SPECIAL ISSUE

Volume 7 Issue1, 2020

ISN TODAY

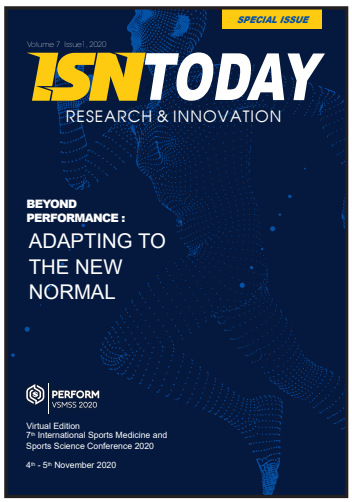
RESEARCH & INNOVATION

BEYOND PERFORMANCE : ADAPTING TO THE NEW NORMAL

PERFORM
VSMSS 2020

Virtual Edition
7th International Sports Medicine and Sports Science Conference 2020

4th - 5th November 2020



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International Sports Medicine and Sports Science Conference 2020 (Virtual Edition)

Programme and Abstracts

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INSTITUT SUKAN NEGARA MALAYSIA

PERFORM VSMSS 2020

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Research and Innovation Division
National Sports Institute of Malaysia

INTERNATIONAL SPORTS MEDICINE AND SPORTS SCIENCE CONFERENCE 2020 (Virtual Edition)

Beyond Performance: Adapting to The New Normal

The International Sports Science and Sports Medicine Conference (SMSS) which has been organised by the National Sports Institute of Malaysia since 1999. For the first time, SMSS will be held virtually. SMSS provides the perfect platform for scientists, researchers, students, athletes, coaches and professionals from all over the world to meet and discuss recent knowledge and innovations in the world of sports.

Our virtual conference aims to provide a transformative professional development experience by bringing together the world's scientific experts to catalyse and advance scientific knowledge in sports especially in sports medicine, sports science and sports technology.

We are excited about our first digital journey and we would be honoured for you to be part of our delegate.

HONOURABLE MINISTER OF YOUTH AND SPORTS, MALAYSIA

Since a physical gathering and travelling would be impossible due to the COVID-19 global pandemic has put a halt on all international conferences in Malaysia and forced this conference to become virtual.

The International Sports Medicine and Sports Science Conference (Virtual Edition) will be held from November 4th and 5th 2020 here in Kuala Lumpur, Malaysia aims to provide a transformative professional development experience by bringing together the world's scientific experts to catalyse and advance scientific knowledge in sports especially in sports medicine, sports science and sports technology.

This wonderful gathering, with over 150 representatives from the various components of the sports science milieu representing scientists, coaches, athletes, doctors, lecturers and students from all over the world are here to share their scientific and sporting achievements, wisdom, knowledge and latest research.

We are grateful to the National Sports Institute of Malaysia (ISN) for their tremendous commitment to organise, to put together an engaging programmes throughout this conference. Congratulations to ISN for putting an excellent initiative for continuous learning during the COVID-19 pandemic – sharing knowledge.

This Institute emphasizes the application of sports medicine and sports science in the development of Malaysian sports today which I believe is of upmost importance in the successful preparation of athletes for competition all over the world today.

ISN has been playing a significant role in helping the Malaysian national athletes excel in their endeavours in a multitude of competitions in a variety of sports. From a strong muscles and bone structure to a healthy heart and lungs, many aspects involved in order to increase the sport performance. The success of these Malaysian athletes has been in no small way aided by the sports science and sports medicine interventions that have been provided or facilitated through the Institute over the last two decades.

The ultimate goal is to educate a generation of athletes who will move Malaysia beyond the present level of achievement. We want to prepare the athletes to always be able to adapt to changes and to remain relevant in meeting the nation's hopes and aspirations in the international sporting arena.

I sincerely hope that this opportunity to develop cooperation and collaboration between practitioners, academicians and researchers shall contribute to a vibrant and productive sports eco-system not only here in Malaysia but also in all your home countries.

YB DATO' SRI REEZAL MERICAN NAINA MERICAN

CHIEF EXECUTIVE OFFICER, NATIONAL SPORTS INSTITUTE OF MALAYSIA

The COVID-19 pandemic certainly has provided the opportunity for National Sports Institute of Malaysia (ISN) to embark and explore a more innovative approach via digital platform for the International Sports Medicines and Sports Science Conference.

This year conference themed is “Beyond Performance: Adapting to the New Normal”. As the world begins to recover from COVID-19, there will be significant issues to be addressed to ensure the safety of sporting events at all levels and the well-being of sporting organizations. In the short term, these will include the adaptation of events to ensure the safety of athletes, fans and vendors, among others. In the medium term, there may also be a need to take measures to support participation in sporting activities, particularly for grassroots sports.

VSMSS 2020 is focusing on the sharing information on various disciplines such as Sports Medicine, Sports Science, Sports Technology, Talent Identifications and Development and Women in Sports. Thus, the conference also shares the field of science exercise that can contribute to health benefits.

In general, this conference covers the novel and fundamental advances in the fields of Sports Science, Sports Medicine and Sports Technology. It also serves to foster communication among researchers and practitioners working in wide variety of scientific areas including the speeches and lectures from world-renowned lecturers and professors. Also, it will be an ideal opportunity for all practitioners to be part of the interactive forum. Above all, the forum serves the platform to exchange idea and information for everyone.

ISN has been steadily nurturing an environment that will encourage a culture and best practice in applied research in sports medicine, science and technology. We have been collaborating with local and international experts to assist the coach and athlete to achieve their objectives. This is fortified by all the various educational activities organised by ISN, which provide opportunities to delve more deeply into new cutting edge approaches that help to garner those marginal gains towards victory for our athletes.

I hope through the interactions and collegial discussions amongst the speakers and participants will bring forth new ideas to be developed as well as provide food for thought among us so as to further bring the ideals and aspirations of sporting excellence for the betterment of sports as a whole.

AHMAD FAEDZAL MD. RAMLI

MESSAGE

CHAIRMAN VSMSS 2020

The International Sports Medicine and Sports Science Conference 2020 (Virtual Edition) has been made possible with the strong support of the Ministry of Youth and Sports of Malaysia and other partners and sponsors. I would like to express my deepest gratitude and thanks to the VSMSS 2020 team for their kind and committed involvement.

The COVID-19 pandemic has upended all areas of life - and sports is no exception. Now is the time to think ahead on sports “Beyond Performance: Adapting to The New Normal” which is the theme of this year conference.

ISN has emphasizes the application of sports medicine and sports science in the development of Malaysian sports today which is of upmost importance in the successful preparation of athletes for competition all over the world today. The success of these Malaysian athletes has been in no small way aided by the sports science and sports medicine interventions that have been provided or facilitated through the Institute over the last two decades.

This conference provides opportunities for all of us to learn the latest progress in research and clinical knowledge in all the various areas of sports science and sports medicine. This will be a platform and opportunity for leading researchers and scholars to share experiences and thoughts with local academicians and those involved in sports here in Malaysia as well as create a network of friendship and collaboration amongst us all.

We do believe that the topics offer will benefits the participants on the latest research and both theoretical and applied insight into the related disciplines.

I am sure the diverse fields represented here at this conference will be a fertile bed of research opportunities and knowledge sharing that will hopefully advance these fields of sports science and sports medicine that much further forward.

DR. THUNG JIN SENG

Day 1

4 Nov 2020, Wednesday

Time	Program			
0800 - 0830	**Login & Instruction Briefing**			
	CHANNEL 1	**CHANNEL 2**	**CHANNEL 3**	**CHANNEL 4**
0830 - 0900	**Welcoming Speech** (CEO of National Sports Institute of Malaysia)			
	Opening Speech (Minister of Youth and Sports Malaysia)			
0900 - 1000	**Prof. Louise Burke** Ketogenic Low-CHO, High-Fat Diet: The Future of Elite Endurance Sport?			
1000 - 1030		**ASSOC. PROF. Dr. Kok Lian Yee** Deliberating the Efficacy of Periodazation : Is Periodazation Based on Scientific Evidence		
1030 - 1130	**Prof. Ken Kazunori Nosaka** Science and Practice of Eccentric Training			
1130 - 1200	**Professional Sports Preparation** Athletes, Coaches & Support Staffs' Perspective	**Strength & Conditioning** Eccentric Training on Sports Performance		
1200 - 1230				
1230 - 1300	**Sponsored Presentation 1**			
1300 - 1400	**Lunch Break**			
1400 - 1500	**Prof. Rob Newton** Performance Diagnosis Informs Efficient Training Program Design			
1500 - 1530	**Prof. Tian Ye** China's Sport for All: Current Situation and Prospect			**Symposium** Identifying and Developing Potential Talents into Champions
1530 - 1600	**Recreational Sports Participation** Challenges in Recommencing Physical Activity Post COVID-19 Pandemic			
1600 - 1630				
1630 - 1700	**Road To Tokyo (RTT) Preparation** COVID-19 & The New Normal in Sports: The Challenges & Strategies		**Dr. Rizal bin Mohd Razman** Kicking up a fuss: What's the Deal with Taekwondo Electronic Body Protector	
1700 - 1730		**Dr. Oliver Gibson** Challenges to Performance Physiology when Exercising in the Hot Enviroment	**Prof. Mark King** Optimum Performance in Sports	
1730 - 1800		**Dr. Ashley Willmot** The Development and Implementation of Heat Alleviation Strategies to Enhance Athletic Performance	**Biomechanics** Application of Biomechanics in Sports Performance	
1800 - 1830		**Dr. Gary Brickley** Passing the Baton to Tokyo: A Coach and Scientist Approach		

- Keynote & Plenary
- Invited
- Research Interest Group & Symposium
- Sponsored Presentation
- Medical Topics

Day 2

5 Nov 2020, Thursday

Time	Program			
0800 - 0830	**Login & Instruction Briefing**			
Time	**CHANNEL 1**	**CHANNEL 2**	**CHANNEL 3**	**CHANNEL 4**
0830 - 0930	**Prof. John Hawley** A Time To Exercise, A Time To Eat: Chronobiology for Health & Performance			
0930 - 1030	**Asst. Prof. Dr. Margo Mountjoy** Keeping Our Female Athlete Healthy and Performing At Their Peak			
1030 - 1100		**Assoc. Prof. Intan Safinar Ismail** Sportomics: Metabolomics Application in Sports. Have You Heard About It?	**Women in Sports** Play it Safe: Fostering a Safe Sport Environment	
1100 - 1130		**Assoc. Prof Garry Kuan** The Power of Music as Motivation for Athletes and Home Exercisers: Towards to The New Norms		
1130 - 1200	**Sports Injury Management** Exploring Treatments Option	**Psychology** Art Themed Mindfulness		**Exercise Physiology** Training Monitoring (Training Load & Biomakers)
1200 - 1230				
1230 - 1300	**Sponsored Presentation 2**			
1300 - 1400	**Lunch Break**			
1400 -1430	**Return to Performance** Mind The Gap: Emphasizing on Teamwork Integration	**Sport Nutrition** Dietary Supplements and Athlete Performance : Needs vs Want ?		**Ts. Dr. Zulkifli Mohamad** Internet of Things (IoT) in Sports Application
1430 - 1500			**Performance Analysis** Current Trend in Performance Analysis	**Dr. Anwar P.P Abdul Majeed** The Classification of Skateboarding Tricks: Case Studies on the Employment of Machine Learning and Deep Learning Approaches
1500 -1530	**Health Conditions & Injury Affecting Athletes' Performance**			**Dr. Rabiu Muazu Musa** Machine Learning in Team Sports
1530 - 1600			**Dr. Peter O'Donoghue** Analisys of Tactical Movement in Games using Machine Learning	
1600- 1700	**Prof. Barry Drust** New Approaches to Player Development? Lesson Learnt for Football From the COVID-19 Crisis			
1700 - 1715	**Closing Speech**			

- Keynote & Plenary
- Invited
- Research Interest Group & Symposium
- Sponsored Presentation
- Medical Topics

Professor Louise Burke

Australian Catholic University, Melbourne, Australia

Title : Ketogenic Low-CHO, High-Fat Diet: The Future of Elite Endurance Sport?

4 November 2020 : Channel 1, 09:00 - 10:00

Chair : Dr. Yeo Wee Kian

Louise is a sports dietitian with nearly 40 years of experience in the education and counselling of elite athletes. She worked at the Australian Institute of Sport for thirty years, first as Head of Sports Nutrition and then as Chief of Nutrition Strategy. She was the team dietitian for the Australian Olympic Teams for the 1996-2012 Summer Olympic Games. Her publications include over 350 papers in peer-reviewed journals and book chapters, and the authorship or editorship of several textbooks on sports nutrition. She is an editor of the International Journal of Sport Nutrition and Exercise Metabolism. Louise was a founding member of the Executive of Sports Dietitians Australia and is a Director of the IOC Diploma in Sports Nutrition. She was awarded a Medal of the Order of Australia in 2009 for her contribution to sports nutrition. Louise was appointed as Chair in Sports Nutrition in the Mary MacKillop Institute of Health Research at Australian Catholic University in Melbourne in 2014 and took up this position in a full-time capacity in 2020.

Associate Professor Dr. Kok Lian Yee

Tunku Abdul Rahman University College, Kuala Lumpur, Malaysia

Title : Deliberating the Efficacy of Periodization: Is Periodization Based on Scientific Evidence

4 November 2020 : Channel 2, 10:00 - 10:30

Chair : Dr. Thung Jin Seng

Assoc. Professor Kok is a senior lecturer at the Tunku Abdul Rahman University College, Kuala Lumpur, Malaysia. Dr. Kok's main teaching focus is physical conditioning and coaching methodology as she has mainly been involved in research concerning optimizing of performance for elite athletes. strength and conditioning methods for different sports, and also testing and evaluation for sports and exercise.

Dr. Kok was actively involved with the coaching of athletes especially in sports such as netball and swimming. Dr. Kok was the Malaysian netball coach from 1999 until 2002, when she helped the national team obtain the best ranking in the 1999 world netball championships, and Malaysia's first gold medal in netball during the 2001 Kuala Lumpur SEA Games.

For this she was named "Coach of the Year" (Female, High Performance Athletes) by the National Sports Council inn 2002. In 2017, she was recalled to the national team as Assistant Manager to help the netball players again during the SEA Games. In addition to that, she was helped the National Sports Council, Johor State Sports Council and sports associations develop their coaching manuals and coach development programs. Currently, Dr. Kok is actively involved in coach education.

Professor Ken Kazunori Nosaka

Edith Cowan University, Perth, Western Australia

Title : Science and Practice of Eccentric Training

4 November 2020 : Channel 2, 10:30 - 11:30

Chair : Erik Tan Chek Hiong

Professor Ken is the Director of Exercise and Sports Science in the School of Medical and Health Sciences at Edith Cowan University (ECU) , Perth, Western Australia. He was awarded PhD from Yokohama City Medical School (Japan) in 1995. He worked in Japan for nearly 20 years as a teaching and research scholar before relocating to ECU in April 2004. He started to work at ECU as an Associate Professor and was promoted to a Full Professor in December 2009.

At ECU, he has been a research and administrative academic, and was a Director of Centre for Exercise and Sports Science Research (2007 – 2012) and a Postgraduate Course Coordinator of Exercise and Sports Science (2007 – 2014). He has supervised 18 PhD and 15 Masters by Research students to completion and is currently supervising 8 PhD and 4 Masters by Research students. He received the Vice Chancellor's Award "Excellence in Research Supervision" in 2008, and the Vice Chancellor's Award "Excellence in Research" in 2012. He was awarded "Certificate of Excellence" in recognition of being one of the most highly cited researchers over past five years in 2013, 2014 and 2015.

Professor Ken has published more than 200 peer-reviewed journal articles, and his main research topics include eccentric exercise-induced muscle damage and adaptation, neuromuscular fatigue, strength and power training, and effect of exercise on health and diseases. He has given many invited talks and presentations in conferences and workshops around the world.

Professor Robert Newton

Edith Cowan University, Perth, Western Australia

Title : Performance Diagnosis Informs Efficient Program Design

4 November 2020 : Channel 2, 14:00 - 15:00

Chair : Jad Adrian Washif

Professor Robert Newton, PhD, AEP, CSCS*D, FESSA, FNSCA is Professor of Exercise Medicine at Edith Cowan University, Perth, Western Australia. In 2020, he was appointed as a Vice-Chancellor Professorial Research Fellow in the Exercise Medicine Research Institute. In 2018, Professor Newton received the career achievement award from the Cancer Council WA and in 2019, was named the Western Australia Premier's Scientist of the Year.

Professor Newton has published over 800 scientific papers including 400 refereed scientific journal articles, 450 conference abstracts and papers, three books, 16 book chapters and has a current Scopus h-Index of 75 with his work being cited over 19,000 times. As of 2020, Professor Newton has attracted over $38 Million in competitive research funding.

His current major research directions include: exercise medicine as neoadjuvant, adjuvant and rehabilitative cancer therapy to reduce side-effects and enhance effectiveness of surgery, chemotherapy and radiation therapy; the influence of targeted exercise medicine on tumour biology and exercise medicine for reducing decline in quality of life, strength, body composition and functional ability in cancer patients.

Professor Tian Ye

Shen Zhen University, China

Title : China's Sport for All: Current Situation and Prospect

4 November 2020 : Channel 1, 1500 - 1530

Chair : Dr. Thung Jin Seng

Professor Dr. Tian Ye is currently the Chairman of China Association of Exercise Physiology and Biochemistry. He was the director of China Sport and Culture Development Center, the director-general of China Anti-Doping Center, the President of China Institute of Sport Science, and the vice-president of Beijing Sport University. Prof. Tian Ye has published over 17 scholarly on local and high-impact journals and served as an editor and reviewer for numerous international journals. Besides, he had been invited to deliver over 4 keynotes presentations globally and chaired the symposium Physical activity and health promotion in European Congress of Sport Science from 2017 to 2019.

Dr. Oliver Gibson

Brunel University, London, United Kingdom

Title : Challenges to Performance Physiology when Exercising in the Hot Environment

4 November 2020 : Channel 2, 17:00-17:30

Chair : Dr. Carl James

Dr Oliver Gibson is a Senior Lecturer in Exercise Physiology and a member of staff in the Division of Sport, Health and Exercise Sciences, Department of Life Sciences and a member of the Centre for Human Performance, Exercise and Rehabilitation.

Oliver was awarded his Ph.D from the University of Brighton in 2015 following undergraduate and postgraduate study at the institution where he obtained MSc Sport and Exercise Physiology, PGCE Post Compulsory Education, and BSc (Hons) Sport and Exercise Science degrees. Oliver is a fellow of the Higher Education Academy.

Oliver regularly publishes within peer-reviewed journals predominantly in the field of Exercise and Environmental Physiology with a particular focus on acute and chronic responses to heat and/or hypoxic stress, and subsequent sporting and clinical/health applications. Oliver's research also examines cross adaptation between environmental stressors, and the mechanistic role(s) of heat shock proteins in thermal adaptation. These publications can be viewed in the 'Selected Publications' tab.

Oliver provides peer-review for a number of international journals and has presented at a number of national and international conferences winning several young investigator awards.

Dr. Ashley Willmott

Anglia Ruskin University, Cambridge, United Kingdom

Title : The Development and Implementation of Heat Alleviation Strategies to Enhance Athletic Performance

4 November 2020 : Channel 2, 17:30 - 18:00

Chair : Dr. Carl James

Dr. Ash is an accredited Sport and Exercise Physiologist (British Association of Sport and Exercise Sciences [BASES]) and Chartered Scientist (CSci), a member of the Environmental Extremes Laboratory (EEL) and the Physiological Society and holds a Fellowship of the Higher Education Academy (FHEA).

With over nine years' experience in Sport and Exercise Physiology, Dr. Ash has worked at various institutions including the University of Brighton, Westminster and Roehampton. Ash specializes in the sensitivity and adaptation to extreme environmental conditions, specifically heat stress and altitude. He has undertaken numerous research studies involving acute and chronic heat alleviation strategies, which have translated into support for elite level ultra-runners for the Marathon des Sables and English Institute of Sport for Tokyo 2020 preparations.

Alongside this, he is continually working with business partners, a trustee for Para-Monte, an altitude awareness charity, and is continuing his commitment with ongoing educational talks and research into the susceptibility to mountain sickness within a range of populations. He has published over 20 peer-reviewed articles in high impact factor journals and has presented his research at national and international conferences.

Dr. Gary Brickley

University of Brighton, United Kingdom

Title : Passing the Baton to Tokyo: A Coach and Scientist Approach

4 November 2020 : Channel 2, 18:00 - 18:30

Chair : Dr. Carl James

Dr. Gary is an internationally respected Applied Exercise Physiologist from the University of Brighton in the UK. Dr. Gary has been involved in High Performance Sport as the physiologist for British Cycling and has been heavily involved in coaching as well as providing sport science support for the Great Britain Paralympic Cycling team guiding them to multiple gold medals over 6 Olympic cycles. He was appointed to the Coaching Hall of Fame in 2009, won the University Alumni of the Year as well at British Association of Sport and Exercise Science Applied Practitioner of the year in 2019.

Dr. Gary has a PhD. in muscle metabolism, an MSc in Cardiology and continues research work in critical power, cardiology, Premier League football and Paralympic sport. He is an accomplished open water swimmer crossing the English Channel solo in 2016, as well as numerous other channel swims. Gary continues to coach in swimming, triathlon and cycling and will give an insight into his vast experience in high performance sport as a coach, athlete and scientist.

Dr. Rizal bin Mohd Razman

University of Malaya, Kuala Lumpur, Malaysia

Title : Kicking Up a Fuss: What's the Deal with Taekwondo Electronic Body Protector

4 November 2020 : Channel 3, 16:30 - 17:00

Chair : Yuvaraj s/o Ramasamy

A biomechanist based at the Centre for Sport & Exercise Sciences (CSES), University of Malaya. Rizal's focus is on technical enhancement of various sport skills. Current research includes studying the reliability of the taekwondo electronic body protector scoring system, designing an apparatus to help the visually impaired run and; looking at the effects of leg length discrepancies on gait. Moreover, he has a particularly keen interest in finding solutions for applied problems in an array of different fields. He was instrumental in establishing the UM Sports Science Support Services (UM4S) which is the current commercial arm of the labs; which help sustain their operations.

Rizal is an accomplished floorball and hockey player. An active coach, he has coached the national floorball team, was assistant national coach of the hockey team and coached various state teams. A medallist at the 2015 SEA Games as a player, and at the 2019 SEA Games as a coach, he is currently the president of the Malaysian Floorball Association.

Professor Mark King

Loughborough University, United Kingdom

Title : Optimum Performance in Sports

4 November 2020 : Channel 3, 17:00 - 17:30

Chair : Dr. Viswanath Sundar

Dr. King is a lecturer with over 20 years of research experience investigating optimum performance and minimizing injury risk in elite athletes. Dr. King has been at Loughborough since 1990 graduating in Sport Science and Mathematics in 1993 and obtained his PhD in computer simulation of dynamic jumps in 1998. Dr. King has worked with a broad range of sports including gymnastics, cricket, athletics, badminton, swimming and tennis. Dr. King has received over £1 million in externally funded grants for research, has over 60 peer-reviewed journal publications.

Professor John Hawley

Australian Catholic University, Melbourne, Australia

Title : A Time to Exercise, A Time to Eat: Chronobiology for health & Performance

5 November 2020 : **Channel 1, 08:30 - 09:30**

Chair : **Dr. Yeo Wee Kian**

John is currently Director of the Mary MacKillop Institute for Health Research and Head of the Exercise and Nutrition Research Program at the Australian Catholic University, Melbourne, Australia. He has published over 280 scientific manuscripts, written over 100 articles for technical journals and has authored numerous book chapters for exercise biochemistry and sports medicine texts. He currently sits on the Editorial Boards of many international journals including the American Journal of Physiology (Endocrinology and Metabolism), The Journal of Applied Physiology (U.S.A.), The Journal of Sports Sciences (U.K), Medicine & Science in Sports & Exercise (U.S.A.), Sports Medicine (New Zealand) and The International Journal of Sport Nutrition and Exercise Metabolism (U.S.A.). The focus of his lab's work includes the interaction of exercise and diet on skeletal muscle metabolism, the molecular bases of exercise training adaptation and the cellular bases underlying exercise-induced improvements in insulin action. He is a frequently invited speaker at both National and International scientific meetings.

Associate Professor Dr. Margo Mountjoy

McMaster University, Canada

Title : Keeping Our Female Athlete Healthy and Performing At Their Peak

5 November 2020 : **Channel 1, 09:30 - 10:30**

Chair : **Syarifah Fathynah binti Syed Sheikh**

Dr. Mountjoy is an Associate Clinical Professor in the Department of Family Medicine at McMaster University Medical School and Regional Assistant Dean of the Michael G. DeGroote School of Medicine, McMaster University. She is also a clinician scientist - sports medicine physician practicing at the Health & Performance Centre at the University of Guelph, as the Clinical & Academic Director. Dr. Mountjoy works for several International Sports organizations in the field of sports medicine including the International Olympic Committee (Games Group), the International Federation for aquatics (FINA), the Association of Summer Olympic International Federations (Chair- ASOIF Medical and Scientific Consultative Group) and for the World Anti-Doping Agency (Health Medicine and Research). She is a retired elite artistic swimmer.

One of her areas of expertise is the field of harassment + abuse in sport. She has worked in this area for the International Olympic Committee, ASOIF, FINA, and unicef. She is a member of the international consortium of researchers in the field: IRNOVIS (International Research Network on Violence and Integrity in Sports). She is an active advocate of the prevention of harassment + abuse in sport at the National level through the Canadian Olympic Committee and the Canadian Academy of Sport & Exercise Medicine.

Associate Professor Dr. Intan Safinar Ismail

Universiti Putra Malaysia, Malaysia

Title : Sportomics: Metabolomics Application in Sports: Have You Heard About It?

5 November 2020 : Channel 2, 10:30 - 11:00

Chair : ChM. Dr. Siti Khadijah binti Ab Rahman

Associate Professor Dr. Intan Safinar Ismail completed her PhD and post-doctoral studies at Okayama University and Hoshi Medical University, Japan. She joined Universiti Putra Malaysia in 2005 and became the Head of Laboratory of Natural Products at the Institute of Bioscience in November 2011 until May 2017. Within the period of her affiliation to the Universiti Putra Malaysia, she has published around 160 papers in reputed journals and about 90 presentations at conferences, led 14 research projects and being invited as speakers including as keynote speaker at international meetings. She is an editor for Journal of Natural Medicines under Springer, and chairing a few important scientific meetings including Asian Symposium on Medicinal Plants and Spices (ASOMPS) XVII for 2020.

Associate Professor Dr. Garry Kuan

Universiti Sains Malaysia, Malaysia

Title : The Power of Music as Motivation for Athletes and Home Exercisers: Towards to The New Norms

5 November 2020 : Channel 2, 11:00 - 11:30

Chair : Aruna d/o Santhappan

Dr. Garry Kuan is a lecturer of the Exercise and Sports Science Programme, School of Health Sciences, Universiti Sains Malaysia, and the Postdoctoral Research Fellow at the Brunel University, London, United Kingdom. Currently, Garry is the Secretary-General and managing council of the Asian-South Pacific Association of Sport Psychology (ASPASP), the Secretary-General of the Malaysian Sport Psychology Association (MASPA), the executive board member of the Asian Council of Sports Science (ACESS) and Asian Exercise & Sport Science Association (AESA), and the Asia representative of ENYSSP and the scientific committee of the World Exercise Medicine.

In 2019, he was appointed as the Sport Psychology Panellist for the National Coaching Academy of Malaysia. Previously, Garry was a lecturer at Victoria University, the President of Australian Federation of International Students, and a contract Sports psychologist with the Australia Institute of Sport (AIS). He was also a certified trainer and sport coach for the Active-After School Communities (AASC) programme, and a registered music therapist. He received the “A-CIPA Young Researcher Award” at the ICSEMIS pre-Olympic conference.

During his social time, he teaches communities to play various musical instruments. He is the founder and resident conductor of the USMKK Symphony Orchestra. Garry also performed with prestige orchestras such as the Melbourne Symphony Orchestra, and Melbourne Symphonic Orchestra.

Associate Professor Ts. Dr. Zulkifli Mohamad

Universiti Teknologi Mara (UiTM), Malaysia

Title : Internet of Things (IoT) in Sports Application

5 November 2020 : Channel 4, 14:00 - 14:30

Chair : Mohamad Fauzi bin Ibrahim

Ts Dr Zulkifli Mohamed received his Bach. Eng. degree in Mechanical Engineering from Universiti Teknologi MARA, Malaysia, in 2003, M.Eng in Mechanical Engineering from Universiti Teknologi Malaysia, in 2006 and Dr. Eng. in Robotics and Intelligent System from Toyama University in 2014. He worked as a Senior Lecturer in the Faculty of Mechanical Engineering UiTM since 2007 and currently he is the Head of Sports Engineering & Artificial Intelligence Centre in Universiti Teknologi MARA, Malaysia. His research interest includes sports engineering device, IoT, intelligent system, evolutionary algorithm, and mobile humanoid robots.

Dr Anwar P.P. Abdul Majeed CEng MIMechE

Universiti Malaysia Pahang, Malaysia

Title : The Classification of Skateboarding Tricks: Case Studies on the Employment of Machine Learning and Deep Learning Approaches

5 November 2020 : Channel 4, 14:30 - 15:00

Chair : Muhammad Ridwan bin Jaafar

Dr. Anwar P.P. Abdul Majeed graduated with a first-class honour B.Eng. in Mechanical Engineering from Universiti Teknologi MARA (UiTM), Malaysia. He obtained an MSc. in Nuclear Engineering from Imperial College London, United Kingdom. He then received his PhD in Rehabilitation Robotics from the Universiti Malaysia Pahang (UMP). He is currently serving as a senior lecturer at the Faculty of Manufacturing and Mechatronics Engineering Technology, UMP. He is an active research member at the Innovative Manufacturing, Mechatronics and Sports Laboratory (iMAMS), UMP. His research interest includes rehabilitation robotics, computational mechanics, applied mechanics, sports engineering, renewable and nuclear energy, sports performance analysis as well as machine learning.

Anwar has authored over 60 papers in different journals, conference proceedings as well as books. He serves as a reviewer a number of prolific journals such as IEEE Access, Frontiers in Bioengineering and Biotechnology, SN Applied Sciences, Applied Computing and Informatics amongst others. He has also served as a Guest Editor for SN Applied Sciences as well as an Editor for several Springer book series.

Dr. Rabiu Muazu Musa

Universiti Malaysia Terengganu, Malaysia

Title : Machine Learning in Team Sports
5 November 2020 : **Channel 4, 15:00 - 15:30**
Chair : **Mohamad Fauzi bin Ibrahim**

Dr Rabiu Muazu Musa holds a PhD degree from Universiti Sultan Zainal Abidin (UniSZA), Malaysia. He obtained his MSc in Sports Science from UniSZA in 2015 and his BSc in Physical and Health Education at Bayero University Kano, Nigeria in 2011. His PhD research focused on the development of multivariate and machine learning models for athletic performance. His research interests include performance analysis, health promotion, sports psychology, exercise science, talent identification, test and measurement as well as machine learning.

Dr. Peter O'Donoghue

Cardiff Metropolitan University, Cardiff, United Kingdom

Title : Analysis of Tactical Movement in Games using Machine Learning
5 November 2020 : **Channel 3, 15:30 - 16:00**
Chair : **Mohd Sofwan bin Ahmad Naim**

Peter O'Donoghue has a B.Sc Hons Data Processing from the Ulster Polytechnic (1984), an M.Sc Information Technology from Ulster University (1985), a PhD in Computer Science from Ulster University (1993) and an M.Sc with Distinction in Computer Science from Ulster University (1999). He has lectured computer science at Robert Gordon University (1985-87) and Ulster University (1990-98) and has lectured sports performance analysis at Ulster University (1999-2003) and Cardiff Metropolitan University (2003-present).

He is currently a Reader at Cardiff Metropolitan University and programme director of the M.Sc Sports Performance Analysis (Analytics). He has written or co-authored six books and edited three other books as well as being an author or co-author of over 90 peer reviewed journal publications. Peter has given keynote presentations at 12 international conferences in sports performance analysis, analytics or sports science. His main research interests are in predictive modelling in sports performance, spatio-temporal analysis of team games and tactical analysis in tennis.

Professor Barry Drust

University of Birmingham, Birmingham, United Kingdom

Title : New Approaches to Player Development? Lesson Learnt for Football From the COVID-19 Crisis

5 November 2020 : Channel 1, 16:00 - 17:00

Chair : Dr. Carl James

Barry is an applied exercise physiologist with a particular interest in intermittent exercise and the sport of football. He is recognized internationally for his research in the area of football performance and player preparation and his applied experience working within the sport. He is also the programme leader for the Doctorate in Sport and Exercise Science at the University.

SYMPOSIUM

Theme

Identifying and Developing Potential Talents Into Champions

4 November 2020	**: Channel 4, 15:00 - 17:00**
Chair	**: Mohd Zaid bin Mohd Ghazali**

Professor Dr. Johan Pion

Head of Department,
Talent Identification and Development,
HAN University of Applied Sciences, Netherlands
Guest Professor at Ghent University, Belgium

Title: Overview of Talent Identifications and Development Essential Elements for Future Champions

Dr. Irene Faber

Post-doctoral Fellow
Carl von Ossietzky University of Oldenburg, Germany

Title: The Value of Motor Testing as Part of Talent Identification in Table Tennis

Dr. Mohd Rozilee Wazir bin Norjali Wazir

Senior Lecturer
Universiti Putra Malaysia, Malaysia

Title: Talent Identification: A New Exciting Era for Malaysia

Associate Professor YM Dr. Tengku Fadilah binti Tg. Kamalden

Head of Department,
Sport Department, Faculty of Education
Universiti Putra Malaysia, Malaysia

Theme

Play it Safe: Fostering a Safe Sport Environment

05 November 2020	**: Channel 3, 10:30 - 11:30**
Chair	**: Syarifah Fathynah binti Syed Sheikh**

Assoc. Prof Dr. Margo Mountjoy

Regional Assistant Dean, Clinician Scientist, Clinical & Academic Director
McMaster University
University of Guelph

Title: Protecting Athletes from Harassment and Abuse in Sport

Sarina Sundara Rajah

Founder and Principal, Former National Rhythmic Gymnast
SRGC.Asia

Title: Fostering Safe Sports Environment from a Practitioner Perspectives

Dr. Sharifah Syahirah S. Sheikh

Senior Lecturer
Kolej Universiti Polu-Tech MARA

Title: Eliminating Sexual Harassment and Abuse in Sports: Initiatives & Challenges in Malaysia

RESEARCH INTEREST GROUP

Strength & Conditioning

Title	: Eccentric Training of Sport Performance
04 November 2020	**: Channel 2, 11:30 - 12:30**
Chair	**: Erik Tan Chek Hiong**
Speaker	**:**

Professor Ken Kazunori Nosaka

Director of Exercise and Sports Science
Edith Cowan University, Perth, Western Australia

Biomechanics

Title	:Application of Biomechanics in Sports Performance
04 November 2020	**: Channel 3, 17:30 - 18:30**
Chair	**: Yallini Selva**
Speaker	**:**

Professor Mark King

Associate Dean for Enterprise
Loughborough University, United Kingdom

Dr. Rizal bin Mohd Razman

Senior Lecturer
University of Malaya, Kuala Lumpur, Malaysia

Dr. Viswanath Sundar

Senior Biomechanist
National Sports Institute of Malaysia

Mohd Manshahar Abd Jalil

Coach
Malaysia Athletics Federation

Noraseela Mohd Khalid

Olympian
Sarawak State Sports Council

Sport Psychology

Title	: Art Themed Mindfulness
05 November 2020	: **Channel 2, 11:30 - 12:30**
Chair	: **Aruna d/o Santhappan**
Speaker	:

How Peck Ngor

Head of Sport Psychology Centre
National Sports Institute of Malaysia

Philip Lew Chun Foong

Sport Psychologist
National Sports Institute of Malaysia

Nor Azura binti Mat Nasir

Sport Psychologist
National Sports Institute of Malaysia

Sports Nutrition

Title	: Dietary Supplements & Athletes Performance: Need vs Want?
05 November 2020	: **Channel 2, 14:00 - 15:00**
Chair	: **Mohd Izham bin Mohamad**
Speaker	:

Chai Wen Jin

Sport Nutritionist
National Sports Institute of Malaysia

Tania Lee

Sports Dietitian, Sports Nutrition Academy PLT
Fellow Consultant in Sports Nutrition (UPMSA)
Vice President, Malaysian Olympism in Action Community

Loo Lean Hong

Sport Nutritionist, Private Wellness & Learning Center
Visiting Sport Nutrition Consultant State Sports Council &
i-Sports Physiotherapy & Rehabilitation Center, Island Hospital

Performance Analysis

Title : Current Trend in Performance Analysis

05 November 2020 : **Channel 3, 14:30 - 15:30**

Chair : **Sofwan Naim**

Speaker :

Norasrudin Sulaiman

Lecturer
Faculty of Sport Science and Recreation
Universiti Teknologi Mara (UiTM)

Dr. Nasnoor Juzaily bin Mohd Nasiruddin

Senior Lecturer
Department of Sport Studies
Faculty of Educational Studies
Universiti Putra Malaysia (UPM)

Datuk Ong Kim Swee

Assistant Technical Director, Football Association Malaysia
Acting Head of Unit Youth, Football Association Malaysia

Ahmad Hilmi bin Abdul Latif

Sports Performance Analyst
National Institute of Sports Malaysia

Exercise Physiology

Title : Training Monitoring (Training Load & Biomarkers)

05 November 2020 : **Channel 4, 11:30 - 12:30**

Chair : **Christopher Pok**

Speaker :

Dr. Carl James

Senior Sport Physiologist
National Sports Institute of Malaysia

Dr. Timothy John Jones

Head of Sport Psychology Centre
National Sports Institute of Malaysia

SPORTS MEDICINE FORUM

Theme

Professional Sports Preparation: Athletes, Coaches & Support Staff Perspective

04 November 2020	**: Channel 1 , 11:30-12:30**
Chair	**: Dr. Malini Karuppiah**

Dr. Malini Karuppiah

Sports Physician
Hospital Serdang, Selangor

Associate Professor Dr. Abdul Halim bin Mokhtar

Consultant Sport Physician
Universiti Malaya Medical Centre, Kuala Lumpur

Title: Travelling with Athletes: Medical Preparations

Sivanasvaran Suppiah

Head of Medical and Sports Science Unit
Chief Physiotherapist
Football Association of Malaysia, Selangor

Title: Adaptation to the New Norm in Team Sports by Athlete's, Technical and Support Staff

Nurdiasafra binti Hassan

Senior Physiotherapist
National Sports Institute of Malaysia, Kuala Lumpur

Title: Road to Tokyo Camp Post MCO (Malaysia Driving Team): A Physiotherapist Perspective

Theme

Recreational Sports Participation: Challenges in Recommencing Physical Activity Post COVID-19 Pandemic

04 November 2020 : Channel 1 , 15:30-16:30
Chair : Suresh s/o Marathamuthu

Suresh s/o Marathamuthu

Research Officer
National Sports Institute of Malaysia, Kuala Lumpur

Associate Professor Nahar Azmi bin Mohamed

Head, Sport Medicine Unit
Universiti Malaya, Kuala Lumpur

Dr. Rozaiman bin Ebrahim

Head of Service, Sports and Exercise Medicine KKM
Hospital Tuanku Jaafar, Seremban, Negeri Sembilan

Capt (B) Prabhu s/o Nagarajan

Head of Program Fit Malaysia X
National Sports Institute of Malaysia, Kuala Lumpur

Title: Fit Malaysia X Program

Theme

Road to Tokyo (RTT) - COVID-19 & The New Normal in Sports: The Challenges & Strategies

04 November 2020 : Channel 1, 16:30 - 17:30
Chair : Dr. Azril Syazwan bin Mohd Ali

Dr. Azril Syazwan bin Mohd Ali

Consultant Sports Physician
National Sports Institute of Malaysia, Kuala Lumpur

Dr. Kamarul Hashimy bin Hussein

Director of Sports Medicine
National Sports Institute of Malaysia, Kuala Lumpur

Title: How We Face (mask) the Challenges of COVID-19

Professor Mutsuo Yamada

Chief Medical Officer of Asia Rugby
Ryutsu Keizai University, Japan
Asia Rubgy

Title: Road to Rugby World Cup 2019, Olympics 7's & Paralympic Track & Field

Dr. Helan Walker

Physiotherapy Consultant
Founder of Physio4Athletes, Melbourne, Australia

Title: Current Physiotherapy Practice in High Performance Sport Environments During The COVID-19 Pandemic: A Melbourne, Australia Perspective

Yeo Hwee Koon

Team Lead, Principle Sport and Exercise Physiotherapist
Sport Science and Sport Medicine, Singapore Sport Institute

Title: Resetting the Circuit Breaker - The Team Singapore Approach

Theme

Sports Injury Management: Exploring Treatments Option

05 November 2020 : Channel 1, 11:30 - 12:30
Chair : Dr. Kamaljeet Singh Jaharan Singh

Dr. Kamaljeet Singh Jaharan Singh

Consultant Sports Physician
Hospital Kuala Lumpur

Dato' Dr. Ramlan bin Hj. Abd. Aziz

Senior Consultant Sports Specialist
National Sports Institute of Malaysia, Kuala Lumpur
Title: **Prolotherapy: A Practitioner's Perspective**

Associate Professor Dr. Shariff A. Hamid

Consultant Sport Medicine
Universiti of Malaya, Kuala Lumpur

Dr. Gan Eng Cheng

Orthopaedic Surgeon (Sports Surgery)
KPJ Damansara Hospital, Selangor
Title: **Stem Cells Usage in Sports Injuries**

Sports Injury Management: Exploring Treatments Option

Dr. Azril Syazwan bin Mohd Ali

Consultant Sports Physician
National Sports Institute of Malaysia, Kuala Lumpur

Title: Management of Concussion in Sports

Nur Hidayah Ong binti Abdullah

Head of Unit, Head of Physiotherapy Profession
Hospital Sultanah Aminah Johor Bahru
Ministry of Health Malaysia

Title: Enhance Self-Efficacy in Sport Physiotherapy for Pain Management

Faezah binti Md Jais

Head of Sports Rehabilitation Branch
National Sports Institute of Malaysia, Kuala Lumpur

Title: Injury Prevention Strategies in Sports

Theme

Return to Performance - Mind the Gap: Emphasizing on Teamwork Integration

05 November 2020	**: Channel 1, 14:00 - 15:00**
Chair	**: Dr. Jazmiza Khusairi bin Jasme**

Dr. Jasmiza Khuzairi bin Jasme

Head of Sports Care
National Sports Institute of Malaysia, Kuala Lumpur

Dr. Arshad bin Puji

Consultant Sport Medicine
Hospital Kuala Lumpur

Title: Returning to Competitive Sports in Elite Athletes: The physician's

Dr. Shamsul Iskandar bin Hussein

Consultant Orthopaedic Surgeon (Sports & Joints)
Ara Damansara Medical Centre, Selangor

Title: Update on ACL Reconstruction - Between Hamstring Tendon & Bone-Patellar Tendon-Bone Autograft

Mohd Noorfaizalazrul bin Muhammad Azalai

Head, Rehabilitation Unit
National Sports Institute of Malaysia. Kuala Lumpur

Title: Return to Performance for lower extremities injury: Return to Play Testing and Challenges

Return to Performance - Mind the Gap: Emphasizing on Teamwork Integration

Mohd Hafizzuddin bin Baki

Assistant Director.
Anti-Doping Agency of Malaysia, Putrajaya

Title: World anti-doping code 2021: what to expect?

Mazwan bin Zainuddin

Strength and Conditioning Officer
National Sports Institute of Malaysia. Kuala Lumpur

Title: Return to Play: Role of Strength & Conditioning

Philip Lew Chun Foong

Sport Psychologist
National Sports Institute of Malaysia, Kuala Lumpur

Title: Recovery Mindset: The Psychology of Sports Injury

Goh Kok Wei

Group Leader (Paralympics)
National Sports Institute of Malaysia, Kuala Lumpur

Title: Nutrition Support During Injury Recovery - Multidiscipline Approach

Theme

Health Conditions & Injury Affecting Athletes' Performance

05 November 2020	**: Channel 1, 15:00-16:00**
Chair	**: Dr. Choong Wai Kwong**

Dr. Choong Wai Kwong

Medical Lecturer and Sport Physician
Universiti Malaya, Kuala Lumpur

Dr. Syed Iqbal bin Syed Husman

Senior Consultant Oral and Maxillofacial Surgeon
Hospital Sungai Buloh, Selangor

Title: Sports Dentistry: Sweet Smile Sweet Performance
Senior Consultant Oral and Maxillofacial Surgeon

Assistant Professor Dr. Louis Holtzhausen

Sports Medicine Physician
Aspetar Orthopaedic and Sports Medicine Hospital
Weill-Cornell Medical College, Qatar

Title: Wake Up to The Importance of Sleep in Concussion Care

Dr. Rizmy Najme Khir

Senior Lecturer, Clinical Specialist Head of Invasive
Cardiology Laboratory (ICL)
Universiti Teknologi MARA (UiTM)

Title: Risk of Competitive Sports in Athletes with Heart Disease

Dr. Mohd Farhan Hamdan

General and Musculoskeletal Clinical Radiologist, Medical Lecturer
UiTM Medical Specialist Centre
Faculty of Medicine, Sungai Buloh Camous

Title: Cruciate Ligaments of the Knee: MR
Imaging Anatomy and Common Pathology

Norhayati binti Mohd Jali

Head of Medical High Performance Unit
National Sports Institute of Malaysia, Kuala Lumpur

Title: Health Condition & Injury Affecting Athletes
Performance: The Role of ISN Medical HPT Unit

P01. Characteristic of surgically managed anterior cruciate ligament ruptures in a sports surgery practice Hospital Queen Elizabeth 2, Kota Kinabalu

MOHAMAD AZWAN AZIZ[1*] & REDZAL ABU HANIFAH[1]

[1]Sports Medicine Unit, Hospital Queen Elizabeth, Kota Kinabalu, Sabah
**Corresponding author: kassemkoya69@gmail.com*

Introduction: Anterior Cruciate Ligament (ACL) tear is one of the most commonly injured ligaments of the knee referred in sports medicine clinic. **Methods:** A retrospective data describing the characteristic of ACL injuries in patients who underwent arthroscopic procedure at Hospital Queen Elizabeth 2, Kota Kinabalu, Sabah in 2018 were obtained. **Results:** Out of 57 knee arthroscopic procedures, 59.6% (n=34) had ACL injuries. The mean and standard deviation age of patients was 30.4 ± 4.7, with 85% men, and 15% women. Most common cause of injuries were due to playing football (n=14,40.6%) and futsal (n=5,14.7%). Non-contact injury (n=18,53%) was the most common mechanism of injury. Out of 34 patients with ACL injuries, 74% had complete ACL tears, while 26% had partial ACL tears. 33 patients (97.2%) underwent ACL reconstruction. 82% of the ACL tears had concomitants injuries; posterior cruciate ligament tears reported were 17.6% (n=6), medial meniscus tears 47% (n=16), lateral meniscus tears 37.7% (n=13), and cartilage defects 53% (n=18). The mean hospital stays were 5 ± 2.3 days. 20 % of patients defaulted follow up at 6 month, and 47% defaulted follow up by one year. Out of 11 patients, 91% of them achieved more than 85% of single leg hop test. **Conclusion:** These results provide greater understanding into potential causes or contributors of ACL injury, development of injury prevention and rehabilitation strategies in the future.

Keywords: *ACL, Sports Surgery, Sports Rehabilitation, Football, Sabah*

P02. Restoring strength and motor control for chronic quadriceps weakness: A case report of post-medial patellofemoral ligament reconstructio

KONG YEE TIN[1*]

[1]Sports Medicine Unit, Hospital Queen Elizabeth, Kota Kinabalu, Sabah
**Corresponding author: vesperano@gmail.com*

Introduction: Knee surgeries including medial patellofemoral ligament (MPFL) reconstruction are often complicated by arthrogenic muscle inhibition (AMI) of the quadriceps leading to chronic quadriceps muscle atrophy and weakness. The purpose of this clinical case report is to highlight the importance of long-term post-operative rehabilitation in preventing chronic quadriceps weakness in patients who has undergone MPFL reconstruction. **Case presentation:** We here-in report a case of a 33-year-old Malaysian lady who was presented to us with the complaint of worsening anterior left knee pain and persistent left patellofemoral instability for 7 years after her MPFL reconstruction. She ceased to participate in post-operative rehabilitation after 6 months due to her busy schedule. Physical examination revealed a positive J-sign for her left patella along with atrophy and weakness of bilateral quadriceps with the affected side being more prominent. A repeated magnetic resonance imaging of her left knee was unremarkable except for few post-operative changes. Home-based quadriceps strengthening exercises along with weekly neuromuscular electrical stimulation therapy were prescribed. Her condition significantly improved within 4 weeks of treatment. **Conclusion:** This case illustrates the importance of long-term post-operative rehabilitation in preventing chronic quadriceps weakness resulting from arthrogenic muscle inhibition as well as its role in restoring strength and motor control of the weaken muscles in a patient who defaulted her previous rehabilitation program.

Keywords: *Arthrogenic Muscle Inhibition, Case report, Medial Patellofemoral Ligament Reconstruction, Post-operative Rehabilitation, Quadriceps Dysfunction*

P03. Predictive factors associated with successful outcome of ACL reconstruction

NIK ALYANI NIK ABDUL ADEL[1*] & MOHD SHUKRIMI AWANG[1]

[1]Department of Orthopaedics, Traumatology and Rehabilitation, Kulliyyah of Medicine, International Islamic University Malaysia (IIUM), Kuantan, Pahang
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Introduction: Anterior cruciate ligament (ACL) reconstruction is a common surgery to treat an ACL injury which is indicated for a person to return to sports activity and patients with symptomatic knee instability. Several patients' and injuries' related prognostic factors before ACL reconstruction (ACLR) have been suggested to be associated with a successful outcome. In addition, none of them reported in our region. **Objective:** This study purpose is to determine factors that may affect the outcome of ACLR in Malaysia. **Methodology:** This is a cross-sectional study of patients with ACL injury treated with ACLR from 2013 to 2016 in two hospitals in Terengganu. The patients' age, BMI, tobacco use status, occupation and duration of injury to surgery were collected from patient's data. Patients were interviewed at 18 to 24 months post-surgery using the Short Form Health Survey (SF-36) and the International Knee Documentation Committee (IKDC) subjective knee form questionnaire to determine the outcome. **Results:** Forty patients (n = 40, male = 37, female = 3) participated in this study. The mean age was 25.03 years old, range from 17 to 41 years old, and the mean BMI was 24.58 kg/m2. The patients consisted of 62.5% office workers, and 37.5% were field workers. 37.5% of the patients were smoker, while 62.5% were a non-smoker. Patients performed ACLR at a mean of 19.5 months after the injury. There were no or weak correlation in-between age, BMI and duration of injury with the outcome and there was no significant difference between outcome with tobacco use or occupation. **Conclusion:** Although other evidences have reported multiple factors associated with a successful outcome of ACLR, this study revealed no or weak correlation and no significant difference between factors with successful outcome of ACLR patients in Malaysia.

Keywords: *ACL, Reconstruction, Predictive Factors, ACL Tear, IKDC.*

P04. Case report: Spontaneous bilateral quadriceps tendon rupture in tertiary hyperparathyroidism

MOHD NOORAZMI SAHARUDDIN[1*] & MOHAMAD AZWAN AZIZ[1]

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Introduction: Patient with hyperparathyroidism are at risk of tendon rupture. Fifteen percent of end stage renal failure (ESRF) patients tend to experience tendon rupture including quadriceps tendon. **Case report:** We present a case of 41 years old male patient with longstanding haemodialysis for 5 years and tertiary hyperparathyroidism which was planned for parathyroidectomy. The patient presented to casualty with recurrent quadriceps tendon rupture following a trivial fall. Bilateral quadriceps tendon rupture was diagnosed via ultrasound of the bilateral knees. Patient was subjected for quadriceps tendon repair. Intra-operative findings noted fibrous and calcified tendon. Subsequently, patient was under sports medicine clinic for rehabilitation of the quadriceps tendon repair. We discuss the management of tertiary hyperparathyroidism in patient presented with quadriceps tendon rupture in this report. **Conclusion:** It is essential to treat tertiary hyperparathyroidism before the onset of tendon rupture. Surgical approach is the best treatment for quadriceps tendon rupture as it allows primary tendon healing. The main principle of rehabilitation in this case would be slow progressive eccentric quadriceps and hamstring strengthening with progressive neuromuscular balancing. Thus, early referral to a sports physician is recommended in this type of case.

Keywords: *Quadriceps Tendon, Hyperparathyroidism, Rehabilitation*

P05. Retrospective study of musculoskeletal corticosteroid injection during COVID-19 pandemic

FARHAN HAFIZ BIN NAZARI[1], MOHAMAD AZWAN BIN AZIZ[1*] & REDZAL ABU HANIFAH[1]

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Introduction: Musculoskeletal corticosteroid injection is commonly used as an adjunct to help patient in pain management. In this current COVID-19 pandemic, many clinicians would defer from this treatment as steroid is seen as an immunosuppressive drug and may risk patients in developing severe adverse effect if contracting COVID-19. **Methods:** This is a retrospective study based in Sabah, Malaysia examining the prevalence of COVID-19 infection following musculoskeletal corticosteroid injection from 1st December 2019 until 30th June 2020 in the sports medicine clinic and the orthopedic clinic. Patient who received musculoskeletal corticosteroid injection were called and asked regarding visit to emergency department or government health clinic for influenza like illness symptoms or severe acute respiratory infection requiring screening of COVID-19. **Results:** 35 patients were in the study. Mean age were 47.9 years ± 15.1, with 52% male and 48% female. 25% of them were diabetics and 2.9% of them had history of lymphoproliferative disorder. The mean pain score pre-injection were 6.74 ± 1.03, and post-injection pain were 2.27 ± 1.63. In this study, there were 11.4% (n=4) with minor complication of steroid injection i.e. skin discolouration. Nonetheless, the were no severe complication due to corticosteroid reported. There were no reported cases of COVID-19 following corticosteroid injection. Thus, a careful consideration with risk-benefit analysis should be done before administering musculoskeletal corticosteroid injection during Covid-19 pandemic.

Keywords: *Covid-19, Steroid Injection, Musculoskeletal, Osteoarthritis, Sabah*

P07. Retrospective study on sports-related injuries and illness during Four Feather Ultra Trail Marathon 2020, Sabah

ADAM TAN JIAN[1], MOHAMAD AZWAN BIN AZIZ[1*] & KONG YEE TIN[1]

[1]Ministry of Health Malaysia, Sports Medicine Unit, Hospital Queen Elizabeth, Kota Kinabalu, Sabah
**Corresponding author: kassemkoya69@gmail.com*

Background: There were limited studies on the prevalence of sports injuries and illnesses in ultra-trail marathons held in Sabah. Objective: The purpose of this retrospective study is to describe sports injuries and illnesses reported during the Four Feathers Ultra Trail Marathon (FFUTM) 2020, Sabah to assist future medical teams and organizers in anticipating for potential sports injuries and illnesses. **Methods:** This is a retrospective study describing sports injuries and illnesses reported during FFUTM 2020, Sabah held from 29th February 2020 to 1st March 2020. **Results:** Out of 504 runners, 166 (33%) runners encountered at least 1 injury or medical illness with a total of 254 injuries or illnesses. The incidence of injury was 504 per 1000 athletes, 478 per 1000 km run, and 401.4 per 1000 hours run. There were no severe injuries nor medical illnesses that required urgent referral to the hospital. From the reported injuries and illnesses, 54.3% were due to medical conditions. Meanwhile, musculoskeletal injuries contribute to 39.8% and 5.9% attributable to skin conditions. For heat-related illness, 31.5% were heat cramps and 15.7% were heat exhaustion. The mean age of diagnosing heat-related illness was 40.3 years old ± 9.1. There were 71.7% male and 28.3% female. 50km-category runners had the highest percentage of heat-related illness (78.3%) followed by 90km-category (11.7%) and 20km-category (10%). 74.2% of heat-related illness occurred at kilometer 19, 20% occurred at kilometer 37, 2.5% at kilometer 50, and 3.3% at kilometer 70. 23 out of 33 medical “Do Not Finish” due to heat exhaustion. **Conclusion:** Musculoskeletal injuries and heat-related illnesses are most commonly encountered during FFUTM 2020, Sabah. We hope that this study will help future medical teams and organizers to be well prepared in similar events that will be held in Sabah.

Keywords: *Four Feathers Ultra Trail Marathon, Ultramarathon, Heat-related illnesses, Musculoskeletal injuries, Sabah*

P08. Karate athlete presented as lateral elbow pain - A rare case of osteochondritis dissecans of the capitellum

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[1]*Sports Medicine Unit, Hospital Queen Elizabeth, Kota Kinabalu, Sabah*
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Introduction: Osteochondritis Dissecans (OCD) of the capitellum is a localized disorder of the subchondral bone, in a region of limited healing capacity. Although the etiology is unclear, OCD of capitellum is often associated with high demand, repetitive overhead or weight bearing sports such as baseball and gymnastics. It is rarely reported in contact sports. **Case report:** We present a rare case of capitellar OCD in our practice, a 14 years old Karate athlete. Mechanism of injury involved were repetitive compressive pronation force during punching bag training leading to severe right lateral elbow pain. Risk factor for this patient was low BMI of 16.1. No other underlying risk factor was identified. Clinical examination revealed reduced range of motion for extension- flexion ,10°-110° (normal 0°-145°), tender at capitellar region with positive active compression radio-capitellar test of right elbow. MRI of the elbow reveal stage 1 Itsubo classification of capitellar injury. Patient improved significantly in terms of pain and range of motion after period of immobilization of right elbow for 2 months. Subsequently, patient was initiated with supervised, progressive upper limb strengthening program. Other main strategies of management was weight increment with the help of dietitian to achieve BMI more than 18.5 kg/m2 .**Conclusion:** Paediatric athlete presented with lateral elbow pain is not common in contact sports. It is crucial to identify capitellar OCD at early stage to avoid surgical intervention and complication of OCD at later life.

Keywords: *Osteochondritis Dissecans (OCD) , elbow, capitellum, athletes, paediatric*

P09. A triathlon athletes with medical meniscus tear and subchondral insufficiency fracture

AZLAN M. NAING[1] & MARIAM G. M[1]

[1]*Sports Medicine Unit, Hospital Queen Elizabeth, Kota Kinabalu, Sabah*

Subchondral insufficiency fracture of the knee (SIFK) is an important differential diagnosis for knee pain and yet it is often overlooked. If diagnosed early, SIFK can be treated conservatively with non-weight bearing ambulation. If left untreated, this under-diagnosed disease may lead to catastrophic complications such as subchondral fragment detachment and fragmentation or subchondral collapse which will warrant the need for surgical intervention. The author reports a 44-year-old triathlete that presented with complaint of a trivial left anteromedial knee pain for one-year duration. This disease presented at an unusual site of the medial tibial condyle. Moreover, the patient is a healthy triathlete that does not have any predisposing factors for SIFK. Magnetic resonance imaging showed subchondral insufficiency fracture of the medial tibial condyle with a complex multi-directional medial meniscus tear in the same knee. It is of paramount of importance to diagnose SIFK early to prevent catastrophic complications such as subchondral fragment detachment and fragmentation, subchondral collapse, osteonecrosis, and rapidly progressive osteoarthritis. A simple conservative management which includes non-weight bearing ambulation and physiotherapy would have sufficed if patients are diagnosed early. Whereas if the disease missed, the management of the deliberating complications such as subchondral fragment detachment and fragmentation or subchondral collapse will warrant the need for surgical intervention. This will eventually lead to longer inpatient stays, longer sick leaves, and higher overall costs (surgery, surgical implants, etc).

P10. Correlation between acromiohumeral distance and rotator cuff tear

UZIR BIN AHMAD HUSNI[1,2*], NIK ALYANI BINTI NIK ABDUL ADEL[2] & SITI HAWA BINTI TAHIR[1]

[1]Department of Orthopaedics and Traumatology, Hospital Kuala Lumpur, Wilayah Persekutuan, Malaysia
[2]Department of Orthopaedics, Traumatology and Rehabilitation, International Islamic University Malaysia (IIUM), Kuantan, Malaysia
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Introduction: Rotator cuff tear is a common cause of pain affecting the shoulder. In massive rotator cuff tear the humeral head displaces superiorly, therefore causing narrowing of the subacromial space quantified as acromiohumeral distance which be measured from radiographic imaging of the shoulder plain x - ray and MRI. **Objective:** To determine the mean acromiohumeral distance measurement of rotator cuff tear in local population and to evaluate the correlation between acromiohumeral distance measure from plain x - ray and MRI. **Methodology:** This is a retrospective study conducted in a single centre by reviewing the records of patients with confirmed rotator cuff tear from 2014 - 2018 with ethics approved and consented by patients. Mean value of measured acromiohumeral distance from plain x-ray (anteroposterior and Y scapula view) and MRI were calculated. The presence of rotator cuff tear, muscle atrophy and fatty degeneration were analysed. **Result:** 100 patients' plain X-Ray were recruited with mean age of 52 (±11.4). 59% of them were male. Half of the patient presented with complete tear of supraspinatus tendon, and 42% with partial tear, and another 8% with other type of rotator cuff tear. The mean acromiohumeral distance for complete tear based on x-ray measurement was 6.30mm (± 0.96), while the MRI was 6.00mm (±0.88). For partial tear mean measurement for x-ray was 7.20mm (± 0.51) and MRI 6.80mm (±0.54). There was positive correlation between the two factors(p=<0.001). Out of 100 patients only 26% associated with muscle atrophy and 7% with fatty degeneration. The acromiohumeral distance does not correlate with muscle atrophy and fatty degeneration (P value 0.100 and 0.317). **Conclusion:** X-ray and MRI both give significant reading correlation, usage of MRI over x-ray is more superior because it can detect soft tissue injury with lesser radiation. However, in Malaysian setting, x-ray is easily accessible with cheaper cost, hence, makes it a widely used predictive tool in this case. Western study showed that from plain x-ray, distance below 7mm associated with complete tendon tear and 7 to 10mm associated with partial tendon tear. From this study the mean acromiohumeral distance in Malaysian population for complete tear is lower, mainly because our glenohumeral joint is smaller compared to westerner, and the distance has no correlation with muscle atrophy and fatty degeneration.

P11. Characteristic of resting ECG among professional male footballers in Sabah, Borneo Malaysia

MOHAMAD AZWAN BIN AZIZ[1*] & REDZAL ABU HANIFAH[1]

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ECG is a valuable tool for pre-participation health screening prior to sports participation, to minimize the risks of sudden cardiac death during exercise due to cardiac pathology. The purpose of this study is to describe the resting electrocardiogram (ECG) seen among 176 professional male footballers from Sabah Football Association Club during pre-participation evaluation. This is a retrospective study from 2017 to 2019. Majority of the players were Sabah natives (n=153, 87%) while the remaining were Malay footballers (n=23, 13%). Mean age of the players was 19.9 ± 3.1, mean body mass index was 22.6 kg/m2 ± 7, mean resting heart rate was 53.6 beats per minute ± 9.4, mean systolic blood pressure was 122.3 mmHg ± 12, and mean diastolic blood pressure was 65.1 mmHg ± 8.8. Using the International Criteria for ECG Interpretation in Athletes 2017 consensus guidelines, 8.5% (n=15) had abnormal ECG while 2.8% (n=5) had borderline ECG. Most common ECG changes seen in the normal findings were sinus bradycardia (n=123, 69.9%), early repolarization (n=115, 65.3%) and left ventricular hypertrophy (n=83,47.2%). Abnormal ECG were abnormal t wave inversion (n=7,4.0%) and pre excitation syndrome (n=5,2.9%). All footballers with abnormal ECG findings were subjected to further evaluation by cardiologist using echocardiography assessment and exercise stress test. All footballers passed the cardiology assessment; thus, they were deemed fit to play. Most of the ECG changes is seen in Sabah footballers were the result of physiological adaptation of the heart towards systematic exercise training. The number of abnormal ECG is comparatively lower than many international studies as the current guideline for ECG interpretation using the International criteria 2017 has improved ECG interpretation accuracy.

Keywords: *Sabah Football Athlete, Football, Electrocardiogram, International Criteria*

P12. Do weight, height and the body mass index affect lung function test? : Pilot spirometry assessment on non-obese volunteers

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Introduction: The lung function test differs in values from children to adults due to the lungs size as they grow up. Nevertheless, upon reaching adulthood, it is not known if variations of weight, height and body mass index (BMI) would affect lungs function. This study is set out to determine if these variables affect the lung function. **Methodology:** This was a quasi-experimental pilot study among 12 adult volunteers. Subjects' weight, height and BMI were measured, and they were asked to blow into a spirometer (Otthon 2.0 Mobile Handheld Spirometer) three times. The best reading was taken. The expiratory forced vital capacity (FVC), forced expiratory volume in 1 second (FEV1), FEV1/FVC ratio and maximal mid-expiratory flow (MMEF25-75) were recorded. The National Health and Nutrition Examination Survey (NHANES) III prediction method for oriental race was utilized in determining the percentage of the measurement standard values. In this study, Otthon IDEGEN Handheld Spirometer Professional Edition (Model OTH-15020020, Japan) was used. **Results:** 12 subjects, all males, participated with the mean age 27.73 ± 3.19 years with weight 66.14 ± 7.87 kg, height of 167.91 ± 3.53 cm and BMI 23.45 ± 2.64. The results showed means as follows: FVC 80.58 ± 10.77%, FEV1 83.21 ± 11.42%, FEV1/FVC 103.34 ± 6.57 % and MMEF25-75 101.91 ± 24.57%. All had normal statistical distribution. Multiple regressions for all the measured elements with FEV1 (r^2 = 0.281, p = 0.522) and FVC and (r^2 = 0.063, p = 0.922) were not significant. Analysis with FEV1/FVC as the dependent variable did not show significant relationship with combined weight, height and BMI (p=0.327) with the r^2 being 0.371. Nevertheless, Pearson analysis showed significant correlation for height against FEV1/FVC (r = -0.544, p =0.042). Similarly, strong correlation was seen between height and MMEF 25-75 (r = -0.676, p =0.011). There was no significant correlation noted for weight and BMI. **Conclusion:** Our pilot study thus far shows that among normal non-obese subjects, significant negative relationship for height was observed in FEV1/FVC and MMEF 25-75. As for weight and BMI, no significant relationship with FEV1, FVC and FEV1/FVC were noted. Only height appeared to affect the FEV1/FVC and MMEF 25-75 component of lung function test among non-obese subjects. Further study to compare this with obese category of subjects may be conducted in the future.

Keywords: *Lung Function Test, Weight, Height, Body Mass Index*

P13. Do hydration, fat, muscle and bone density affect the lung function test results?: Pilot spirometer assessment on healthy volunteers

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Introduction: Our bodies have differences in terms of proportions of hydration, fat, muscle and bone. Little attempt had been made in the past to see if body composition would affect lung function. This study was set out to determine if these variables could affect the lung function. **Methodology:** This was a quasi-experimental pilot study among 12 adult volunteers. Subjects' weight, height, MI, hydration, fat, muscle and bone density were measured using a SECA digital weighing scale (Germany). Subjects were asked to blow into a spirometer (Otthon 2.0 Mobile Handheld Spirometer, Japan) three times. The best reading was taken. The expiratory forced vital capacity (FVC), forced expiratory volume in 1 second (FEV1), FEV1/FVC and maximal mid-expiratory flow (MMEF 25-75) percentage based on National Health and Nutrition Examination Survey (NHANES) III prediction method for oriental race. Multiple regression analysis was utilized in looking at the relationship between hydration, fat, muscle and bone density with FVC, FEV1, FEV1/FVC and MMEF25-75. **Results:** 12 subjects, all males participated with the mean age 27.73 ± 3.185 (range 24-35) years with weight 66.14 ± 7.87 (range 52.0-78.2) kg, height of 167.91 ± 3.53 (range 163-173) cm and BMI 23.45 ± 2.64 (range 18.21-26.43). The mean FVC is 80.58 ± 10.77 , FEV1 83.21 ± 11.42% and FEV1/FVC 103.34 ± 6.57 % and MMEF25-75 101.91 ± 24.57%. All had normal statistical distribution. The mean hydration was 55.37 ± 2.72 %. The mean fat was 20.05 ± 3.74%, muscle 42.07 ± 2.04% and bone density 17.13 ± 7.67%. Multiple regression analysis with FEV1/FVC as the dependent variable significant prediction with bone, fat, hydration and muscle (p<0.001) with the r2 was 0.608. Individually, significant correlations with FEV1/FVC were seen for fat (r = -0.388, p = 0.013) and bone density (r= -0.397, p = 0.011). No significant correlations were seen between muscle and hydration on FEV1, FVC and FEV1/FVC. Significant relationship was seen between all measured elements with MMEF25 (r2 = 0.437, p =0.002). Individually, it was noted only bone had significant correlation (r=-0.314, p=0.038). **Conclusion:** Fat and bone density showed significant negative correlation with FEV1/FVC. Bone density too, showed negative correlation with MMEF 25-75. No associations were seen in terms of muscle mass and hydration level on FEV1, FVC and FEV1/FVC. This study suggests benefit on fat reduction for improved lung function test. Increased bone density appeared to correlate negatively with lung function test, and this may be attributed to increased weight from the bone which may affect lung compliance.

P14. Effects of 'arousal' versus 'relaxing' music on respiratory function: A pilot study

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Introduction: Music had beneficial effect on exercise performance and duration from past studies. However, no attempt had been made to see whether different types of music could affect lungs function. We aimed to determine if lung functions differ upon application of 'arousal music'(AM) and 'relaxing music' (RM). **Methodology:** As a baseline, with no music application (NM), the respiratory rate (RR), oxygen saturation (SPO2) and spirometry measurement expiratory forced vital capacity (FVC), forced expiratory volume in 1 second (FEV1) and FEV1/FVC were recorded as baseline. Subsequently, subjects were asked to listen to AM. Upon starting to listen for a minimum of 5 minutes, the same spirometry measurements are taken. After resting for a minimum one hour, subjects are then asked to listen to RM and the measurements repeated. Half of the subjects were exposed to NM, AM and RM whereas the other half in the sequence of RM, AM and NM (crossover counterbalance). The chosen music was from of classical instrumental music from study by Garry Kuan et al (2016). Sony Walkman NWZ-B183F is used as mp3 player. The data were compared using the SPSS Version 22. Non-parametric one-sample Kolmogorov-Smirnov test is used to compare the differences between various music types and no music interventions. **Results:** 12 subjects, all males participated, with the mean age 27.73 ± 3.185 years, weight 66.14 ± 7.87 kg, height of 167.91 ± 3.53 cm and BMI 23.45 ± 2.64. No significant difference was seen with music intervention on all measured parameters. The mean SPO2 was 90.21 ± 10.32 (NM), 89.15 ± 9.47 (RM) and 90.52 ± 8.05 (AM) % (p=0.992). The mean RR was 12.58 ± 4.37 (NM), 12.64 ± 3.76 (AM) and 12.55 ± 2.95(RM) bpm (p=0.99). The mean FEV1 was 83.21 ± 11.42 (NM), 83.82 ± 11.97(AM) and 84.21 ± 12.12(RM) % (p=0.742). The mean FVC was 80.58 ± 10.77 (NM), 81.36 ± 9.81 (AM) and 81.76 ± 9.92 (RM) % (p=0.581). The mean FEV1/FVC was 103.34 ± 6.57 (NM),102.90 ± 7.48 (AM) and 102.84 ± 6.46 (RM) % (p=0.321). The MMEF 25-75 was 101.91 ± 24.57 (NM), 100.85 ± 28.94 (AM) and 102.73 ± 30.15 (RM) % (p=0.182), **Conclusion:** This pilot study shows that music exposure, either 'relaxing' or 'arousal' types did not result in any improvements of respiratory function. No significant difference was seen in terms of SpO2, RR, FEV1, FVC, FEV1/FVC and MMEF 25-75, upon comparison between no music as baseline with both music exposure. This study suggests no clear benefit in terms of music intervention on lung function at sea-level.

Keywords: *Music, Oxygen Saturation, Lung Function, Arousal , Relaxing*

P15. Performing echocardiogram study in different positions: How much do they differ?

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Introduction: Cardiac function assessment with echocardiogram is routinely done in left lateral position. In some emergency or research in confined place, this is performed in either supine or sitting positions. No attempt in the past had been made to see whether these position change would affect the echocardiogram measurements. This study therefore, was designed to address research concerns on position change upon echocardiogram on different positions. **Methodology:** Echocardiogram was performed using the Logic e General Electric ultrasound machine. Measurements were taken in left lateral (LL), supine (Su) and sitting (Si) positions. Measurements included Ejection Fraction (EF), Velocity Time Integral (VTi), Total Annular Plane Systolic Excursion (TAPSE), Pulmonary Artery End-Systolic Pressure (PAESP) , Pulmonary Artery End-Diastolic Pressure (PAEDP), Left atrial volume (LA), EA ratio (EA), Mitral Valve Deceleration Time (MVDecT), EE' ratio (EE') and inferior vena cava (IVC). Comparisons of measurements were determined between the three positions and statistical analysis using non-parametric one-sample Kolmogorov-Smirnov test was used. **Results:** 6 subjects participated with the mean age 27.83 ± 2.64 years, weight 64.83 ± 4.73 kg and a height of 165.83 ± 5.076 cm. The measurements showed : EF Biplane (LL 63.61 ± 5.40; Su 61.36 ± 4.06 ;Si 62.34 ± 10.30) %, VTi (LL 18.94 ± 4.30; Su 20.16 ± 2.80; Si 16.71 ± 2.09) cm, TAPSE (LL 2.17 ± 0.31; Su 1.93 ± 0.27; Si 1.82 ± 0.12) cm, PAESP (LL 2.02 ± 0.66; Su 1.26 ± 0.37; Si 1.36 + 0.74) mmHg, PAEDP (LL 0.81 ± 0.63; Su 0.56 ± 0.75; Si 0. 57 ± 0.93 mmHg, LA (LL 26.93 ± 9.41; Su 31.07 ± 6.09, Si 17.44 ± 3.32: p=0.00) mls, EA (LL 1.74 ± 0.31; Su 1.89 ± 0.35; Si 1.45 ± 0.23), MVDecT (LL 191.02 ± 15. 27; Su 191.39 ± 35.23; Si 203.03 ± 44.00)m/s, EE' (LL 5.49 ± 0.68; Su 5.92 ± 1.73 : p=0.12 ; Si 6.23 ± 1.37) , IVC (LL 1.63 ± 0.38; Su 1.54 ± 0.77: p=0.046; Si 1.59 ± 0.87) cm. Apart from left atrium volume which was significantly low in sitting position and the IVC which was lowest in supine position, all other comparisons did not show significant differences. **Conclusion:** Our study showed that echocardiogram performed in left lateral, supine and sitting positions had no significant difference in terms of EF, VTi, TAPSE, PAESP, PAEDP, EA, MVDecT and EE'. Echocardiogram, therefore, can be performed in these positions with similar results except for LA and IVC.

Keywords: *Echocardiogram, Position, Systolic, Diastolic, Function*

P16. Pre-season fitness profiling on Perak II professional soccer players

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The preparation towards challenging and competitive soccer league needs to be planned thoroughly to ensure the players can perform at maximum performance ability. The purpose of this study was to determine the sprinting and cardiovascular fitness performance on the Perak II professional soccer players after underwent 6 weeks pre-season training program. Twenty-four Perak II professional soccer players participated in this study. 20m sprint used to determine sprinting performance and Yoyo Intermittent Recovery Test Level 2 (YYIR2) protocol used to determined cardiovascular fitness performance. Data analysed by Paired Sample T-Test shows a significant improvement on sprint (pre-test 3.16 ± 0.15 sec, post-test 3.09 ± 0.12 sec) and cardiovascular fitness performance (pre-test 58.20 ± 3.10 ml•kg-1•min-1, post-test 67.73 ± 4.41 ml•kg-1•min-1). In conclusion, the results indicated the 6 weeks pre-season training program shows a significant improvement in sprinting ability and cardiovascular fitness ability. This study implies that proper pre-season training programs based on intermittent training anaerobically and aerobically can enhance professional soccer player performance and an appropriate performance monitoring program capable to determine the effectiveness of the pre-season program.

Keywords: *Pre-Season, Cardiovascular Fitness, Sprint, Soccer, Perak II*

P17. Effects of coconut sport gel on hydration measures, cognitive performance and anaerobic capacity in soccer players

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This study examined the effects of coconut sports gel (CSG) on hydration measures, cognitive performance, and anaerobic capacity in soccer players. Seven soccer players (age: 21 ± 1.6 years; body weight (BW): 63.2 ± 6.6 kg; 172.3 ± 6.0 cm; VO2max: 52.8 ± 1.4 ml.kg.min-1) participated in this study. Subjects underwent 1 preliminary testing and 2 experimental trials: CSG and placebo (PLA), separated at least 7 days apart. Each trial consisted of hydration measurements and 2 cognitive (concentration, reaction time) and anaerobic capacity [(vertical jump (VJ) and repeated sprint ability (RSA)] tests at (i) baseline (BL), (ii) post dehydration (PD), and (iii) post recovery (PR). A 90-min exercise-induced dehydration protocol was used to induce ~2.0% of body weight (BW) loss after baseline testing. Subjects were required to ingest either CSG (CHO: 26 g, K+: 381 mg) or PLA (CHO: 26 g, K+: 0 mg) at 1.2 g.kg-1 BW of CHO within 30 min in a randomised order, and replenished plain water (100% BW loss) during the 120 min of recovery period. Results showed that subjects were rehydrated after 2 hours of recovery. Subject regained their BW from PD to PR: 61.3 ± 6.5 kg to 62.7 ± 6.6 kg (CSG trial) ($p<0.001$) and 61.4 ± 6.3 kg to 62.6 ± 6.4 kg (PLA trial) ($p=0.001$). Urine specific gravity reduced from PD to PR: 1.0168 ± .0073 to 1.0082 ± .0068 ($p=0.019$) and 1.0148 ± .0061 to 1.0108 ± .0054 ($p=0.286$) in CSG and PLA trials, respectively. VJ and RSA performance were similar between trials and among time points ($p>0.05$). The concentration scores, simple and choice reaction time tests showed no significant difference in all time points between trials ($p>0.05$). In conclusion, cognitive performance and anaerobic capacity in soccer players were well maintained after rehydration. Therefore, CSG could be an alternative option for athletes for rehydration purposes.

Keywords: *Repeated Sprint Ability, Reaction Time, Concentration, Vertical Jump, Dehydration*

P18. Ziziphus jujube supplementation improved running performance in endurance athletes

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The aim of this study was to determine the effects of Ziziphus Jujube (ZJ) supplementation in endurance athletes. Fourteen male athletes (Age = 24.0 ± 4.6 years; Height = 169.0 ± 4.0 cm; Body weight = 62.4 ± 6.6 kg; VO2max=57.8 ± 6.5 ml.kg.min-1) were recruited into this study. Subjects were randomly assigned into 2 groups (control group [CG], n=7, experimental group [EG], n=7) using systematic-counter-balancing method. Both groups undertook a preliminary testing and two prolonged exercise testing (PET1 and 2). EG was required to consume 14 days of ZJ with a dosage of 0.5g.kg-1 of BW per day, whilst the CG did not receive any intervention throughout the testing period. PET1 and 2 were conducted after 7 days and 14 days, respectively with ZJ ingestion or no ingestion. During PET1 and 2, subjects performed 45 minutes of constant run at 65% of VO2max followed by an incremental run test (2% gradient increase every 2 min until volitional fatigue). Results showed that there was a significant improvement (~5%: 41.4 ± 16.36s) in time to exhaustion after 14 days of ZJ consumption (PET2 vs PET1: 740.0 ± 76.8s vs 781.4 ± 93.2s; p=.018) in EG but not in CG. Mean oxygen uptake (VO2) during PET2 in the EG was significantly lower (p<.001) than that of PET1, indicating that 14 days of ZJ consumption has improved metabolic efficiency. Other physiological measurements (heart rate, RPE, haemoglobin, haematocrit, and blood lactate and glucose levels) were similar during PET1 and 2 in both EG and CG. In conclusion, 14 days of ZJ supplementation has improved metabolic efficiency and running performance in endurance athletes.

Keywords: *Ziziphus Jujube, Supplementation, Metabolic Efficiency, Prolonged Exercise, Time To Exhaustion*

P19. Smartphone apps for diagnosis of acute mountain sickness high altitude: High altitude climbers' perception on beta version

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Introduction: At altitude beyond 2,000 metres, climbers may risk suffering from acute mountain sickness (AMS). Lake Louise self-administered questionnaire is a tool used do diagnose AMS. We develop a smartphone application for which high altitude climbers may self-diagnose AMS. **Methodology:** An apps is developed via programming and modelled upon the widely accepted Lake Louise questionnaire and the diagnosis is made by the Apps upon input by high altitude climbers. We brought the Beta Version of the Apps to be tried out by Mount Kinabalu climbers and get their feedback via questionnaire after they assess the Apps via self-administered questionnaire based on a Likert Scale with 1-Strongly Disagree (SD), 2-Disagree (D), 3-Neutral (N), 4-Agree (A) and 5-Strongly Agree (SA) on statements regarding usefulness, wanting to download the Apps, safety helpfulness, willing to recommend the Apps to others, wanting the Apps on their phones, wanting it to be in multiple languages and whether the Apps can 'replace' a doctor. **Results:** 13 Mount Kinabalu climbers, 8 males and 5 females used the 'Apps' at Laban Rata at 3,000 metres. Their mean age were 38.77 ± 11.85 years. All agree that the Apps is useful (84.6% SA & 15.4% A). More than half (61.8%) either SA (46.2%) or A (15.4%) are willing to download the Apps. All agree that the Apps helps in climbing safety (61.5 SA & 38.5 A).77% would recommend the Apps to others (46.2 SA & 30.8 % A). 77% want the Apps (46.2% SA & 30.8 % A). All agree that the Apps should be multilingual (76.9% SA & 23.1% A). 77% believes that the Apps can replace a doctor (38.5% SA & 38.5% A). **Conclusion:** The AMS Apps has been viewed in a highly positive manner in terms of its acceptability to help high altitude climbers' safety via self-diagnosing AMS with the majority wanting the Apps on their phone.

P20. Dietary habits and body mass index between student athletes and non-student athletes of UiTM

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The aim of this study was to compare the dietary habits and Body Mass Index (BMI) between student athletes and non-student athletes in UiTM (Universiti Teknologi MARA), as well as to study the relationship between their dietary habits and BMI. Dietary habits are the habitual decisions of the individual regarding what foods they eat, while BMI is one of the widely use tools to identify nutritional status of the individual. An online questionnaire was used to collect the data from the respondents. Respondents' body weight and height were self-measured, and respondents provide the data in the demographic section. Dietary habits questionnaire comprised of 18 questions, including the frequency of food intake from every section of the food pyramid, snack, fast food, vitamin and mineral supplements, breakfast, beverages intake and meal skipping. Result showed the mean dietary habits score of student athletes were significantly ($p < 0.01$) higher than non-student athletes. This could indicate the awareness of the student athlete to practice a good dietary habit for them to enhance their sports performance. Regarding BMI, majority of the respondents from both student athletes (62%) and non-student athletes (70%) were in the normal weight BMI category and no significant difference were found in both groups. In addition, present study found no significant relationship between dietary habits and BMI for both student athletes (r-value = – 0.093, $p = 0.359$) and non-student athletes' (r-value = – 0.037, $p = 0.713$) groups, showing that dietary habits of the respondents does not correlate with their BMI. Although no significant association were found, normal BMI category and appropriate dietary habits are essential to be practiced by everyone irrespective athletes or non-athletes, this is to ensure healthy lifestyle and reducing the risk of getting the non-communicable disease.

Keywords: *Body Mass Index, Dietary Habits, Student Athletes*

P21. Pre-race determinant factors in elite swimming performance - chronological age and body stature

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Objective: It has been suggested that body size could provide an advantage to athletes in many sports including sprint events for novice swimmers. However, it is not clear if the influence of body size is similarly found in elite level swimmers for sprint and endurance events. Therefore, this study examined the relationship between chronological age and body size with performance rankings by events for male and female elite level swimmers. **Methods:** 1113 swimmers (male, n=575; female, n=538) who published their chronological age (CA), body height (BH) and body weight (BW), and their official rankings from 32 swim events were extracted from the 2018 Commonwealth Games mobile application provided by Optus. Body mass index (BMI) was computed via the division of BW in kilogrammes by the square of BH in meters. A Spearman Rho correlation analysis was performed using a statistical software with alpha set at 0.05. **Results:** The Spearman Rho correlation coefficient (rs) for sprint events involving females attained poor to moderate correlation in both the 50m(CA -0.41, BH -0.55, BW -0.30, BMI -0.30) and 100m(CA -0.27, BH -0.45, BW -0.19, BMI -0.19) sprints, while the dependent variables were poorly correlated in the 200m(CA-.28, BH-.32, BW-.13 & BMI-.13) events. Only the 400m achieved significant relationship in one variable (CA-.37). The rs for sprint events comprising men varied from poor to moderate in the 50m (CA -0.35, BH -0.48, BW -0.41, BMI -0.41), and correlated weakly in the 100m (CA -0.36, BH -0.36, BW -0.29, BMI -0.29). The dependent variables correlated poorly to moderately for the men's 200m (CA-.41, BH-.20, BW-.22 & BMI-.22) and 400m (BW-.43 & BMI-.43) endurance events. The women's 800m and men's 1500m performance were not significantly correlated to all dependent variables. **Conclusions:** Male and female athletes with bigger body size and higher chronological age performed better than smaller and younger swimmers in all sprint events but the effects faded as distance increased in endurance events. Future talent identification programmes may need to consider body stature as one of the selection criteria for sprint swimming.

Keywords: *Anthropometry, Elite Athlete, Ranking, Swimming, Talent*

P22. Selected physiological responses during youth soccer match simulation

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The purpose of the present study was to develop a soccer-specific simulation that simulates the demands and selected physiological response of youth players. Twenty (n = 20; Age 17 ± 2 years, height = 1.69 ± 0.6 m, body mass = 67.9 ± 6 kg) male academy soccer players volunteered to participate for this study. During the testing session, each player completed a 90 min youth soccer match simulation (YSMS90) interceded by a 15 min half time period. The YSMS90 involved the same average running velocity and activity profile including soccer-specific ball handling actions (heading, passing, shooting, dribbling). Heart rate, and RPE (Borg scale 6-20) were recorded every 5 min throughout the simulation. The mean heart rates and RPE during simulation were 147 ± 19 beats.min-1 and RPE 16 ± 1 respectively. In addition, the heart rates and RPE were significantly higher over time compared with pre simulation values ($p < 0.05$). The newly developed YSMS90 elicited similar physiological response that were consistent with those observed during actual soccer match-play in youth players.

Keyword: *Soccer, Youth, Simulation*

P23. Effect of Cordyceps Militaris on health-related components in sedentary adults

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Cordyceps Militaris (CM) is a well-known entomopathogenic fungus extracted for its medicinal and pharmaceutical implications. However, limited scientific reports documented on the effect of CM on the sedentary population's health benefits. The purpose of this study was to examine the effectiveness of CM on health-related components in sedentary adults. A total of 30 healthy sedentary adults [male (n=14) and female (n=16)]; Age: 44.3 ± 3.4 years; Height: 164.1 ± 9.1 cm; Body Weight: 67.0 ± 15.7 kg; BMI: 24.8 ± 4.1kg.m-²) participated in this double-blind placebo-controlled study. The YMCA 3-minutes step test, body composition analysis, hand-grip strength test, blood parameters (glucose and total cholesterol), blood pressure, flexibility, anti-fatigue ability were measured at pre-test (day-0), day-7, day-14 and day-21. Participants were randomly assigned into CM and Placebo (PLA) groups and they were instructed to consume 1.1g of cordyceps extract (Mitoceps©) and placebo (without cordyceps) with 250 mL of water per day for 21 days. Participants were reminded to refrain themselves from taking any supplements two weeks before and during the experimental period. Results showed the exercise (142 ± 17 bpm vs 148 ± 15 bpm) and recovery (109 ± 17 bpm vs. 115 ± 19 bpm) heart rate responses during 3- minutes step test were ~6 bpm lower, anti-fatigue ability and skeletal muscles mass (24.3 ± 5.8 kg vs. 23.8 ± 5.7 kg) were found improved significantly in CM group in day-7 as compared to day-0. In addition, after 21 days of supplementation, CM group also showed greater improvement in flexibility by 11% (24.3 ± 9.7 cm vs 21.8 ± 9.6 cm) as compared to PLA group which improved by only 7% (26.4 ± 9.1 cm vs. 24.7 ± 9.8 cm) from pre-test. Blood glucose (~5.4 mmol.L-1), blood pressure (~117/70 mmHg) and total cholesterol levels (~4.6 mmol. L-1) in both groups were maintained at normal range throughout the experimental period. In conclusion, the ingestion of cordyceps extract (1.1g per day for 21 days) gave beneficial effects on health-related components in sedentary adults. Higher dosage with longer duration of cordyceps extract ingestion will be suggested to elicit a significant difference between groups.

Keywords: *Anti-Fatigue Ability, Recovery Heart Rate, Flexibility*

P24. Does the role of playing position influence selected soccer specific fitness components in elite youth players?

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The purpose of this study was to determine whether selected fitness component related to speed endurance, agility, aerobic, stability, muscular strength and power capacities of youth soccer players varied according to playing positions. Elite professional youth soccer players (n = 34, age = 19 ± 1.2 years) played in different positions: goalkeepers (GK), defenders (DF), midfielders (MF), and forwards (FW) were assessed during the pre-season. Multivariate analysis of variances was used to compare the following variables: repeated sprint ability (RSA), arrowhead agility, maximal oxygen uptake (VO2max), dynamic stability, quadriceps concentric peak torques, vertical jump height and horizontal jump distance. The findings showed a significant influence of playing positions on body mass, RSA performance, arrowhead agility, dynamic stability and VO2max with trends of influence on agility performance ($p \leq 0.05$). Midfielders weighed significantly lighter than GK (MF = 59.09 ± 7.23 kg, GK = 70.25 ± 5.66 kg) ($p = 0.016$). Forwards had significantly better mean times in RSA tests in comparison to GK (FW = 7.17 ± 0.27 s, GK = 7.66 ± 0.36 s) ($p = 0.039$) while defenders were significantly faster in the arrowhead agility than GK (DF = 8.04 ± 0.60 s, GK = 9.06 ± 0.71s) ($p = 0.035$). Forwards and defenders had significantly higher VO_2max levels (FW = 64.70 ± 6.58 ml/kg/min, DF = 62.16 ± 6.03 ml/kg/min) compared to GK (52.08 ± 2.13 ml/kg/min) ($p < 0.05$). Forward players had significantly better dynamic stability indices than GK (FW = 1.38 ± 0.22, GK = 2.38 ± 0.76) ($p = 0.018$). No significant differences were detected across playing positions for body height, quadriceps concentric peak torques, vertical jump height and horizontal jump distance ($p > 0.05$). The key findings of this study may suggest the importance for coaches to provide soccer-specific fitness assessment and prescribing position-specific physical conditioning programs for youth players. It may also highlight distinct characteristics that may distinguish requirements for certain playing positions in soccer.

Keywords: *Fitness, Soccer, Youth*

P25. Effect of compression garment on anaerobic performance after induced muscle fatigue among physically active individuals

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A compression garment is often used in sports and purportedly to have an ergogenic effect in enhancing anaerobic performance. The purpose of this study was to examine the effects of a lower-body compression garment on anaerobic performance after inducing muscle fatigue. Ten physically active male (age: 21 ± 0.7 years, weight 69.3 ± 8.2 kg, height 173.2 ± 5.1 cm, physical activeness 3.7 ± 1.1 times/week) participated in this randomised crossover study. Each of the subjects underwent a quadriceps muscle fatigue protocol, which involves two sets of 50 repetitions of leg extension at 50% of 1RM, with 4 min rest interval; followed by a 30-second Wingate anaerobic test (WanTs) on a cycle ergometer. Heart rate and RPE rating were recorded during the fatigue protocol to ensure the subjects were at similar effort in two experimental trials. During WanTs, subjects were either wearing non-compressive shorts (CON) or a compression short (COMP). A paired sample t-test was used to analyse the anaerobic variables. Results showed the peak power output (PPO), average power output (APO), anaerobic capacity (AC), anaerobic power (AP) and fatigue index (FI) during WanTs in COMP trial were slightly higher than CON trial. However, these anaerobic variables were not statistically different between trials (PPO, $p = .351$, APO, $p = .105$, AC, $p = .378$, AP, $p = .378$, FI, $p = .329$). In conclusion, this study demonstrated that the lower-body compression garment has no ergogenic effect on anaerobic performance after inducing muscle fatigue among physically active individuals.

Keywords: *Wingate Anaerobic Test, Fatigue Protocol, Ergogenic Effect, Compression Garment*

P26. The immediate effects of cadence alteration on running economy of intermediate distance runners: a case study

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The objective of this study was to investigate the immediate effects of cadence alteration on running economy of intermediate distance runners. Three male participants (AGE: 27.6 ± 2.5 years, predicted VO2max: 55.4 ± 0.5 ml/kg/min) volunteered in this study. A total of four times of 1km running velocity set at their comfort speed was carried out along with cadence alteration (+0%, +3%, +6% and +9%) assisted by a metronome rhythm. An instrumented treadmill (Noraxon, USA) was used to identify running mechanics such as loading rate and impact force, and a metabolic analyzer (Model: K5, COSMED, ITALY) was used to measure the running economy such as heart rate response (HR), oxygen uptake (VO2), respiratory quotient (RQ), and metabolic equivalent (MET). This study found the impact force was +0%: 1.65 ± 0.21 BW; +3%: 1.59 ± 0.10 BW; +6%: 1.70 ± 0.17 BW; +9%: 1.64 ± 0.26 BW and the loading rate was +0%: 70.08 ± 16.51 BW/s; +3%: 68.51 ± 13.09 BW/s; +6%: 69.76 ± 14.32 BW/s; +9%: 65.75 ± 12.35 BW/s. On the other hand, better responses were shown in particular stage for participant individually (M01 lowest in +9%, impact force: 1.34 BW; loading rate: 66.25 BW/s, M03 lowest in +3%, impact force: 1.61 BW: loading rate: 70.63 BW/s and no obvious finding in M02). It is thought that there will be linear reduction as cadence increases but data appears contrary to expectations which demonstrate interesting responses in particular stage. Moreover, similar results also shown in running economy as RQ (+0%: 0.97 ± 0.12; +3%: 1.01 ± 0.14; +6%: 0.99 ± 0.06; +9%: 0.94 ± 0.06), predicted VO2 (+0%: 45.54 ± 12.81 ml/kg/min; +3%: 46.25 ± 10.93 ml/kg/min; +6%: 43.15 ± 11.19 ml/kg/min; +9%: 44.93 ± 9.20 ml/kg/min), HR (+0%: 147 ± 6 bpm; +3%: 149 ± 5 bpm; +6%: 150 ± 2 bpm; +9%: 149 ± 3 bpm), MET (+0%: 14.53 ± 4.17; +3%: 13.66 ± 3.39; +6%: 13.36 ± 3.74; +9%: 12.71 ± 2.51). Hence, there is no indication shows that ultimate cadence immediately improves running mechanics and running economy. However, instant alter cadence may have individualized effects towards running mechanics and running economy which is believed could substantially benefit runners towards distance running.

Keywords: *Running Efficiency, Running Gait Retraining, Running Injuries, Step Rate Manipulation*

P27. Construction of the skill related physical fitness evaluation index system of Chinese young male tennis players

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Introduction: Tennis match is an explosive, multi-directional, brisk creative and skilful game, and it has high requirements for skill related physical fitness. Effective and scientific skill related physical fitness assessment is the key to ensuring the success of tennis sports. To upgrade tennis in China to world-class standard, this study serves to establish a scientific skill related physical fitness evaluation index which is useful for young male tennis players. **Method:** This study utilized Chinese young male tennis players skill related physical fitness evaluation index as the research objects, and recruited experts, coaches and referee among Chinese fraternity as the investigation objects. Literature search was performed using CNKI (China largest journal database, Scopus database with key search terms of young tennis players and skill related physical fitness literature, providing a certain theoretical basis for writing this study. This study designed an expert questionnaire (5 point Likert scale) for selecting Chinese young male tennis players skill related physical fitness evaluation indications based on consulting related literature, and distributed it to youth tennis coaches, tennis teachers in the sports academy and national tennis referees, a total of two rounds of expert questionnaire surveys were conducted. **Results and Discussion:** According to the scoring results of the second round of questionnaires, an index above the "important" level (average score ≥ points) was used the evaluation index for the skill related physical fitness variables of young male tennis players, and the average score of the evaluation index is 4 (important) or above the selection criteria for the evaluation index. Evaluation indicators that were deemed not very useful were either deleted or merged while the more complex evaluation indicators were optimized based on expert opinions in order to select more representative skill related physical fitness evaluation indicators. The results showed that: Chinese young male tennis players skill related physical fitness includes 6 first-level indicators including speed, strength, endurance, agility, flexibility and power; 11 second-level indicators such as aerobic endurance, anaerobic endurance, upper body power, and lower body power and 16 third-level indicators such as the hexagon test, beep test, sit and reach.

Keywords: *Young Tennis Player, Skill Related Physical Fitness, Evaluation Index System*

P28. Thermal effect on Flossband stretch tension

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Objective: Flossband is a novel technology and widely used by physiotherapists and strength coaches to improve athletic performance, reduce unspecific pain sensation, release myofascial tension, increase the joint range of motion and improve sports performance. However, one of the essential factors for optimum treatment effect is getting the right tension strength. With considering the potential of field application range from summer to winter Olympic sports, the influence of temperature on tensile strength of the flossband is yet to be examined. This study aims to examine the thermal effect on flossband tension strength. **Methods:** Twelve new flossbands (CompreFloss™, Malaysia) in three width lengths (2.5cm, 5cm, 7.5cm) and four colours (lime green, blueberry, plum and grey) were recruited respectively. All flossbands were exposed at least 1 hour (<2 hours) under all thermal conditions (30°C, 20°C, 10°C, 0°C and -10°C) in the environmental chamber and stretched randomly from 25%, 50%, 75%, 100%, 125% and 150% of its' original length of 50cm with one end fixed at a calibrated force gauge (Kubei®, China). The average score of two trials with no more than 0.02kg was recorded for further analysis. There were consistent results observed over the duration of exposure. IBM SPSS version 26 5x6 two-way repeated-measures ANOVA analysis was used to analyse the treatment effect of between and within-group. **Results:** There was significant difference in stretch lengths ($F_{(1.009, 11.095)} = 60.166$, $p < 0.001$, $\eta^2=0.845$) where greater stretch length generated greater tension strength, and no significant difference among all temperature conditions ($p > 0.05$). **Conclusions:** Flossband tension strength was not affected within the temperature range from -10°C to 30°C. Therefore, relevant personnel may apply the recommended tension strength (30%-50%) for desirable effect without considered thermal effect in summer and winter Olympic sporting environment.

Keywords: *Flossband, Myofascial, Pain, Force*

P29. Acute effect of morning light therapy on elite weightlifters' strength and cognitive performance

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Objective: Bright light therapy (BLT) is effective in reducing sleepiness, enhancing cognitive performance, alter melatonin level and improve alertness that relate to athletic performance who train in the morning, and late evening Olympian swimmer's performance over several days' dosage. In contrast to this, the significant of this practice was unknown to elite strength athletes. This study was aimed to examine the acute effect of morning BLT on strength and cognitive performance of elite weightlifters. **Methods:** Four competitive male weightlifters (20-22 age, >5years in national training camp) were recruited underwent all conditions (treatment, placebo and control) right after morning woke up (between 6:30am to 6:45am). BLT treatment group were put on blue light glass (Luminatte 2.0, Belgium) with self-selected intensity (1500lux of 20minutes unanimously). Placebo was put on the glass without light-on and control was free of device. All groups were exposed to dimmed light and natural light after woke up as their normal self-preparation regime toward morning training session. Handgrip strength, cognitive performance and RPE of alertness were recorded immediate woke up, immediate post and 1-hour after BLT exposed and compared against baseline. Baseline data were established after several familiarization sessions at the afternoon (6.00pm – 7:00pm). A Two-Way repeated measure ANOVA (3 x 3) was used to examine the treatment effect of between and within groups. **Results:** Handgrip strength, cognitive performance (reaction time, score) and RPE of alertness were significantly different within groups, $p<0.05$. There was no significant between groups and interaction effect were found. **Conclusions:** Strength and cognitive performance improved after woke up in the morning may related to either circadian hormonal change or thermal effect induced by natural sun or self-initiated physical activity. However, deprivation of performances was observed even after 1-hour woke up. Acute BLT was not effective to alter both performances for elite strength athletes.

Keywords: *SmartFit, Strength, Cognitive, Elite Athlete, Short-wavelength light*

P30. The effects of high intensity short duration soccer-specific fatigue simulation on hamstring eccentric strength in elite U19 players

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This study aims to investigate whether high intensity, short duration soccer-specific fatigue simulation affects hamstring eccentric strength. Twelve (n=12, age=18 ± 0.5 years, weight =62.3 ± 6.4 kg, height=171 ± 6.6 cm) elite U19 (UiTM FC) soccer players completed five minutes of soccer-specific fatigue simulation (SFS^5). The SFS^5 involved over-ground (with the incorporation of 4 positioned poles/markers) high intensity soccer-specific multidirectional and utility movements (kicking, jumping and heading, sprints with a ball), with frequent high accelerations and decelerations. Before SFS^5 (time 0 min), immediately after SFS^5 (time 5 min), and after 15 mins SFS^5 (time 15 min), participants performed three maximal dominant limbs eccentric hamstring muscle contractions at $120°s^{-1}$ on an isokinetic dynamometer. A one-way repeated measures ANOVA was used to identify significant differences between conditions and over time, with α=0.05. A significant time-dependent reduction in hamstring eccentric peak torques at time 5 min (9.5%) and time 15 min (9.7%) was observed (p<0.05). These findings suggest that eccentric training for hamstring during fatigue state should be a primary consideration in injury prevention programs. Our findings also recommended the inclusion of high intensity, short duration soccer-specific fatigue simulation as part of pre-season hamstring strain injury risk screening, and return to play assessment to ensure the effectiveness in identifying the markers of hamstring injury risk in youth soccer players.

Keywords: *Fatigue, Hamstring, Eccentric, Soccer*

P31. Selected physical performance comparison between Malaysia elite and university based rugby sevens players

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The purpose of this study was to compare selected physical performance related with muscular strength and cardiovascular endurance between Malaysia elite national team and university level (UiTM Lions) rugby sevens players. Thirty-two (n=32, Malaysia elite=16, University=16; age=22 ± 2.8, weight=82 ± 12.9, height=174 ± 5.4) rugby sevens players were recruited for this study. Upper and lower limb muscular strength were measured using the One Repetition Maximum (1RM) bench press and back squat, while VO2max was measured using Yo-Yo Intermittent Recovery Level 1 (YYIRL1). The Malaysia elite national team players demonstrated significantly (p<0.05) higher upper (100.63 ± 15.69 vs 86.88 ± 14.48) and lower (200 ± 22.44 kg vs 144.37 ± 31.83 kg) limb muscular strength in comparison with the university players. The distance covered during YYIRL1 was also significantly higher in elite national team players (2025 ± 276.31 m vs 1497.50 ± 227.20 m; p<0.05). The findings of the present study may suggest that elite national team players can be distinguished from the university level rugby sevens players in strength and endurance characteristics. The selected assessments may provide insightful strategies for coaches to develop individualized conditioning and evaluating training programs based on competitive level.

Keyword: *Strength, Endurance, Rugby*

P32. Effects of low-load bench press and push-up on muscular performance among youth female

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Introduction: Various fitness challenges had been invented and innovated in order to integrate exercise in life especially during the new norm of Covid-19 pandemic. There is lack of study on the effect of push-up exercise on sedentary women. The study aims to compare the effects of 6-week push-up (PU) and bench press (BP) exercise interventions towards muscular strength (MS) and muscular endurance (ME) among healthy sedentary youth women. **Methodology:** Forty (n=40) healthy sedentary youth women (aged 18.93 ± .97 years; body mass index 23.44 ± 4.5 kg m−2) were recruited in the study. Participants were divided into two groups of training interventions (PU group and BP group). Resistance exercise intervention involving four sessions per week for consecutive 6 weeks. Each session comprised of 3 sets of 12 repetitions with one minute of rest between each set. BP exercise was performed at 40% 1RM for BP group. One-repetition maximum bench press (1RM BP) test and one-minute push-up (1Min PU) test were performed at pre and post-intervention to measure MS and ME. A 2 x 2 mixed model ANOVA was employed to compare the effects of the two interventions following six weeks of training. **Result:** MS and ME for PU group has significantly improved ($p < .05$), with at the end of the intervention were 59.75 ± 13.91 and 45.05 ± 6.59 as compared to during the pre-intervention of 42.0 ± 11.40 and 28.95 ± 5.93, respectively. Similar result also found for BP group. MS and ME for BP group had significantly increased ($p < .05$), from the pre-test of 44.50 ± 9.58 and 29.95 ± 6.28 to the post-test of 60.25 ± 10.45 and 41.45 ± 6.20, respectively. However, there is no significant difference observed between BP and PU protocols on MS ($p= .661$) and ME ($p= .472$). **Conclusions:** The present study concludes that PU and low load BP exercise interventions do significantly improve MS and ME of sedentary youth women, with PU as an alternative for BP for sedentary youth women.

Keywords: *Push-Up, Bench Press, Muscular Strength, Muscular Endurance, One-Repetition Maximum Bench-Press and One-Minute Push-Up, Sedentary Youth Women.*

P33. Comparison of force-velocity profiling obtained using barbell and Kineo

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Differences in the mechanical outputs of vertical jumps obtained from different loading types and measurement tools were reported from previous studies. However, their influences on force-velocity (F-V) characteristics had not been extensively explored. Thus, this study aimed to compare the F-V characteristics of loaded squat jumps when performed using barbell (BSJ) and Kineo (KSJ). Nine male subjects were tested in BSJ and KSJ. While BSJ was assessed with force plate (BSJ-FP), KSJ was assessed with force plate (KSJ-FP) and Kineo's built-in measurement system (KSJ-KS). Averaged across subjects F-V profiles (peak F and peak V from each trial) and relationships (V at instant of peak F of each trial) were generated. Individual force-intercept (F0), velocity-intercept (V0), slope and linearity were compared between conditions and measurement system. BSJ-FP and KSJ-KS, except KSJ-FP, showed similar pattern. Significant difference was not observed in F0 and linearity. However, significant difference in V0 and slope was observed in F-V profile, whilst in F-V relationship only V0 demonstrated significant difference. This discrepancy could be due to the equipment and measurement tool mechanical factors as well as the altered movement kinematics due to the loading type. This study suggested that similar F-v relationship can be obtained from BSJ-FP and KSJ-KS. This study also provided some guidance in utilising Kineo for investigation of F-V profile and relationship. Future study should employ 3D motion analysis to further evaluate the loading and velocity mechanics of Kineo to provide insights of the movement biomechanics.

Keywords: *Force-Velocity Relationship, Force-Velocity Profiling, Loaded Squat Jump, Barbell, Kineo*

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P34. Development of movement variability detection system using MATLAB app designer

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This paper outlines the design and implementation of a video analysis based on MATLAB® App Designer to compute and visualize the trial-to-trial movement variability. The variability of movement is characterized as the natural variations that occur in motor performance across multiple repetitions of a task. There is general agreement that an optimal degree of movement variability is needed to form a stable system. The most common challenge with coaching is seeing the acceptable and subtle differences in movement variability and knowing when an athlete is struggling with errors. This computational tool enables scientist and coaches to identify the subtle differences in movement, both qualitatively and quantitatively. We can select videos using this APP, as well as edit the parameters that define the starting frame and the video length. To identify the difference in movement, the absolute difference between two images was calculated and image thresholding was used to minimize the changes in background. In each frame, the difference in motion was recorded in the percentage ratio. To detect the subtle changes, the two top shot put and archery performances recorded during the competition and the training were chosen, respectively. After importing the video into the APP, the absolute difference between two performances was calculated. Qualitatively, the disparity in results can be observed visually by coaches and scientists. Furthermore, the highest percentage difference was observed for both shot put (8.74%) and archery (5.87%) during release. Using this APP provides coaches with the opportunity to give instant feedback to athletes in order to enhance motor skills and performance

Keywords: *movement variability, video analysis, image processing, MATLAB*

P35. The differences of the ball speed and the spin rate depending on the results of tennis serves

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Objective: In tennis, the service is the only shot that a player can give himself without being influenced by his opponent, and it is said to be the most powerful and important shot to win the game. In this study, we investigate the difference in speed and spin rate in services when a service is entered, when it is not entered, and when an ace is taken. **Methods:** 14 men singles matches of 20 participants(age 25.9 ± 4.1) in the ATP Challenger tournament were included in the analysis. The speed and spin rate were measured using the Trackman. The analysis included 1343 1st service balls. **Results:** We compared the speed and spin rate for each IN, FAULT and ACE in the 1st service using one-way ANOVA. The speed of the 1st service, IN was significantly slower than that of FAULT and ACE($F=9.9$, $\eta^2=0.02$). The spin rate of the 1st serve, IN had significantly more spin rate than the FAULT and ACE($F=8.4$, $\eta^2=0.01$). **Conclusion:** The results of this study showed that the service was faster and lower spin rate when ACE was taken. However, it was found that the faster the speed of the service and the lower the spin rate, the higher the rate of FAULT. These considerations suggest that it is important to decide whether to take risks or play it safe, depending on the game situation at the time.

Keywords: *Tennis, Serve, Speed, Spin Rate, Trackman*

P36. The relationship between the scoring and the rally numbers in men's collegiate tennis in Japan

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Objective: It is said that in the recent years the servers have the advantage on the scoring in men's professional tennis. And also, this advantage remained when the rally continued over the third shots. The purpose of this study was to clarify the relationship between the scoring by the servers and rally numbers in men's collegiate tennis in Japan. **Methods:** We analysed the recorded matches from regional men's collegiate tennis tournaments in Japan. The subjected matches were 40 and the subjected points were 5085. We obtained the data as below from the recorded matches: the kinds of serve (1st or 2nd), the scored players (the servers or the receivers), rally numbers (classified by every two rallies), the kinds of the last shot of points. The scoring ratio by the servers were the ratio of the servers' scoring in every two rally numbers classifications. Chi-square test was used to clarify the difference of the scoring ratio in the rally numbers classifications. **Results:** As a result, the scoring ratio by the servers was significantly high when the rally was finished within the first two shots on the 1st serve ($x^2(4) = 554.41$, $p<0.01$, $V=0.41$). When the rally continued over the third shots on the 1st serve, the scoring ratio by the servers was same as the receivers. There was no relationship in the 2nd serve between the scoring ratio by the servers and the rally numbers ($x^2(4) = 5.03$, $V=0.05$). The scoring ratio by the servers or the receivers in the 2nd serve was about the same in every rally numbers. **Conclusions:** We concluded that the servers' advantage was showed only in the first two shots on the 1st serve in men's regional collegiate tennis in Japan. When the rally continued over the third shots in the 1st serve or every point in the 2nd serve, the servers' advantage was disappeared.

Keywords: *The Server, Scoring Ratio, 1st Serve, 2nd Serve, The Servers' Advantages*

P37. Ball speed and spin rate of backhand groundstrokes in professional male tennis players - comparison between Topspin shots and Slice shots

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Objective: Many current tennis players aggressively hit topspin shots in backhand and forehand groundstrokes. In addition, backhand slice shots are also used effectively as "change-of-pace" shots. Goodwill et al. (2007) presented data about the ball speed and spin rate of backhand shots in matches. However, data that players can use as references are limited, and information about differences between topspin and slice shots is lacking. This study aimed to clarify the quality of backhand groundstrokes by professional tennis players based on the shot speed and spin rate. **Methods:** Data concerning the shot speed and spin rate were collected during professional tennis tournaments using Trackman tennis radar (Trackman Inc., Denmark). Trackman tracks ball movement using Doppler radar technology and collects data similarly to a speed gun. Sato et al. (2017) confirmed the accuracy of the shot speed and spin rate measured by Trackman in comparison with a 3D motion capture system. In this study, the speed and spin rate of topspin and slice shots were compared among players who hit double-handed backhanded shots and those who hit single-handed backhand shots. **Results:** For double-handed hitters, the means ± S.D. of the ball speed and spin rate of topspin backhand groundstrokes were 108.7 ± 16.1 km/h and 1,481 ± 743 rpm, and those of slice shots were 76.7 ± 13.6 km/h and 2,469 ± 753 rpm, respectively. For single-handed hitters, the means ± S.D. of the ball speed and spin rate of topspin shots were 107.5 ± 20.6 km/h and 1,930 ± 763 rpm, and those of slice shots were 75.0 ± 14.8 km/h and 1,957 ± 588 rpm, respectively. As a result of ANOVA, significant differences ($p<0.01$) were observed in the ball speed and spin rate between topspin and slice shots by both double-handed and single-handed backhand hitters. **Conclusions:** When topspin and slice backhand shots were compared, the ball speed was higher in topspin shots, and the spin rate was higher in slice shots by both single-handed and double-handed hitters. In addition, the range of the spin rate of backhand topspin shots was narrower than that of forehand shots. The degree of freedom of backhand movements is smaller because the racket is held with two hands by double-handed hitters and because the hitting point is distant from the body for single-handed hitters. This may explain lower spin rates in backhand topspin shots. This study suggests that professional tennis players maintain a rally by incorporating slice shots into backhand strokes as the situation demands because the range of the spin rate is narrower in backhand strokes than in forehand strokes.

Keywords: *Ball Quality, Double-Handed, Single-Handed, Trackman*

P38. Kinematic differences in left-right side in blocking among college women's volleyball players in Japan

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Objective: In recent years, the attacking tactics of top-level teams have been dominated by a combination of four attackers. The basic approach to defending against this move is to block in the direction of the toss (Read Block System). This study compares and examines the difference between the left and right sides of the crossover step of women's volleyball players using the read block system. **Methods:** Fifteen Japanese college women's volleyball players (age: 20.1 ± 1.1 years, height: 169.3 ± 5.5 cm) were eligible for the study. A time synchronized 16 camera Mac3D optical motion capture systems (Motion Analysis Co.) and 10 force plates (Tec Gihan Co.) were used to determine three dimensional (3-D) coordinates of 38 retroreflective markers. The players were told that the toss from the setter would go up randomly in one of the left or right direction, and they were asked to block in response to the toss from the centre of the net. **Results:** The results showed that the performance of the jump height ($p = 0.04$, $d = 0.50$), maximum block reach ($p = 0.01$, $d = 0.51$), and motion time ($p = 0.02$, $d = 0.75$) was better than the left, and the effect size was large. **Conclusion:** Since most of the subjects in this study were right-handed (two of the Opposites were left-handed), it is assumed that they tended to perform better on the left side, which is a block stepping similar to spike stepping. However, some players may not use the spiking hand, so individualized instruction is required.

Keywords: *Biomechanics, Kinematics, Motion Analysis, Volleyball, Blocking*

P39. Behaviour and perception on physical activity during Movement Control Order (MCO)

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To curb the spread of the COVID-19 disease, governments have introduced social distancing measures with varying degrees of enforcement, ranging from unenforced recommendations to quarantine. Physical activity is an important determinant of health, and it is likely affected by social distancing measures introduced to combat the pandemic. This study presents findings from an online survey examining behaviour and the perception of physical activity and exercises during the period of the movement control order (MCO) dated 27th April until 3rd May 2020 in Malaysia. A total of 307 respondents (male = 134, female = 173) participated in the survey, which comprised three sections with a total of 33 items. Results indicate that about 81% of the respondents engaged in physical activity in which 42.3% exercise 3 to 7 days and 38.8% exercise 1 to 2 days per week during the MCO period. Interestingly, male respondents reported negative impact on their actual physical activity and exercise as compared to female respondents. This study reveals no significant association between gender and perception towards participating in physical activity, but it does show a significant association between gender and behaviour ($p<0.05$) in terms of physical activity and exercise during the MCO period. This study found that both genders have a positive understanding and awareness of the benefits of physical activity and exercise, which are crucial for physical and mental health during the pandemic.

Keywords: *Physical Activity, Exercise, Gender, Behaviour, Perception*

P40. Exergaming improves self-efficacy in sustaining physical activity among sedentary university students

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This research contrasts the physical activity-related self-efficacy before and after exergame play and the gender wise expectancy related beliefs and task values. Sedentary undergraduates (n=102) were recruited from local university in Kota Bharu, Kelantan using Global Physical Activity Questionnaire (GPAQ). Participants completed questionnaires assessing their self-efficacy, expectancy related beliefs, subjective task values and intention to participate in exergame play in the future. Participants had a substantially higher degree of self-efficacy after 30-minutes exergame play relative to that before exergame play (Mean score: Pre 27.1 ± 4.33 vs. Post 32.2 ± 4.51; $p < 0.001$). Their belief in their ability to exercise on a regular basis varied considerably across gender, with higher values reported in male than in female participants (mean difference = 0.84, $p = 0.02$). Other components of expectancy related beliefs, task values, and intentions were comparable between genders. Besides, participants also found exergame to be more appealing and engaging than conventional physical exercise, thus present higher beliefs in ability and higher intention for future participation. The result suggests that exergame play can be used as an innovative approach to increase the level of physical activity among sedentary university students.

Keywords: *Exergame, Self-Efficacy, Physical Activity*

P41. Effects of brisk walking on health-related physical fitness in the elderly: A systematic review

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Objectives: This research was aimed to systematically review current evidences in the literature to examine the effects of brisk walking on physical fitness among elderly over 60 years old, as well as to determine the magnitude of the physical impact of brisk walking on these elderly adults. Design: Systematic review. **Method:** Researcher collected data from January 2020 to September 2020, a systematic search of the academic search PubMed, Scopus, SportDiscus and CINAHL databases was carried out. Moderate and high intensity walking related studies were included, excluded low-intensity walking is defined by the American Heart Association as being less than 50% of your maximum hear rate, which varies by age. Papers published between 1990 and 2020 were included in the analysis and PEDro guidelines were used to assess the risk of bias in these studies. **Results:** 10 studies met all inclusion criteria; 9 were classified as low risk of bias and 1 was classified as moderate risk. There was a significant ($p>0.05$] main effect of group in cardiorespiratory fitness, muscle endurance and walking endurance. Significant ([<0.05] main effects of time were found in leg strength and upper body strength. There was a significant ($p<0.01$) main effect of time in BML. However, there was no significant main effect of time in body fat, trunk fat, lean mass and flexibility. **Conclusion:** Brisk walking is beneficial to cardiorespiratory health, BMI, aerobic endurance, muscle endurance, walking endurance, trunk muscle strength, upper body strength and leg strength for elder populations. However, brisk walking does not appear to have sufficient impact on flexibility, body fat and lean mass in this group of elderly cohort.

Keywords: *brisk walking, elderly, physical fitness*

P42. The manifestation of the menstrual cycle in the athletes of the National Team of Nepal in their preparation towards 13th SAG

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Introduction: The role of the menstruation cycle in sports performance is the important issues. It is felt need to bring a new look in Nepal to enhance the female athletic performance. The objective of the study is to identify the appearance of menstrual cycle on sporting performance in the elite female athletes of National team of Nepal. **Method:** Altogether 126 female athletes of 25 different sports are considered as participant in this study, their age ranged from 14 to 40 years. A structured questionnaire is applied in the study. **Results:** Regarding the menarche age, 6%, 43%, 35% and 16% athletes had between (10-11), (12-13), (14-15) and (16-17) years respectively. 79% athletes had regular menstruation, 10 % did not have, and 11% had sometime irregular menstruation. 49% respondents had painful menstruation, 10% did not feel pain, 2% athletes had very rarely painful and 39% respondents had sometime painful. However, 56% athletes continue the training, 2% often continue, 23% often discontinue, 9% sometime discontinue and 10 % always discontinue the training during their menstrual period. Only 5% athletes felt a lot of desire to involve in training, 76% athletes had little desire, and 18% did not have desire to involve in training during menstrual period, 1% athletes felt to avoid the menstruation period. 4% of the athletes used medicine to postpone their menstruation period, 1% often used and 95 % never used medicine. 10% athletes had heavy menstrual bleeding, 38% athletes sometime had and 52% athletes never had heavy bleeding during their menstruation period.

P43. Determination of motivation and barriers on physical activity participation among working individuals in a university setting

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Introduction: Work normally accounts the most portion of waking time and is the reason many people fail to meet the physical activity recommendations. **Objectives:** To identify the motivation and the barriers to exercise participation among academicians. **Methods:** Purposive sampling was employed to obtain 144 academicians of Tunku Abdul Rahman University College as suggested by Krejcie and Morgan (1970) with 84 (58.3%) women and 60 (41.7%) men. Participants completed two inventories; **1)** Physical Activity and Leisure Motivation Scale (PALMS) to identify motives of physical activity participations with reported validity (0.79 to 0.95) and reliability (0.78 to 0.94). **2)** Barrier Being Active Quiz (BBAQ) measured barriers of being active among individuals with validity (0.67 to 0.85) and reliability of 0.92. Demographic data such as gender, age, faculty, education level, marital status and physical activity level were obtained. Data were analysed by descriptive and inferential statistics (Independent T-test and One-Way ANOVA). **Results:** It was found significantly ($p < 0.005$) that barriers such as lack of time, energy, will power and skills are the main contributors to hinder an individual from being active when comparing between gender, different age group and physical activity levels. Motivators such as psychological condition, enjoyment, to master a skill, being competitive/ego and appearance were found to be the drive for individuals to be motivated to remain physically active. **Conclusions:** The findings of this study suggest the importance in acknowledging specific motives and barriers of physical activity participations among academicians. Employers may find this information useful to promote work-life balance to improve productivity.

Keywords: *Academicians, Barriers, Motivation, PALMS And Physical Activity*

P44. Cheerleaders' motivation and readiness to return to sports following injury

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Introduction: Returning to sport following an injury is a process that is riddled with difficulties especially so for competitive athletes. **Methodology:** This is a quantitative research employed survey method. A total of 130 cheerleaders (age = 25.66 ± 4.928 years old) participated in this study where they have suffered from an injury that have put them out from sports for 1 - 4 weeks. Two inventories were completed: 1) Adapted Sport Motivation Scale and 2) Readiness to Return to Sport Questionnaire. The demographic data collected were age, team cheer division, area of injury, position in team and injury duration. Descriptive statistics and inferential statistics (Pearson product-moment correlation, Independent T-test and One-way ANOVA) were used to analyse the data. **Results & Discussion:** Results from the study showed that there were significant effects ($p < 0.05$) of intrinsic motivation (toward accomplishment and experience stimulation) and extrinsic motivation (identified regulation, introjected and external regulation) of athletes towards returning to sport after injury. This demonstrated that motivation significantly influenced athletes' readiness to return to sport following an injury. Correlation analyses revealed that effects of intrinsic and extrinsic motivation towards athletes' readiness to return to sports following injury were associated with a positive renewed perspective on engaging in sports. As the athletes perceived themselves to be psychologically ready to return to sport after injury; it also reflected on their self-determination to attempt the sport again without fear, worry, concern and anxiety of reinjure from occurring. **Conclusion:** This study indicated the importance of motivation in assisting injured athletes to return to sport. Most athletes returned to sport because of others' expectations on themselves although they were not fully mentally prepared to return to sport due to their fear and concerns of performing at peak performance again.

Keywords: *Cheerleading; Sport Motivation; Sport Injury; Return To Sport*

P48. Short-term effects of commencing sprint interval training with divegent carbohydrate availability on cycling performance in well-trained tthletes: a case study

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Introduction: Sprint Interval Training (SIT) has gained much popularity recently as an effective training strategy to improve endurance performance. However, the effects of carbohydrate (CHO) availability during SIT on subsequent training adaptation and performance is yet to be investigated, especially among well-trained cohorts. The aim of this case study was to examine short-term effects of commencing sprint interval training (SIT) divergent carbohydrate availability on cycling performance in well-trained cyclist. **Method:** Six well-trained cyclist, VO2 peak (58.2±4.5 mL/kg/min) were recruited to undertake 3 weeks of twice-a-day, every other day training sessions. Training intervention consists of a 90-minute steady-state ride at 70% VO2 peak (90-minSS), followed by a SIT session (8-12 sets x 30s @ 175% PPO interspersed 4.5 min at 100W) 3 hour later. Upon completion of the 90-minSS, 3 subjects were provided 2.5g/kg body mass of CHO to replenish CHO availability for subsequent SIT session (SIT-CONTROL), whereas another 3 subjects were given 6.5g of CHO (SIT-LOW). Throughout the experimental period, the subjects were restricted to perform only training prescribed by this study and consumed their habitual diet with no supplementation and extreme dietary practices reported. 48-h before and after the 3-week training-diet intervention, endurance performance was assessed by a high-intensity time to exhaustion test at 150% peak power output (150% TTE) and a 250kJ time trial (250TT). **Results:** After the 3-week training-diet intervention ANCOVA revealed that both SIT-CONTROL and SIT-LOW improved significantly in the 150% TTE (65.0±8.5 sec to 73.0±10.1 sec; 12% vs. 82.7±14.6 sec to 97.7±14.6 sec; 18% respectively). In a similar, both SIT-CONTROL and SIT-LOW improved significantly in 250TT (21.3±3.5 min to 20.5±1.8 min; 4% vs. 19.6±4.6 min to 19.2±5.4 min; 2% respectively). However, there is no significant difference observed between the two interventions in both the endurance tests. **Conclusion:** In a model of training twice-a-day, every other day, CHO availability does not appear to influence the effect of SIT on endurance performance in well-trained athletes.

P49. Comparison of body composition among Malaysian paralympic athletes before and after the lockdown of COVID-19

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Objective: This study aimed to investigate the body composition among Malaysian National Paralympic athletes before and after the Lockdown of COVID-19 in Malaysia. **Method:** Data for pre-lockdown were collected between June 2019 and March 2020, while post-lockdown was between June 2020 and August 2020. 40 subjects (age 27.1 ± 5.4 years old) from 7 different sports (para athletics, para badminton, para table-tennis, wheelchair basketball, para swimming, para cycling and powerlifting) were enrolled. Of all, 20 subjects were wheelchair-bound (WC) and 20 were non- wheelchair-bound (NWC). Body composition was measured by method of skinfold using ISAK protocol (n=29) and bio-impedance analysis (BIA) (n=11). **Results:** This study found that the body weight decreased from 70.1 ± 15.5kg before lockdown to 69.1 ± 14.9kg after lockdown even though the difference was not significant ($p>0.05$). This was mainly due to significant reduction of lean body mass from 56.93 ± 9.23kg to 55.42 ± 8.43kg ($p<0.001$). The loss of lean body mass was evident strongly from corrected biceps girth (pre:33cm ± 3.8, post: 32.2cm ± 3.8, p: 0.001). However, after categorizing into WC and NWC, only NWC athletes had significant loss of lean body mass from 58.5 ± 7.9kg to 56.8 ± 6.9kg ($p<0.001$) with corrected biceps girth of 31.6 ± 2.9cm to 30.9 ± 3.2cm ($p<0.05$). Besides, skinfold results showed increases of both sum 4 for WC and sum 7 skinfolds for NWC but the differences were not statistically significant. Based on overall BIA results, although there was no significant difference in body fat and skeletal muscle mass, body fat mass raised from 29.93kg ± 18.36kg to 30.25 ± 17.17kg while skeletal muscle mass reduced from 30.65 ± 10.61kg to 30.04 ± 9.5kg. **Conclusion:** National Paralympic athletes especially NWC experienced significant reduction of lean body mass after the lockdown period, resulting from muscle atrophy due to reduction in training intensity. Whilst WC athletes did not because they mainly rely and manoeuvre using upper body for training and activity of daily living (ADL). Post lockdown interventions are indispensable to achieve pre-lockdown state of body composition.

Keywords: *Lockdown, COVID-19, Body Composition, National Paralympic Athletes, Malaysia*

P50. Changes in body Composition and aerobic fitness of Malaysia youth elite soccer players following COVID-19 Movement Control Order (MCO)

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Objective: The aim of this study was to investigate the changes of body composition and aerobic fitness among Malaysia male youth soccer players after returning to an elite soccer academy following COVID-19 Movement Control Order (MCO). **Method:** A group of elite youth soccer players (U17) (n=63) undergone body composition assessment through Bio-Electrical Impedance Analysis (BIA) (body mass (BM), height, fat free mass (FFM), skeletal muscle mass (SMM), fat mass (FM) and percentage of body fat (BF%)) and performed field test (Yo-Yo Intermittent Recovery Test Level 1) before MCO (pre) and upon returning to the academy (post) after MCO was lifted. Players were provided with home-based training program throughout the MCO period which focused on core body strength and cardiovascular endurance with low to moderate training load. Paired-samples T-Test and Wilcoxon Signed Rank Test was conducted to analyse the changes in body composition and aerobic fitness of the players. **Results:** Although the median value of BM was not significant (63.3kg to 62.8kg), however there were statistically significant decrease in FFM and SMM of U17 players pre MCO (54.1 ± 5.9 kg; 30.7 ± 3.6kg) to post MCO (52.6 ± 5.9kg; 29.7 ± 3.5kg, $p<0.005$). Similarly, significant drop in Yoyo-test performance were observed with mean maximal oxygen uptake reduced from 52.2 ± 3.5ml/kg.min to 49.8 ± 3.1ml/kg.min ($p<0.005$) and mean total distance covered decreased from 1879 ± 416m to 1590 ± 363m, ($p<0.005$). PBF among players increased from 14.1 ± 3.7% to 17.3 ± 4.8% ($p<0.005$) with significant increase in median value of BFM from 8.2kg pre MCO to 10.6kg post MCO ($Z = -6.336$, $p<0.005$). **Conclusion:** A nearly 4-month MCO due to unprecedented COVID-19 pandemic has resulted in a decline of anthropometric and endurance performance of our youth elite soccer players. Findings from present study indicate the need for interventions to preserve FFM and SMM, prevent increase in BFM and PBF as well as to regain aerobic capacity to enable a safe and effective return to training or competition for youth soccer players.

Keywords: *Soccer Players, Body Composition, Anthropometry, Aerobic Fitness, Lockdown*

P51. Comparison prescribed and self-hydration plan on body fluid changes and performance towards 40-km time trial among Malaysia endurance cyclist

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Objective: Changes between 1–2% body mass loss from sweating has been shown to compromise physiological functioning during prolonged exercise. The aim of this study is to compare effects of prescribed (PH) and self-hydration (SH) plan on body mass loss and performance toward 40-km time trial among Malaysia endurance cyclist. **Method:** Nine elite male endurance cyclists (18.2 ± 0.7 year, 64.7 ± 6.5 kg, 170.8 ± 4.8 cm, VO^2max= 56.3 ± 4.5 mL/kg/min performed three sets of 40km time trial on SRM Training System in the fastest possible time using the strategy of free choice during familiarization (F), SH (drink water based on self-hydration) and PH (drink water based on fluid losses) in the lab environment (Temperature: 22.8 ± 0.8°C; Relative Humidity: 51.1 ± 5%). Subjects performed a familiarization trial to calculate fluid losses for prescribed hydration (PH). Body weight (kg), body mass loss (%), urine specific gravity (USG), power output (W), RPE, heart rate (HR) and time trial (sec) were measured during three trials. **Result:** Body mass loss was lower in PH compare to F and SH (1.1 ± 0.3%, 2.2 ± 0.5%, 2.1 ± 0.4% respectively). There are no differences was found on performance, heart rate, power output and RPE between three trials. PH to match fluid losses during exercise can minimise body mass loss during prolonged exercise however it did not influence the 40-km time trial performance.

P52. Body composition changes after COVID-19 Movement Control Order (MCO) among Malaysian national athletes

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Objective: Malaysia implemented series of MCO after the outbreak of pandemic COVID-19 in Malaysia where athletes only able train at home for about 3 months. This study was aimed to compare the changes of body composition due to the COVID-19 MCO among Malaysian national athletes. **Methods:** 135 (67 males, 68 female) national athletes from 11 sports that undergone home based training during MCO phases were recruited. 75 athletes were assessed PRE and POST MCO by bioelectrical impedance (BIA) method, while 60 athletes assessed by anthropometry method with ISAK protocol. Body Mass Index (BMI) and body composition were derived from data and subjects were divided into five groups (combat, racquet, skill, team, strength and power). **Results:** Median POST body mass 54.1 (51.1 to 58.4) kg and BMI 21.5 (20.0 to 22.6) were significantly ($p<0.01$) lower than PRE at 54.9 (51.5 to 59.6) kg and 21.6 (20.4 to 23.1) among female athletes. Result shown significant ($P<0.05$) reduction on lean body mass (LBM) from 59.9 (54.5 to 64.1) kg to 58.4 (53.9 to 63.3) kg among male athletes and significant ($P<0.01$) reduction from PRE 44.6 (42.0 to 46.5) kg to POST 44.5 (41.8 to 46.3) kg among female athletes. Similar trend shown in combat and skill sports group for male athletes ($P<0.05$) and racquet sports group for female athletes ($P<0.01$). Team sports was the only group shown significant ($P<0.05$) reduction in body fat percentage (both gender) and body fat mass (male). **Conclusion:** In summary, pro-long home-based training due to COVID-19 MCO could impact both positive and negatively on athletes' body composition. Body fat loss only found on team sports group. The loss of LBM especially among combat, skill sports (male) and racquet sports (female) athletes indicated POST MCO interventions are essential for athletes in order to return PRE MCO body composition.

Keywords: *Body fat, Lean body mass, Movement Control Order, COVID-19, Athlete*

P53. Comparison of lower body strength between tenpin bowling and lawn bowl elite athletes

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Introduction: Both lawn bowls and tenpin bowling are target sports and recreational activities in which a player rolls a ball toward pins (tenpin bowling) or another target (lawn bowls) with different styles of playing. However, these sports require great lower body strength to execute the games. This study aims to determine if the lower body relative strength (LBRS) levels are significantly different between male tenpin bowling (MTB), female tenpin bowling (FTB), male lawn bowls (MLB) and female tenpin bowling (FLB) elite athletes. **Subjects and Method:** 11 MTB athletes with age (years): 25.9 ± 7.5; height (cm): 171.8 ± 7.7 and weight (kg): 74.1 ± 15.9; 12 FTB athletes with age: 26.7 ± 6.1; height: 161.2 ± 3.2 and weight: 68.3 ± 18.9; 8 MLB athletes with age: 28.8 ± 5.9; height: 171.2 ± 5.3 and weight: 73.4 ± 13.1 and 8 FLB athletes with age: 29.0 ± 5.3; height: 157.8 ± 8.1 and weight: 63.2 ± 15.9 at national level in Malaysia were recruited to perform the 1-RM squat test. From the 1-RM squat test results, the maximal strength was divided by body weight to calculate LBRS. **Results:** A Shapiro-Wilk test showed that LBRS data was normally distributed. There was a statistically significant difference between four groups as determined by one-way ANOVA, $F(3,35)=5.52$, $p=0.003$. A Bonferroni post hoc test indicated that MTB athletes was significantly better in LBRS (M=1.4, SD=0.3) than FTB athletes (M=1.1, SD=0.2) and FLB athletes (M=1.0, SD=0.2). However, no statistically significant difference between MTB and MLB athletes (M=1.3, SD=0.2); and FTB and FLB athletes. **Conclusion:** Despite the fact that there's no significant difference in the LBRS between i) MTB and MLB athletes; and ii) FTB and FLB athletes, the results of the 1-RM squat relative strength is higher in tenpin bowling athletes compared to the lawn bowl athletes. Further study for strength and power tests should also be done to determine strength levels and to monitor strength changes in conjunction with training programs.

Keywords: *Tenpin Bowling, Lawn Bowls, Lower Body, Strength*

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FREE PROGRAM / CHANNEL 5			
Time	4 NOVEMBER 2020	5 NOVEMBER 2020	
8.00 - 8.30 AM	Login & Instruction Briefing		
8.30 - 9.00 AM	Welcoming Speech (CEO of National Sports Institute of Malaysia)		
	Opening Speech (Minister of Youth and Sports Malaysia)		
9.00 - 10.00 AM	STEFAN RICHELLI Recovery of Strength Post Covid-19 with COMPRE Floss (SANCTBAND)	9.00 – 9.45 AM	CHEAH BOON CHOONG Science Behind Stair Climbing (INTENZA FITNESS)
10.00 - 10.30 AM	SPONSORED VIDEOS	9.45 – 10.30 AM	RICHARD WEE Sports Law (Richard Wee Chambers)
10.30 - 11.30 AM	TANIA LEE Personalizing Protein Intake for Performance (NOVA)	10.30 - 11.30 AM	JOSEPH DOLCETTI Assistive vs Resistive Loading Resistance Training as a Coaching Tool (LILA)
11.30 - 12.30PM	TRIMAX Tecar Therapy & Kineo	11.30 - 12.30 PM	TANIA LEE Fluids and Hydration for Athletic Performance (NOVA)
12.30 - 1.00 PM	SPONSORED PRESENTATION	12.30 – 1.00 PM	SPONSORED PRESENTATION
1.00 - 2.00 PM	LUNCH BREAK	1.00 – 2.00 PM	LUNCH BREAK
2.00 - 2.30 PM	NISHA SABANAYAGAM & LILIAN KOK Sexual Harassment and Its Impact in Malaysia Sports (AWAM)	2.00 – 3.00 PM	DR. SILVANO ZANUSO The Role of the New Technologies in Delivering Evidence Based Exercise Programs (TECHNOGYM)
2.30 - 3.00 PM	LET'S TRAIN WITH PHYSIOTOOLS & SMARTFIT 1. Physiotools (The Smart Way to Create Personalized Exercise Programs for Rehabilitation and fitness) 2. Gunnar Peterson (Power of SMARTfit Cognitive Training)	3.00 – 4.00 PM	FOO SHAN MEI Probiotics, Immunity & Sports (YAKULT)
3.00 - 4.30 PM	CAPT PRABHU S/O NAGARAJAN (R) FIT Malaysia X (ISN)	4.00 – 5.00 PM	JOERG TEICHMANN Unexpected Disturbance in Early Stages of Rehabilitation (REHAMED)
4.30 - 5.00 PM	ADVERTISEMENTS	5.00 – 5.15 PM	CLOSING SPEECH Deputy Minister KBS

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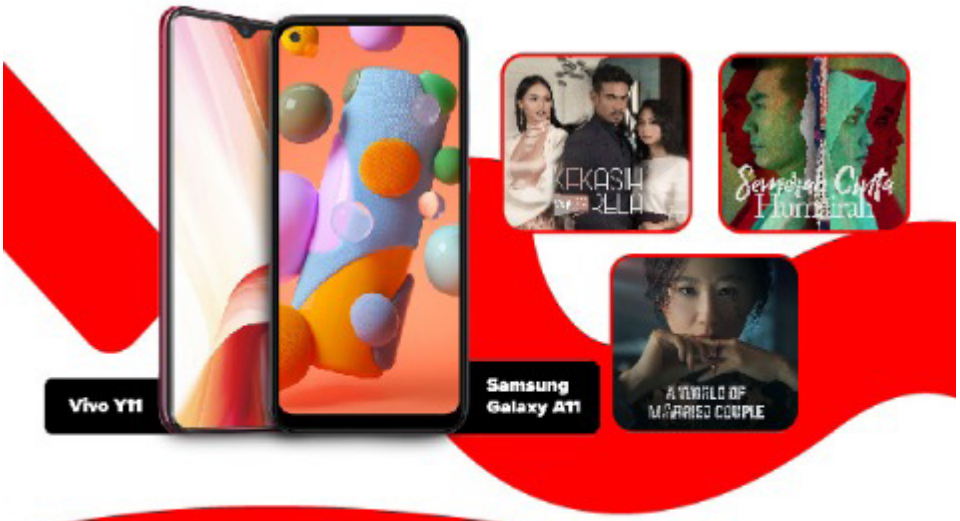

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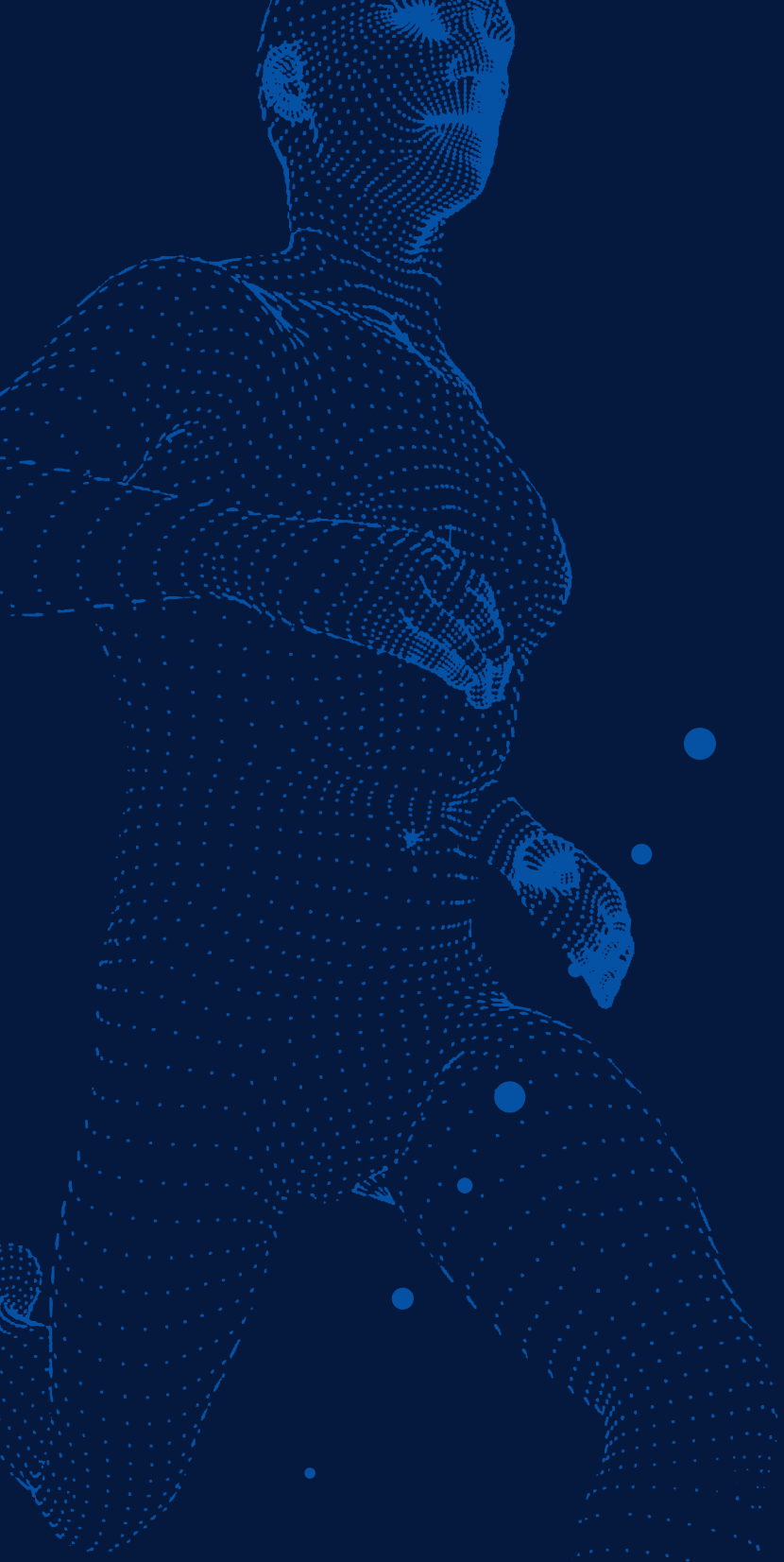

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