specific roles on the team, so as to decrease the overall incidence of cheerleading injuries in Singapore.

POSTER S6-02

Injuries Profile of Amateur Taekwondo Championship in Jakarta, Indonesia 2016

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Background and Aim

Taekwondo is one of the most popular martial arts. Taekwondo consists of two branches, namely Kyorugi and Poomsae, in which kyorugi has a high risk of injury to athletes who are competing. In the United States, the incidence of injuries to elite athlete taekwondo by 9-13%. Whereas in Indonesia at the pra-PON Championship 2016, the incidence of injury was 6,8%. This study aim to identify how the number of injuries occurring in the amateur taekwondo championship in Jakarta 2016.

Methods

The study was conducted using primary data when the researcher became a match doctor at the Ambassador Cup Championship (ACC) 2016 (n1= 1.180 participants) and Jakarta Taekwondo Festival (JTF) 2016 (n2 = 2.440 participants) in Jakarta, Indonesia. Then, data was processed univariate.

Results

The incidence of injury in the amateur taekwondo championship was 1,66% of total 3.620 participants, consisting of 26 (2,2%) in ACC and 34 (1,39%) in JTF. The majority of injured athletes were male (1,02%) than female (0,64%) of total participants. The most of injured age was 12-17 years with a 36 out of a total of 60 athletes injured in both competitions. According to the severity of the injury, all injuries suffered were minor injuries, with the site of most injuries was foot 18,3% of a total of 60 injured athletes, followed by 15% shinbones and eyes, 13,3% ankles, and thighs 10%. Whereas based on diagnosis, most injuries were contusions of 36,7% of a total of 60 injured athletes, followed by sprains 25%, epistaxis and strains 6,7%, lacerations 5%, cramps 3,3%, and other 16,7%.

Conclusions

Taekwondo (kyorugi) has an increased risk of injury to athletes while competing, even in amateur competition, with the most injuries location was foot and the most diagnosis was contusions.

Keyword

Taekwondo, Injury Location, Injury Type, Sport Injury, Amateur

POSTER S6-03

Early Outcomes with a New-Generation Humeral Nail: An Institutional Experience

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Objective

The majority of humeral fractures are treated conservatively while those displaced, unstable fractures require surgery. We evaluated our institutional outcome of humeral nailing using a new-generation nailing system. Our surgical technique, and operative nuances are described.

Methods

We analyzed a cohort of 14 patients with 6 months follow-ups. Radiographic classification (AO/OTA Classification) was performed. Clinical outcome was prospectively charted using American Shoulder and Elbow Surgeons shoulder score (ASES), Oxford and Constant scores. Secondary outcome was to look at any complications.

Results

Over one year, 26 patients underwent surgery with complete follow-up data available in 14 patients (nine females). The mean age was 52.4 years old (range, 19-85 years). There were 36% A type fracture, 14% B type, 21% C type and 29% shaft fractures. The mean post-operative Constant score was 52.1 (range, 24-100, SD \pm 24.4), Oxford score was 33.7 (range, 6-47, SD \pm 12.7) and ASES was 66.1 (range, 11.6 to 98.0, SD \pm 24.9). Radiographically, all fractures united by 3-months. The complication rate was 14.3% (n=2/14).

Conclusions

Our findings show that this new method of nailing was versatile for both simple and complex fractures. In osteoporotic patients, this technique yielded good functional results with minimal complication rates.

POSTER S6-04

Reliability of Preoperative MRI Prediction of Hamstring ACL Autograft Size

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Background & aim

The Anterior Cruciate Ligament (ACL) is the most commonly injured ligament of the knee. In ACL reconstructions, autografts with cross sectional diameters less than 8 mm have been associated with increased failure rates. Recent retrospective analysis has found strong correlations between hamstring tendon size as predicted on routine MRI and intraoperative autograft size. To date, there has been no prospective analysis of the use of routine MRI to predict ACL autograft size. There is also no previous literature comparing the ability of orthopaedic surgeons to that of radiologists in predicting autograft size with MRI. Since many clinics do not have a trained MSK radiologist on hand, it is important to evaluate whether orthopaedists can independently use MRI to predict autograft size.

Methods

Patients were recruited if they were evaluated by the three orthopaedists for suspected ACL injuries. We used routine knee MRIs. After an ACLR was scheduled, but before the procedure, these three orthopaedists and an MSK radiologist used the Sectra PACS measurement function to determine hamstring tendon size. Cross-sectional area of the semitendinosus and gracilis tendons was calculated at the levels of the widest point of the medial femoral condyle and at the joint line. Control measurements were performed intraoperatively using a graft sizing block containing sizing holes of 0.5 mm increments.

Results

The distribution of the data for 18 patients shows a positive correlation between MRI measurement and graft size. Multiple linear regression demonstrates similarity between radiologist and surgeon predictions of autograft size

Conclusions

The data collected suggests that there is a correlation between ST and GR cross-sectional area and autograft diameter. The radiologists and surgeons were all able to reliably predict autograft size.

Keywords

ACL, MRI, Hamstring, radiologist, orthopaedist

POSTER S6-05

Review of Overuse and Acute Injuries among Young Athletes at Sukma Games

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Background and Aim

This study was conducted among young athletes participating at the Sukma Games. It was intended to review the comparisons of acute to overused injuries sustained at a biannual national multi-sport games. The aim was to look into preparations Athletes had prior to the games and outcome of their condition during the national meet.

Methods

This study was conducted during the Sukma Games 2012 in Kuantan, Pahang. With an age limit of 21 years old a randomised assigned questionnaire to Medical aid and emergency centres attending to injured athletes was carried out. A total of 76 (n=76) questionnaires were filled up by athletes. The questionnaire includes demographic background of athlete and their involvement in sports with corresponding injuries sustained during the games. A study of recurrent to acute injuries sustained was carried out and compiled. The cases were closely observed till discharge (return to play).

Results

There most severe injury sustained during the games was an acute elbow dislocation sustained during a taekwondo match. A majority of 89% percent of acute injuries was noted among Athletes participating at the Games. It was a significant differences compared to overuse recurrent injuries of only 11% .Although the growing skeleton is particularly susceptible to overuse injuries due to the presence of growth cartilage, other factors such as duration and level of training preparations undergone by this young athletes has painted such an outcome

Conclusion

Although overuse injuries are increasing in number with rapid increase in younger athletes training, the reported cases of acute injuries remain a majority in younger age group of athletes

Keywords

Sports injury, Young athlete, Acute, Overuse injuries

POSTER S6-06

Left Lateral Meniscus Injury Due to an Insensate Foot Secondary to Left Leg Amniotic Band Syndrome : A Case Report

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Background & Aim

Amniotic Band Syndrome (ABS) , also known as Constriction Band Syndrome is an uncommon, congenital foetal anomaly with multiple disabling and disfiguring manifestations that ranges from simple ring constrictions to major disfiguring craniofacial or visceral defects. Limb extremities are commonly involved which may lead to in utero amputations, lymphoedema, asymmetrical digital constriction bands, distal atrophy and clubfoot. Here we present a case of a 27 year old gentleman with a left knee pain after a football injury who coincidentally also suffers from an insensate left foot secondary to left leg amniotic band syndrome.

Method

On examination, he had lateral left knee joint line tenderness with positive Thessaly and pain on McMurray test.

Results

Furthermore, he has lost of all sensory modalities including proprioception of left ankle and foot below the constriction which is 10cm proximal to the medial malleolus, besides being flat footed. The x-rays revealed a deformed left navicular and collapsed talonavicular joint which points towards neuropathic osteoarthropathy which is a sequelae of nerve entrapment syndrome that was secondary to the amniotic band syndrome. Management included lower limb monitored resistant exercises and pressure injury prevention methods.

Conclusion

In conclusion, early recognition of ABS and prompt management may prevent likelihood of patient suffering from the complications of it in later stages of life.

POSTER S7-01

Placement of the Dish which the Female Physical Education College Students Prefer

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Purpose

The purpose of this study was to clarify whether a difference was found in taste by a change of the placement of the dish, as compared the general female college students with the different female physical education college students of the lifestyle.

Methods

Participants were learning basic knowledge of the sports nutrition female physical education college students(n=102), other participants were not learning basic knowledge of the sports nutrition general female college students(n=171). The survey was used by questionnaire and image investigation. The questionnaire was 6 items. Image investigation was used the same contents in a dish, however, only placement evaluated seven different type with seven phases 14 items each. The image investigation group it in female physical education college students and general female college students resolution into factored. Placement of the dish which the female physical education college students prefer a group and type were analyzed by two- way ANOVA ($P<0.05$).

Results

30% of the students continued exercising, and lived with their parents was more than 80% of the general female college students. 70% of the students continued exercising as for the female physical education college student, and they tended to cook themselves. There were much dietary habits score in general female college student than female physical education college student. The female physical education college students prefer far placement of the main greens and vice-greens. It was revealed that it was different in taste by the placement of the dish between female physical education college student and general female college student.

Keyword

female physical education college students, sports nutrition, college students

POSTER S7-02

The Relation of Energy and Body Composition in Japanese Female Collegiate Rhythmic Gymnasts through the Competitive Season

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Introduction

The aim of this study was to clarify the relation of energy expenditure, food intake and body composition in through the competitive season for the Japanese female collegiate rhythmic gymnasts.

Methods

Thirteen female rhythmic gymnasts (19.4±0.5years, BMI:20.1±1.3, body fat mass:10.7±2.0kg) participated in this study. Body composition was measured InBody230 at early morning fasting. Food intake was investigated by FoodFrequency Questionnaire Based on Food Groups(FFQg). Energy expenditure was measured physical activity(PA) from triaxial accelerometry Active style Pro HJA-750C, attached to the waist until the end of measurement. It was excepted for bathing, training and sleeping hours. The PA was substituted as follows: the sedentary activity (1.4 METs or less), the low-intensity activity (1.5 to 2.9 METs), the moderate- activity (3 to 5.9 METs) and the high-intensity activity (6 METs or more). The sedentary activity was set as the time when the practice time was subtracted from the activity time of less than 1.4METs. Physical activities were proportions of low intensity, moderate intensity, high intensity during the time of 1.5 METs or more. The correlation coefficient of each measurement was obtained by Pearson. The significance probability was less than 5%.

Results and Conclusions

There is a positive correlation between body fat mass and steps on holiday ($p=0.042$, $r=0.5704$), and a negative correlation was found in carbohydrate and confectioneries intake of on the competitive season (carbohydrate: $p=0.018$, $r=0.6408$, confectioneries : $p=0.001$, $r=0.8175$).

Food intake showed low value compared with ordinary women, only confectioneries showed high value. According to the Japanese dietary intake standard, the recommended amount of protein is 50 g / day, as the number of subjects was as low as about 10 g / day, we considered that it was necessary to increase protein intake.

Key words

female collegiate, rhythmic gymnasts, competitive season, physical activity, food intake

POSTER S7-03

The Influence of the Appearance of the Dish on the Judgment of the Quantity of Meal

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Introduction

This study clarified the influence of the appearance of the dish on judgment of the quantity of the meal. For example, it compared meals such as rice ball, the set meal, noodles, salad, soup, for female collegiate athletes.

Methods

In this study, 101 female collegiate athletes participated. They had enrolled for the physical education course in women's colleges. The investigation involved a questionnaire assessing the quantity of meal, consciousness of the quantity of meal, and meal card. Meal card judged in five seconds and 20 meals per person. A meal of the general quantity was of medium size. Each meal was of 3 sizes. The small size was 0.5 times that of the medium size; the large size was 1.5 times that of the medium size. The meals were of 20 kinds and a meal card was created (including Makunouchi lunch, rice ball, fried chicken with rice, fish lunch, Udon, vegetable salad, and vegetable soup). Three sets of 20 kinds of meal cards were prepared, and 60 kinds were selected. The 60 kinds of meal cards were arranged random and divided into three parts of large, middle, and small sizes.

Results

The "pot-au-feu small" was 100% at a correct answer rate. "The vegetable salad large", "rice ball large", "curry and rice large", "lotus root salad large", "oden large", "rice balls" was 0% at a correct answer rate. All participants answered that "A lotus root salad large" was small. It is difficult for female collegiate athletes to judge large quantities of meals compared to small ones.

Keywords

meal, quantity, Judgment, appearance

Acknowledgement

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POSTER S7-04

Variations in Perception of Meal Quantity Between Athletes of Different Sports

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Introduction

The aim of this study was to investigate the perception of quantity of food in meals between university-level athletes in different sports.

Methods

One hundred and fifty-two males participated in this study (44 soccer players, 51 long distance runners and 57 rugby players). This study surveyed their lifestyle and eating habits using a questionnaire. Participants chose one of four pictures for the questionnaire. The four pictures were A: one plate, B: Bento Box, C: 3 dishes, D: 4 dishes. The questionnaire asked athletes to indicate which meals were "the largest amount", "the smallest amount", and "the one I want to eat most". There was open description space to explain reasoning. Analysis of the open description used KH Corder, and χ^2 test was used for the questionnaire surveys. One-way analysis of variance (ANOVA) was used to compare means among groups, and Scheffe/Dunn post hoc test was performed to further examine significant effects from the ANOVAs.

Results

There was a difference of estimation of meal size between the three groups. In the results of the surveys about lifestyle and eating habits, it was found that both rugby and long distance runners lived in dormitories with breakfast and dinner provided, whereas soccer players live alone and cooked meals by themselves. The dietary habits score for both long distance runners and rugby players was significantly higher than soccer players. In regards to food quantity perception, the long distance runners and rugby players chose (A), one plate, to be the most, and chose the four dishes as the smallest. Rugby players tended to also select the perceived largest quantity option (A), one plate, as the one they wanted to eat the most, while long distance runners tended to select the more well-balanced (C), three dishes.

Key words

quantity of food, university-level athletes, different sports

POSTER S7-05

Nutritional Supplement Use and Belief among Exercisers in a Selected Gym in Setapak, Kuala Lumpur.

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Background and Aim

The use of supplement is prevalent among Malaysians especially athletes and gym users. However the study on the supplement use among people exercising in the gym is rarely carried out in Malaysia. The aim of the study was to determine the prevalence and factors associated with nutritional supplement use amongst exercisers at a selected gym in Setapak, Kuala Lumpur.

Methods

A total of 315 gym users (79.0% male and 21.0% female) with a mean age of 27.1 ± 7.8 years participated in the study. Anthropometric measurement of weight and height of the subjects were taken. Sociodemographic information and supplement use were obtained using questionnaire. Nutritional supplement belief was assessed using 22 belief statements.

Results

Nutritional supplement use was reported among 66.3% of the participants with 71.5% men and 47.0% female. Protein shakes (73.7%), vitamin C (72.4%) and whey protein (68.3%) were the most popular choices among the supplement users. Furthermore, the mean body mass index (BMI) for male and female was $24.9 \pm \text{kg/m}^2$ and $22.9 \pm 4.8 \text{ kg/m}^2$ respectively. The most common reasons for using nutritional supplements were muscle repair or recovery (58.9%), followed by strength enhancement (50.7%) and muscle gain (50.2%). Internet (76.2%), friends (47.9%) and coaches (35.2%) were primary sources of supplement information. Of all the supplement belief, the most agreed were supplements build more muscles and enhance sports performance. Min scores of 19 out of 22 supplement belief statements for supplement users were significantly higher than non users. There were significant association between BMI category ($p=0.020$), smoking habit ($p=0.032$), weightlifting ($p<0.001$), total time of exercise ($p<0.001$), frequency of exercise ($p=0.007$), age group ($p=0.037$), sex ($p<0.001$) and race ($p=0.027$) with supplement use status.

Conclusion

In conclusion, prevalence of supplement use among gym users was high. Therefore, it is crucial to disseminate precise scientifically based information about health benefits and risks of supplement to gym users to avoid inappropriate use of supplements.

POSTER S7-06

Anabolic Effect of *Ficus Deltoidea* (Mas Cotek) in Sedentary and Trained Rat's Model

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Background and Aim

Ficus deltoidea is one of most common traditional herb that been used in Malaysia. Traditionally it had been used to treat headache, toothache, wound, soreness, cold, strengthen up the uterus for post-partum women and to regain energy. Numerous studies on *Ficus deltoidea* show that it possesses certain medicinal properties such as anti-inflammatory, anti-diabetic, anti-nociceptic, anti-ulcer and anti-pyretic. *Ficus deltoidea* was also reported to attenuate testosterone level and sperm quality in diabetic rats. This study was designed to investigate the effect of *Ficus deltoidea* on serum testosterone and muscle cross sectional size in sedentary and trained rat's model.

Methods

48 Male *Wistar* rats were divided equally into Sedentary and Trained groups. Each group was further divided into four dosages of *Ficus deltoidea* treatment (Placebo, 50, 200 and 800 mg/kg). Treatments was administered orally, 5 days/week for 6 weeks. For Trained groups, they were subjected for 1 hour swimming with weight loaded on their tail. Swim's training was done 1 hour after *Ficus deltoidea* oral administration. Muscle size was determined by measuring muscle fibre cross sectional size using Olympus Image Analysis Software, Cell[^]F.

Results

Supplementation with 800mg/kg *Ficus deltoidea* in both Sedentary and Trained groups had caused significant increase in muscle size compared to Placebo group. Combination of swimming and *Ficus deltoidea* supplementation also had significant effect in increasing muscle size compared to supplementation alone in all dosage (50, 200 and 800mg/kg). Serum testosterone level was not statistically significant among all treatment groups.

Conclusions

Ficus deltoidea had the ability to induce muscle hypertrophy in both sedentary and trained rat's model. Combination of swimming and *Ficus deltoidea* further increased muscle size compared to training or supplementation alone.

Keywords

Ficus deltoidea, hypertrophy, testosterone, swimming, lean mass

POSTER S7-07

The Effects of Different Caffeine Doses on Aerobic and Anaerobic Performance

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Background & Aim

Caffeine is a supplement that has been widely used due to its ergogenic effect. Available literatures indicate that there are effects of caffeine intakes on aerobic and anaerobic performance. While the benefits of caffeine to sport performance have been established, gaps exist in the caffeine literature regarding the caffeine dosage protocol. Therefore, the objective of this study was to investigate the acute effects of different dosage of caffeine on aerobic and anaerobic power.

Methods

Thirty physically active students ($N = 30$; M age = 21.7 yr., $SD = 2.5$) participated in a randomized, double-blind experiment were assigned to either 5mg/kg BW caffeine group, 3 mg/kg BW caffeine group and decaffeinated group. Supplementations were given one hour (60 min) prior to the actual experimental test. The dependent variables were measured using bleep test and vertical jump test. Mixed between-within ANOVA was used to examine the differential effects of both intervention groups and control group.

Results

Results showed significant improvement in aerobic (VO_{2max}) ($p < 0.05$) across experimental sessions (pre-post) only for 5mg/kg BW caffeinated group. However, there was no significant interaction between all groups. There was also no significant change in anaerobic power. The results obtained indicate that the intake of 5mg/kg BW caffeine able to improve aerobic performance in active individual.

Keywords

caffeine, doses, aerobic, anaerobic, active

POSTER S7-08

Relationship between GPS and Accelerometer to Measure Energy Used in Physical Activities

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Background & Aim

Measuring and assessing energy used in physical activities are essential to determine the quality of certain activity toward human health. This study is to test the relationship of Global Positioning System (GPS) with heart rate monitor and accelerometer in determining levels of moderate to vigorous energy used among university staffs during their own capability in limited time.

Methods

10 male university staffs (age: 26.7years \pm 0.92SD) participated in this pilot study. Two different jogging courses used in this measuring energy used study. Participants were asked to wear GPS watch with chest-strapped heart rate monitor and accelerometer before starting their activity. They were then were asked to do some exercises (stretching, slow jogging, brisk walking and running) freely according to their own capability in 30 minutes. Data gathered from the devices are process and analyze in specific software.

Results

A minimum of 115 kCal used in this 30 minutes activity and maximum used energy is 240.14 kCal. The respondent's movement during exercise from GPS were able to be map and viewed graphically for better analysis.

Conclusions

Results suggested, these two devices can be combined to objectively assess the energy used when doing any physical activity.

Keywords

Physical activity; assessment; accelerometer; GPS; Accelerometer, energy used

POSTER S8-01

Psychotherapy Intervention: A Case Report in Anxiety and Recurrent Injury Young Soccer Athlete

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Background & Aim

Anxiety in the athlete can occur because of recurrent injuries. Anxiety in injured athlete that is not handled properly can disrupt the athlete's healing process, self-confidence and athlete's performance after the rehabilitation process. Psychotherapy is one of the companion methods during the rehabilitation process that aims to overcome anxiety in injured athlete.

Methods

This case report shows a 17-year-old male soccer athlete who had recurrent knee injuries three times in the past three months and currently in a mild state of anxiety. The current rehabilitation process is combined with psychotherapy included imagery, relaxation and goal setting interventions for six weeks.

Results

The results obtained have improved the mental status of patients after receiving psychotherapy interventions during the rehabilitation process.

Conclusions

Psychotherapy is recommended during rehabilitation process, to prevent and address the athlete's psychological problems. Psychotherapy during rehabilitation will help in the healing process of his own injury.

Keywords

Anxiety, Recurrent injuries, Injured athlete, Rehabilitation, Psychotherapy

Competing Interests

I submit this abstract for poster presentation, my division (Sports Medicine Division, Department of Community Medicine, Faculty of Medicine Universitas Indonesia, Jakarta, Indonesia) support me to join this congress.

POSTER S8-02

Psychological Impact of Sports Injury Among Elite Athletes in Malaysia: The Role of Psychosocial Factors

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Background & Aim

Sport injury has increased in the past 15–20 years, and still remains a major reason for premature retirement in elite athletes (Knowles et al., 2006). Systematic reviews of the psychology of sport injury suggest that injury is typically related to negative concepts such as grief, loss, and depression (Brewer, 2007; Evans, et al, 2006). In order to understand psychological response following athletic injury, researchers have established several post injury models for example Integrated Model of Psychological Response to the Sport Injury by Wiese-Bjornstal et al. (1998), which have consistent research support (e.g. Albinson et al, 2003, Santi 2013 and Clement 2015). The aim of this study was to study the factors moderating elite athletes' psychological response post injury based on the model by Wiese Bjornstal et al (1998). The factors studied consist of three unique characters of an athlete namely athletic identity, social support and coping skills. The changes in psychological response through the post injury phases were also studied.

Methods

This study was conducted in National Sports Institute Malaysia. One hundred and four (104) elite athletes were included in the study. It was a cross sectional and cohort study design. The athletes in this study answered sets of questionnaires (AIMS, ACSI, SSQ, PRSII) to assess the athletic identity, social support, coping skills and psychological response. Prior to the study, all the questionnaires were translated and validated. The athletes answered the questionnaires at two points: immediately post injury period (within 1 week) and for the athletes with time loss of more than 2 weeks were subsequently called for follow up and answered the questionnaire on the psychological response before return to play. All the athletes answered the questionnaires individually in a quiet room with the present of the author to assist the athletes during the session.

Results

Study showed factors unique in athletes (athletic identity, social support and coping skills) significantly affected the athletes' negative psychological response to sport injury, particularly isolation ($R^2 = 0.17$, $F(10, 93) = 1.91$, $p < 0.05$), feeling cheated ($R^2 = 0.21$, $F(10, 93) = 2.33$, $p < 0.05$) and restless ($R^2 = 0.197$, $F(10, 93) = 2.28$, $p < 0.05$).

Among these factors, athletic identity and social support contributes the most. Athletes' psychological responses ($Z = -3.59$, $p < 0.005$) were significantly improved from early injury to late injury phase.

Conclusion

This study showed that psychological responses of the injured athletes in Malaysia were contributed mainly to athletic identity and social support. Thus, to tackle issues related to sport injury, emphasize not solely to physical issue per se but as well to tackle the psychological aspect with the main concern on athlete's identity and provision of support in the athletes' network. The psychological response of injured athletes should be examined, any intervention needed should be deliver at early injury phase when athletes showed more negative emotions.

Keywords

Psychological response, mood, elite athlete

POSTER YRA-01

Malaysian Age-grouper Triathlete Population: A Pilot Study to Predict VO₂max Using Bruce, Astrand and Modified Harvard Step Test

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Background

Cardiorespiratory fitness is best measured as VO₂max (ml/g/min) via Bruce maximal treadmill test (gold standard), however it is physically demanding even for the physically fit. The submaximal testing using Astrand-Rhyming cycling ergometer and Modified Harvard Step Test (MHST) can predict VO₂max but never compared directly with Bruce in Malaysian population. We conducted a study comparing VO₂max obtained from Astrand and MHST with Bruce protocol in local age-grouper triathlete population.

Methods

Thirty-eight triathletes (mean age: 36.16 years [24 – 48]) underwent MHST, Astrand and Bruce testing twice within 2 weeks, first time for familiarization. Data from familiarization were discarded and only data from second testing were taken for analyses. Statistical analysis performed using paired t-test and bivariate correlation.

Results

VO₂max from Bruce, Astrand and MHST expressed in ml/kg/min (mean, range): 49.42 (31.48 – 61.22), 49.91 (28.98 – 72.55) and 40.21 (33.45 – 48.18) respectively.

VO₂max obtained from Astrand was comparable with Bruce and showed no statistically significant difference ($r = 0.472$, $p = 0.754$) but MHST showed stronger correlation with Bruce results ($r = 0.566$, $p < 0.001$). Maximal heart rate reached during testing protocol was highest in Bruce (200 beats per minutes), followed by MHST (172 beats per minute) and Astrand (163 beats per minute).

Conclusion

Astrand cycling ergometer and MHST are reliable in predicting VO₂max in triathlete population.

POSTER YRA-02

Poor Correlation of Knowledge and Attitude among Undergraduates Trainee Teachers After Exposure to Basic First Aid Management

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Background & Aim

Due to high number of accidents and injuries in schools, the need of First Aid knowledge for teachers is necessary. Training of First Aid had been given to trainee teachers before their enrolment to school. However, the knowledge, attitude and effective implementation of first aid among trainee teacher is still unknown. Therefore, this study aims to observe the relationship of First Aid knowledge and attitude among trainee teachers based on previous First Aid courses attended. The confidence level of these subjects to be a good bystander is also investigated.

Methods

The association of Basic First Aid training was examined in 70 undergraduate trainee teachers (35 sports program, 35 non-sports program) from University Pendidikan Sultan Idris (UPSI). First Aid self-administrated questionnaire with three major parts; General Knowledge of First Aid, First Aid Management and Attitude towards First Aid was used to collect the data. Pearson's correlation coefficient test was used to measure the relationship between the level of knowledge and attitude of First Aid Management toward their previous training.

Results

The analysis showed that there was moderate relationship between First Aid knowledge and attitude among UPSI trainee teachers ($r= 0.35$) based on Cohan's correlation table. However, there was a very weak relationship between First Aid knowledge and confidence level among the trainee teachers ($r = -0.16$) despite of a moderate relationship of the trainee teachers' confidence level with First Aid training and CPR ($r = -0.34$).

Conclusions

The need to focus of the retention of First Aid training among trainee teachers before beginning their working life as teachers is compulsory. Observation had shown that even after being trained in early of their educational life, there were lack of knowledge in First Aid and confidence in an attempt to be a bystander. Therefore, it is suggested to continuously educate UPSI trainee teachers on First Aid especially before their enrolment in school.

Keywords

First aid; correlation; knowledge; attitude; first aid training

POSTER YRA-03

Correlation Between Shoulder Pain and Shoulder Muscles Strength Among Malaysia Male National Wheelchair Basketball Players.

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Background & Aim

Prevalence of shoulder pain among wheelchair basketballers is higher than the general population. Dysfunction of the shoulder joint may contribute to muscle imbalance and pain impairing their functional daily activities and decreased sporting performances. Prevalence and correlation of shoulder pain in functional wheelchair activities and shoulder strength has not been widely explored in the literature, particularly in the Malaysian setting.

This study aimed to determine the prevalence of shoulder pain and its associated factors among Malaysia male national wheelchair basketball players.

Methods

This cross-sectional study involved all Malaysian male national wheelchair basketballers (n=11). Sociodemographic data, wheelchair basketball experience, weekly training durations, number of transfers per day and Wheelchair User's Shoulder Pain Index (WUSPI) score were collected. Shoulder physical assessments and shoulder muscles strength were evaluated via handheld dynamometer (HHD) Powertrack™II Commander JTech by the primary investigator. The correlation of shoulder pain (WUSPI) with shoulder strength were compared by using Spearman correlation test.

Results

A total of 22 shoulders of 11 players were examined. Four players (36.4%) have shoulder pain, involving five (23%) shoulders. Based on clinical assessments supraspinatus injury was frequently diagnosed (27%), followed by subacromial impingement (20%), injuries involving the biceps tendon (20%), subscapularis (20%), infraspinatus (7%) and shoulder instability (6%). Duration of wheelchair use (p=0.047) and WUSPI score (p=0.036) were found to be significantly different between the shoulder with (n=4) and without pain (n=7). A significant negative correlation between dominant shoulder abduction strength with WUSPI score (p=0.030) was noted.

Conclusion

There was a high prevalence of shoulder pain among Malaysia male national wheelchair basketball player. Supraspinatus injury was the commonest injury among players. A negative correlation of shoulder abduction strength with shoulder pain (WUSPI) was found.

Keywords

Basketball, shoulder strength, shoulder pain, wheelchair, WUSPI

Competing interest

None

POSTER YRA-04

Generalized Tonic-Clonic Seizure in a Collapsed Runner – A Case Review

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Introduction

This case illustrates the challenges in establishing a definitive diagnosis in a runner who collapsed with a fit at the finishing line which was unlikely cardio-neurogenic in origin.

Case report

A 42-year-old recreational runner who has been taking moxifloxacin antibiotics for an upper respiratory tract infection completed a fun-run event on a balmy weekend morning. He developed a generalized tonic-clonic seizure which lasted under a minute, witnessed by the attending medical doctors. Upon arrival at the emergency department, he regained full consciousness and had no recollection of the preceding event. He was clinically stable and physical examination was unremarkable. Biochemical investigations showed lactic acidosis, modest hypokalaemia and a mild haemoconcentration likely due to dehydration. Naranjo scoring for measuring the probability of an adverse drug reaction was 1. He trekked two intermediate-height hills within the past week and was notably lethargic on race-day. An MRI and a subsequent EEG of the brain were not suggestive of a primary intracranial pathology, whilst a maximal treadmill exercise stress-testing and an ECG excluded a cardiac-related cause. An advice for progressive incremental sporting participation, preferably accompanied by a partner was given. Six months down the road, he successfully scaled Mount Kinabalu and has been keeping well since.

Discussion

We postulate that the complex physiological interplay of innate fatigue due to prior exhaustive physical exertions evidenced by mild haemoconcentration coupled with transient cerebral hypoperfusion upon sudden cessation of running at the end due to postural hypotension, in addition to the potential CNS hyper-excitation action of the fluoroquinolone-group antibiotics precipitated by electrolyte imbalance, though rare, may have caused the brief neurological disturbance leading to the observed myoclonic manifestations. We do not believe that this is a primary neurological seizure due to the rapid onset of recovery and negative electro-radiographical investigations.

Keywords

Exercise-associated collapse, moxifloxacin, runner, tonic-clonic seizure

Competing interest

None declared.

POSTER YRA-05

Understanding the Behaviour, Belief, Knowledge and Perception of Malaysian Universities Athletes' Towards Doping in Sports

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Background

Doping in sports at present is on escalation, many cases have being reported in various sports involving athletes from South East Asia (SEA) countries. Its incidence not only occurs among the top athletes but also among the university athletes', the future professional athletes. This study was done to understand the doping behaviour among athletes in this region.

Hypothesis

The Malaysian universities athletes have positive behaviour towards doping.

Study design

Cross sectional study.

Level of Evidence

Level 1

Methods

A survey was conducted during Malaysian Universities Games in Kuala Lumpur 2014, in which six hundred and fourteen (614) athletes responded to a questionnaire on their perception, the specific knowledge, environment, behaviour and belief towards doping.

Result

From this survey, there was evident that the knowledge about doping among the athletes was poor, wrong perception present in most of the athletes and most importantly, their behaviour towards doping seems to be positive. 72% of the athletes did not know about the list of banned substances and drugs ($p < 0.05$), meanwhile, 38% of the athletes do not know about the anti-doping program within the country ($p < 0.05$) and 78% of them were not aware the existing of World Anti-Doping Association (WADA) ($p < 0.05$). 18% of the athletes had encountered individuals who took doped substances, 1% of them would try doping in order to accomplish personal results in competitions ($p < 0.05$) and most importantly, it had been found that 2% of the athletes declared of taking banned substance ($p < 0.05$).

Conclusion

The doping behaviour among Malaysian university athletes is moderately positive; however, the doping risks in this region is still unknown.

Clinical Relevance

It is highly recommended for every SEA country to study their athletes in order to understand the doping risks and behaviour; and work together to set strategies for doping and anti-doping issues in this region.

Keywords

Doping, attitude, behaviour, university athlete, South East Asia

POSTER YRA-06

Association Between Doping Knowledge, Doping Attitude and Supplementation Practices Among Malaysian Elite Athletes.

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Background & Aim

Recently, there has been an increase in the number of cases where Malaysian athletes were tested positive for either medicinal or recreational drugs that have been prohibited by the World Anti-Doping Agency (WADA). As a result, they were banned from competing in international competition. Most of the athletes who have failed the doping tests blamed the supplements they consumed. The purpose of this study is to examine the relationship between knowledge on doping, attitude towards doping and supplementation habit among Malaysian elite athletes.

Methods

This is a cross sectional study involving 79 Malaysian elite athletes, where 54 (68%) were males, and 25 (32%) were female athletes. Data collection was carried out using survey method via self-administered questionnaire consisting of questions regarding knowledge on doping, attitude towards doping and supplementation practices. Binomial logistic regression was used to measure the relationships between doping knowledge, doping attitude and supplementation intake.

Results

66% (n=52) of athletes consumed nutritional supplements in the previous six months and most of them obtained the nutritional supplements from sport nutritionists or dietician (90%, n=35). Regarding level of knowledge on doping, majority of athletes had moderate level of knowledge (80%, n=63). Meanwhile for the attitude towards doping, the overall mean and standard deviation PEAS score indicate that athletes in this current study were less likely to favor doping attitude (49.9 ±15.31). Regarding the relationship between doping knowledge and doping attitude towards supplementation intake, the logistic regression model was not statistically significant ($\chi^2(31) = 41.103, p > 0.05$).

Conclusion

It was found out that neither attitude towards doping nor knowledge on doping affects athletes' decision on supplements intake.

Key words

Knowledge on doping, attitude towards doping, supplementation practices, elite athletes