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ADAMAS ANTI-DOPING SOCIAL SCIENCE RESEARCH SEMINAR 2024

The Anti-Doping Agency of Malaysia (ADAMAS) strategically partnered with several key organisations, including the Centre for Drug Research, Universiti Sains Malaysia (USM), Universiti Kuala Lumpur, Southeast Asia Regional Anti-Doping Organization (SEARADO), and the World Anti-Doping Agency (WADA), to curate and implement the 2024 ADAMAS Anti-Doping Social Science Research Seminar (2024 ADAMAS SSR). This landmark event took place from October 22 to 23, 2024, at the Dewan Persidangan Universiti, Universiti Sains Malaysia, Penang, Malaysia.

The seminar aimed to:

- Raise awareness about the importance of anti-doping research.
- Showcase how research can inform the design and effectiveness of anti-doping programs.
- Foster potential collaborations between National Anti-Doping Organization (NADO) administrators and academic researchers.

This was the first seminar of its kind in Southeast Asia, and it attracted a diverse group of 100 participants, including administrators, academic experts, and professionals working in the anti-doping field. The event provided a rich learning experience, blending technical presentations, interactive workshops, and facilitated group discussions. A distinguished lineup of speakers throughout the seminar shared their knowledge, insights, and best practices, focusing on the latest trends and providing thought-provoking perspectives on anti-doping research. The speakers' contributions made for a dynamic and informative session, furthering the seminar's goals and strengthening the region's anti-doping initiatives.

Ms. Catherine Ordway
Social Science Research Expert Advisory Group Member
World Anti-Doping Agency

Mr. Derwin Chan
Social Science Research Expert Advisory Group Member
World Anti-Doping Agency

Mr. Tony Cunningham
Head of Research and Policy, Education
World Anti-Doping Agency

Mr. Gobinathan Nair
Director General
Southeast Asia Regional Anti-Doing Organisation (SEARADO)

Prof. Dr. Ahmad Fuad Shamsuddin
Dean Faculty of Pharmacy & Health Sciences
UniKL Royal College of Medicine

Dr. Eugene Koh Boon Yau
Deputy Director (Academic & Research)
Department of Psychiatry
Faculty of Medicine and Health Sciences
Universiti Putra Malaysia

Profesor Dr. Haslinda binti Abdullah
Pengarah
Institut Pengajian Sains Sosial
Universiti Putra Malaysia

Mr. Lim Ming Chiang
Jabatan Farmasi
Hospital Sultan Haji Ahmad Shah, Temerloh

INVITED SPEAKERS' ABSTRACTS

ENHANCING CLEAN SPORT BEHAVIOUR AT SCHOOL: EVALUATION OF THE EFFECTIVENESS OF POSITIVE EDUCATION INTERVENTION PROGRAM IN MALAYSIAN ADOLESCENT ATHLETES

Haslinda Abdullah [1*], Syasya Firzana Azmi [1], Aini Azeqa Ma'rof [1], Soh Kim Geok [2], Zeinab Zarehmohzzabieh [3], Hayrol Azril Mohammed Shaffril [1]

[1]*Institute of Social Science Studies, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia.*
[2]*Faculty of Educational Studies, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia.*
[3]*University of Religions and Denominations, Qom, Iran.*

*Corresponding author:
Haslinda Abdullah
Institute of Social Science Studies, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia.
Email: lynn@upm.edu.my

Introduction: Doping endangers athletes' health and degrades sports by substituting fair competition with an inflated perception of power. Young athletes are particularly prone to hazardous behaviours when lack a strong ethical grounding. This study provides a novel positive education intervention designed to encourage players to engage in clean sport behaviour. With increased worries about doping and unethical behaviours, the intervention focuses on fostering a culture of integrity, respect, and fair play, as well as promoting the value of competition and anti-doping principles. **Methodology:** Using the PERMA Model (Seligman, 2018), the intervention delivers training modules as a comic book series that emphasises the dangers of doping and promotes clean sport ideals. The study involved 40 adolescent's athletes from the Malaysian National Sport School and used a pre-test post-test control group design. The intervention was administered to the experimental group, but not to the control group. **Results:** The experimental group demonstrated a better comprehension of anti-doping rules, more ethical decision-making abilities, and a greater dedication to clean sport. In addition, compared to the control group, participants demonstrated improved attitudes towards sport ideals and understanding of doping. **Conclusions:** The findings show that a PERMA-based positive education intervention effectively promotes clean sport behaviour, improves anti-doping awareness, and develops ethical decision-making among young athletes.

Keywords: Anti-doping, Athletes, Clean Sport Behaviour, PERMA Model, Positive education.

CULTIVATING A CLEAN SPORT ENVIRONMENT WITH ATHLETE SUPPORT PERSONNEL (ASP): A MULTI-COUNTRY INTERVENTIONAL STUDY ON ANTI-DOPING KNOWLEDGE, ATTITUDES, AND PRACTICES

Ming Chiang Lim [1,2], Gobinathan Nair [3], Eng Wee Chua [4], Tuan Mazlelaa Tuan Mahmood [1], Farrah-Hani Imran [5], Ahmad Fuad Shamsuddin [6], Adliah Mhd Ali [1*]

[1] *Centre for Quality Management of Medicines, Faculty of Pharmacy, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.*
[2] *Department of Pharmacy, Hospital Sultan Haji Ahmad Shah, Jalan Maran, 28000 Temerloh, Pahang, Malaysia.*
[3] *Southeast Asia Regional Anti-Doping Organisation, Singapore Sports Council, 3 Stadium Drive, Singapore 397630.*
[4] *Centre for Drug and Herbal Development, Faculty of Pharmacy, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.*
[5] *Faculty of Medicine, Hospital Canselor Tuanku Muhriz UKM, Jalan Yaacob Latif, 56000 Cheras, Kuala Lumpur, Malaysia.*
[6] *Faculty of Pharmacy and Health Sciences, Universiti Kuala Lumpur Royal College of Medicine Perak, Jalan Greentown, 30450 Ipoh, Perak, Malaysia.*

*Corresponding author:
Adliah Mhd Ali
Centre for Quality Management of Medicines, Faculty of Pharmacy, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.
Email: adliah@ukm.edu.my

Introduction: Athlete support personnel (ASP) work closely with athletes to help them participate in or prepare for sports competitions. Their involvement in preventing and eliminating doping among athletes is crucial. **Methodology:** An anonymised self-administered questionnaire assessing knowledge, attitudes, and practices regarding doping in sport was distributed to ASP before and after an online educational programme. A Wilcoxon signed-rank test was used to assess differences between pre- and post-programme responses. **Results:** A total of 596 respondents from eleven countries participated in the study. The majority were male (67.1%), non-healthcare professionals (89.4%), and retired elite athletes (57.7%). Their knowledge was found to be poor, with a mean score of 16.1 ± 5.4 out of 30. Attitudes towards doping, as measured by the Performance Enhancement Attitude Scale (PEAS), had a mean score of 18.1 ± 9.4, indicating a negative attitude. While some respondents provided information to athletes about medication and supplement use in sport, only 11.8% reported regularly updating their knowledge of doping-related topics. Notably, knowledge and PEAS scores differed significantly between genders ($p = 0.04$; $p = 0.02$), and knowledge scores were negatively correlated with PEAS scores ($p < 0.01$). The intervention improved ASP's knowledge of doping in sport ($p < 0.01$) and increased their deterrence against doping ($p < 0.01$). **Conclusions:** This study highlights significant knowledge gaps among ASP in Southeast Asia regarding anti-doping practices. Enhancing their knowledge and fostering positive attitudes towards anti-doping efforts can promote a culture of doping-free sport, particularly among the young athletes they support. To further this goal, anti-doping agencies should engage ASP through action-oriented programmes that more effectively promote anti-doping behaviours. These initiatives should focus on increasing the adoption and consistency of such behaviours, ensuring long-term commitment to clean sport.

Keywords: Anti-Doping Education, Athlete support personnel, Doping in sports, Youth athletes.

ENGAGING HEALTHCARE PROFESSIONALS TO ELIMINATE INADVERTENT DOPING IN SPORT: STUDY ON KNOWLEDGE, ATTITUDE AND PRACTICE

Nontharit Voravuth [1], Eng Wee Chua [2], Tuan Mazlelaa Tuan Mahmood [1], Ming Chiang Lim [1,3], Sharifa Ezat Wan Puteh [4], Nik Shanita Safii [5], Jyh Eiin Wong [5], Ahmad Taufik Jamil [6], Jamia Azdina Jamal [2], Ahmad Fuad Shamsuddin [7]*, Adliah Mhd Ali [1]

[1] *Centre for Quality Management of Medicines, Faculty of Pharmacy, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.*
[2] *Drug and Herbal Research Centre, Faculty of Pharmacy, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.*
[3] *Department of Pharmacy, Hospital Sultan Haji Ahmad Shah, Jalan Maran, 28000 Temerloh, Pahang, Malaysia.*
[4] *Faculty of Medicine, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia.*
[5] *Centre for Community Health Studies, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia.*
[6] *Faculty of Medicine, Universiti Teknologi MARA, Sungai Buloh Campus, Sungai Buloh, Selangor, Malaysia.*
[7] *Faculty of Pharmacy and Health Sciences, Universiti Kuala Lumpur, Royal College of Medicine Perak, 30450 Ipoh, Perak, Malaysia.*

*Corresponding author:
Ahmad Fuad Shamsuddin
Faculty of Pharmacy and Health Sciences, Royal College of Medicine Perak, Universiti Kuala Lumpur, 30450 Ipoh, Perak, Malaysia.
Email: fuad.shamsuddin@unikl.edu.my

Introduction: Inadvertent doping (ID) occurs through athletes' ignorance of the use of questionable health food products or supplements which contain prohibited substances. These products are easily available through sales from sundry shops or online purchases. Even though national athletes who received supplements from outside sources must obtain approval from the National Sports Institute (NSI) before taking them, cases of ID still occur. **Methodology:** The main objective of this project was to determine the level of knowledge, attitude and practice (KAP) in the issue of doping in sports amongst healthcare professionals in health institutions and community. The results of the KAP studies should be able to provide an early platform to establish these healthcare professionals to be mediators in eliminating the incidence of doping amongst athletes. Due to technicality issues during this study project, only community pharmacists were considered as respondents although the initial plan was to enrol various healthcare professionals that included pharmacists, medical doctors, dieticians, nutritionists, physiotherapists and sport teachers. **Results:** A self-administered questionnaire for the KAP study was distributed to 426 community pharmacists with 384 acceptable responses (N=384) with a response rate at 90.14%. There were more female respondents (90.14%) as compared to males. The median for years of practice as community pharmacist was six years. The respondents were found to have moderate levels of doping-related knowledge (median score of 52 out of 100). Anabolic steroids (95.8%) were readily recognised by the respondents as prohibited substances in sport followed by stimulants (78.6%) and growth factors (65.6%). The number of respondents ignorant of inadvertent doping as a doping violation stood at 65.9%. Surprisingly, 90% of the community pharmacist respondents showed a poor knowledge of doping issues involving Malaysian athletes. **Conclusions:** The study showed that a lot still need to be done to prepare community pharmacists an agent to address the issue of inadvertent doping by athletes.

Keywords: Anabolic steroids, Doping, Inadvertent doping, Prohibited list, Stimulants.

PARTICIPANTS' ABSTRACTS

KNOWLEDGE AND HABITS OF MEDICATION AND DIETARY SUPPLEMENTATION AMONG MALAYSIAN ELITE ATHLETES AND THEIR PERCEPTIONS TOWARDS PHARMACISTS' ROLES IN SPORTS

Tan Yong Qi [1,2], Lim Ming Chiang [1,3], Farrah-Hani Imran [4], How Peck Ngor [5], Adliah Mhd Ali [1*]

[1] *Centre for Quality Management of Medicines, Faculty of Pharmacy, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.*
[2] *Department of Pharmacy, Hospital Beaufort, Peti Surat 40, 89807 Beaufort, Sabah, Malaysia.*
[3] *Department of Pharmacy, Hospital Sultan Haji Ahmad Shah, Jalan Maran, 28000 Temerloh, Pahang, Malaysia.*
[4] *Department of Surgery, Faculty of Medicine, Universiti Kebangsaan Malaysia, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia.*
[5] *Sports Psychology Center, National Sports Institute of Malaysia, 57000 Bukit Jalil, Kuala Lumpur, Malaysia.*

*Corresponding author:
Adliah Mhd Ali
Faculty of Pharmacy, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.
Email:adilah@ukm.edu.my

Introduction: Ergogenic aids are commonly used by athletes to enhance sports performance. The consumption of ergogenic substances is not limited to dietary supplements (DS) but medications. Despite the high prevalence of medications and DS use, limited doping-related knowledge and poor habits of medications and DS use may potentially lead to inadvertent doping. This study aims to assess the knowledge and habits of Malaysian elite athletes regarding the use of medications and DS, and their perceptions of pharmacists' roles in sports. **Methodology:** A cross-sectional, self-administered questionnaire was distributed to Malaysian elite athletes registered with the National Sports Council of Malaysia between April and June 2023. Descriptive analysis was used to summarise the demographic characteristics. The ANOVA and Chi-square test were employed to determine the associations between independent and dependent variables. **Results:** The overall response rate was good (n= 231/400, 57.8%). The majority were male (n= 125, 54.1%), had participated in international competitions (n= 188, 84.1%), and had taken medications and/or DS in the past three months (n= 150, 64.9%). Despite most athletes practising daily supplementation, their knowledge of medications and DS use in sports was lacking, with a mean score of 7.3 (SD= 4.6). The study demonstrated a significant association between knowledge and the use of medication and/or DS use ($p< 0.05$). Training duration and achievement level were significantly associated only with DS use ($p< 0.05$). We discovered that Malaysian elite athletes had a positive perception towards pharmacists' roles in sports, with a median score of 3.8 (IQR= 3.2-4.4). **Conclusions:** Athletes demonstrated limited doping-related knowledge despite a high level of medications and DS use. Adequate education strategies on substance use should be implemented, and a multidisciplinary approach involving pharmacists as drug experts would help bridge the gap, ensuring appropriate use of medication and DS while complying with anti-doping regulations.

Keywords: Athletes, Knowledge, Medications, Pharmacists, Supplements.

SPORTSRXREF: A MOBILE APPLICATION FOR PROHIBITED DRUG REFERENCES IN SPORTS

Muhammad Zul Bahri Zainal Abidin [1], Nor Safwan Hadi Nor Afendi [1*], Muhammad Zaki Ramli [1], Ahmad Fuad Shamsuddin[1] Mohd Murtadha Ramly [1], Khairuddin Nisa [2], Nor Haizan Mohd Rodzi [3]

[1] *Faculty of Pharmacy and Health Sciences, Universiti Kuala Lumpur, Royal College of Medicine Perak, 30450 Ipoh, Perak, Malaysia.*
[2] *Pejabat Pendidikan Daerah Bagan Datuk, Taman Awan, 36100 Bagan Datuk, Perak, Malaysia.*
[3] *Majlis Sukan Negeri Perak, Kompleks Sukan Bandaraya Ipoh, 31400 Ipoh, Malaysia.*

*Corresponding author:
Nor Safwan Hadi Nor Afendi
Faculty of Pharmacy and Health Sciences, Royal College of Medicine Perak, Universiti Kuala Lumpur, 30450 Ipoh, Perak, Malaysia.
Email: norsafwanhadi@unikl.edu.my

Introduction: Doping are considered illegal in sports due to their ability to enhance performance and are classified as cheating. Furthermore, doping also will lead to serious health issues and the ruin of athletes' image. The development of current technology allowed us to develop a mobile application called SportsRxRef as a simple platform for referencing prohibited drugs in sports. This study investigated athletes' knowledge, attitudes, and practices about using SportsRxRef to refer to prohibited drugs in sports. **Methodology:** A cross-sectional survey was conducted that used a self-administered, structured online questionnaire among 50 athletes in Majlis Sukan Negeri (MSN) Perak. Descriptive analysis was used to analyse the sociodemographic characteristics. The Chi-square test was used to identify the association between independent variables and dependent variables, while the Pearson Correlation Test to see the relationship between dependent variables. **Results:** This study found that athletes in MSN have a high knowledge (n= 34, 68.0%), high attitude (n= 40, 80.0%), and high practice (n= 28, 56.0%) after using SportsRxRef as prohibited drugs in sports reference. There was no significant association between between independent variables and dependent variables in this current study ($p > 0.05$). However, this study gave a significant relationship between Knowledge-Practice and Attitude-Practice of athletes towards SportsRxRef usage as a prohibited drugs reference ($p < 0.001$). **Conclusions:** This study concluded that most MSN athletes scored high for knowledge, attitude, and practices regarding the usage of SportsRxRef as a reference for doping drugs. The usage of SportsRxRef by athletes has many benefits in improving the quality of the sports industry.

Keywords: Attitude, Knowledge, Mobile application, Practices.

KRATOM AS AN EMERGING PLANT-BASED PERFORMANCE ENHANCER AMONG MALAYSIAN ATHLETES: UNDERSTANDING ITS PSYCHOACTIVE METABOLITES AND DETECTION CHALLENGES

Nelson Chear Jeng Yeou [1*], Siti R.Yusof [1], Vikneswaran Murugaiyah [1,2]

[1] *Centre for Drug Research, Universiti Sains Malaysia, 11800 Minden, Penang, Malaysia.*
[2] *School of Pharmaceutical Sciences, Universiti Sains Malaysia, 11800 Minden, Penang, Malaysia.*

*Corresponding author:
Nelson Chear Jeng Yeou
Centre for Drug Research, Universiti Sains Malaysia, 11800 Minden, Penang, Malaysia.
Email: nelsonchear@usm.my

Introduction: Kratom (*Mitragyna speciosa*), a psychoactive plant native to Southeast Asia, including Malaysia, has been traditionally used by farmers and laborers to enhance endurance, alertness, and focus. It is also used as a mood enhancer, analgesic, and opioid substitute. Although removed from the WADA Monitoring Program in 2018, its rising use among athletes in Malaysia as a performance enhancer has raised concerns regarding safety and legal implications. This study aimed to analyze key psychoactive alkaloids of kratom, including mitragynine and its oxidative metabolite, 7-hydroxymitragynine, using ultra-performance liquid chromatography-tandem mass spectrometry (UPLC-MS/MS) for potential application in future kratom regulation. **Methodology:** A targeted UPLC-MS/MS method was developed to qualitatively and quantitatively assess psychoactive alkaloids in kratom. Alkaloid standards were evaluated using precursor ion scans and product ion scans to establish fragmentation patterns. A kratom decoction was subsequently analyzed using multiple-reaction monitoring (MRM), with key alkaloids identified based on their precursor and selected product ions. **Results:** Efficient chromatographic separation was achieved on a BEH C18 column within 22 minutes in positive ion mode. Mitragynine and its diastereomer, speciociliatine, speciogynine, and mitraciliatine, were detected at retention times of 12.10, 12.80, 13.73, and 14.80 minutes, respectively, using MRM scan with the ion transition 399 > 174. The minor but addictive alkaloid, 7-hydroxymitragynine, was eluted at 6.50 minutes with the ion transition 415 > 190. However, several oxindole alkaloids with identical molecular masses and fragment ions were also detected, increasing the risk of misidentification as 7-hydroxymitragynine during MRM scan. **Conclusions:** Targeted UPLC-MS/MS analysis, guided by authentic reference standards, is critical to address analytical challenges, especially when working with complex analytes, such as kratom. The use of reference standards ensures accurate identification and quantification of psychoactive kratom alkaloids, minimizing the risk of false positives and supporting reliable regulatory decisions.

Keywords: Kratom, Mitragynine, 7-hydroxymitragynine, Targeted analysis, UPLC-MS/MS.

YOUTH ATHLETES AND DOPING: AN ASSESSMENT OF ATTITUDES TOWARD PROHIBITED SUBSTANCES

Ahmad Fikri Mohd Kassim*, Muhammad Haziq Izzuddin Adzahar

Faculty of Sports Science and Recreation, Universiti teknologi MARA, Perlis Branch, Arau Campus, 02600, Perlis, Malaysia.

*Corresponding author:
Ahmad Fikri Mohd Kassim
Faculty of Sports Science and Recreation, Universiti Teknologi MARA, Perlis Branch, Arau Campus, 02600, Perlis, Malaysia.
Email: ahmadfikri@uitm.edu.my

Introduction: A restricted substance is described as any material that violates the ethical codes of sport, poses an actual or possible health threat to the athlete, and can serve to amplify or enhance athletic capabilities. From a comprehensive and financial perspective, the athlete is involved in commercial activities, collaboration, and collusion with coaches, managers, physicians, pharmacists, and nutritionists, all of whom exhibit a vested interest in augmenting their physical capabilities. Given the pervasive incidence of doping within competitive sports, numerous studies have been conducted focusing on athletes and individuals associated with sports. Consequently, this research seeks to explore the perceptions and understanding related to doping. **Methodology:** A total of 226 adolescent student-athletes from the northern region participated in this investigation. The Performance Enhancement Attitude Scale (PEAS) (α=.88) was utilized for this study. PEAS comprised 17 items that articulated statements pertaining to doping and substance use, categorized accordingly. The instrument was rated using a unidimensional 6-point Likert scale, with total scores ranging from 17 to 102. **Results:** This investigation shows that respondents have an average age of 21.53 years, where the standard deviation is (SD 1.53). The average duration of participation of the respondents in their respective athletic disciplines is 7.03 years (SD 3.78). A significant majority of young athletes have been informed about prohibited substances in their respective sports (84.1%). Their confidence in their understanding of banned substances in their respective sports stands at 78.3%. A minimally significant difference exists in the mean performance enhancement scores between male and female participants. **Conclusions:** Acquiring knowledge about doping is critical as it may aid in the prevention of inadvertent doping by equipping athletes with accurate and reliable information to facilitate clean sports. Future investigations should concentrate on exploring this domain further to discern the potential factors that could influence the understanding of doping.

Keywords: Doping Knowledge, Performance Enhancement Attitude Scale (PEAS), Prohibited Substance, Youth Athletes.

THE EFFECT OF MASSAGE THERAPY ON SPASTICITY IN CHILDREN WITH CEREBRAL PALSY: A SYSTEMATIC REVIEW

Maisarah Rafek*, Azira Iqlima Razali, Najihah Kamaruzzaman, Nur Atiqah Jamaluddin, Nur Hanisah Sejari

Faculty of Pharmacy and Health Sciences, Universiti Kuala Lumpur, Royal College of Medicine Perak, 30450 Ipoh, Perak, Malaysia.

*Corresponding author:
Maisarah Binti Rafek
Faculty of Pharmacy and Health Sciences, Royal College of Medicine Perak, Universiti Kuala Lumpur, 30450 Ipoh, Perak, Malaysia.
Email: rafekmaisarah@gmail.com

Introduction: Cerebral palsy (CP) is a neurodevelopmental disorder that affects children's muscle function as well as motor tone. Massage therapy has been proven to be effective in improving motor function, muscle tone and stiffness, sensory deficit and pain. This study is conducted to critically analyse the published literature on the benefit and effect of massage therapy as a treatment for spastic cerebral palsy. **Methodology:** Three electronic database were searched from August 2023 until September 2023 (MEDLINE via PubMed, Cochrane Library, Scopus) for randomized trials study with keywords; massage, massage therapy, spastic, and cerebral palsy. Final selection was made by the authors, who independently checked the titles, abstracts, inclusion and exclusion criteria and the full text. The articles were assessed for its quality using PEDro scale and relevant data were extracted. **Results:** Out of 242 articles which were reviewed, only 30 articles met the inclusion criteria. Four out of 30 articles were selected (range of PEDro scale is 7 to 9 over 11). The results showed that massage therapy with different techniques have a beneficial effect on spastic cerebral palsy patients. The combination of massage therapy with physiotherapy treatment produces a significant improvement in spasticity reduction. **Conclusions:** The quality of the studies was mixed, ranging from higher-quality experimental to lower-quality studies. Generally, all the studies report positive outcomes associated with massage therapy. This review findings may serve as a good foundation for future randomized controlled trials to understand the long-term effects and optimize treatment approaches for children with cerebral palsy.

Keywords: Cerebral Palsy, Massage, Massage therapy, Spastic.

GASTROESOPHAGEAL REFLUX DISEASE: A MINI REVIEW

Faizzatul Hani Mohammad Husni, Nur Hidayah Aziz Nordin, Siti Nur Aisyah Nor Azlan, Ungku Nur 'Aisyah Ungku Hatta, Azira Iqlima Razali*, Nurhanisah Sejari

Faculty of Pharmacy and Health Sciences, Universiti Kuala Lumpur, Royal College of Medicine Perak, 30450 Ipoh, Perak, Malaysia.

*Corresponding author:
Azira Iqlima Razali
Faculty of Pharmacy and Health Sciences, Royal College of Medicine Perak, Universiti Kuala Lumpur, 30450 Ipoh, Perak, Malaysia.
Email: azira.iqlima@unikl.edu.my

Gastroesophageal reflux disease (GERD) is a condition caused by the retrograde passage of refluxate into oesophagus. The pathophysiology of GERD may be attributed to an assortment of mechanisms including chemical, mechanical, psychological, and neurological aspects. Multiple variables contribute to the developments of GERD, including dental erosion, hiatal hernia, unhealthy lifestyle, drug side effects, and transient lower oesophageal sphincter relaxation. Other than that, several elements might potentially contribute to onset and worsening condition. Within this context, characteristics that lead to GERD are age, gender, obesity, high alcohol intake and unbalanced diet intake. As a result, heart burn and regurgitation are two main symptoms associated with GERD. The physiotherapy management that can be implemented for GERD cases are inspiratory muscle training and diaphragmatic breathing exercise. The mini review will explore pathophysiology, aetiology, risk factors, clinical manifestation, and treatment associated with GERD.

Keywords: Gastroesophageal Reflux Disease, GERD, Physiotherapy Treatment.

A PROTOTYPE OF A MOBILE APPS AND E-BOOK INCORPORATING TRADITONAL MALAY MASSAGE, PHYSIOTHERAPY, AND MEDICATION ADHERENCE FOR STROKE REHABILITATION

Nurhanisah Sejari [1*], Faizah Safina Bakrin [2], Long Chiau Ming [3], Chua Siew Kuan [4], Wan Hazmy Che Hon [5]

[1] *Faculty of Pharmacy and Health Sciences, Royal College of Medicine Perak, Universiti Kuala Lumpur, 30450 Ipoh, Perak, Malaysia.*
[2] *School of Pharmacy, KPJ Healthcare University, 71800 Nilai, Negeri Sembilan, Malaysia.*
[3] *School of Medical and Life Sciences, Sunway University, Sunway City, 47500 Selangor, Malaysia.*
[4] *Department of Physiotherapy, Faculty of Health Sciences, Universiti Teknologi MARA, Puncak Alam 42300, Malaysia.*
[5] *KPJ Seremban Specialist Hospital, Seremban 70200, Negeri Sembilan, Malaysia.*

*Corresponding author:
Nurhanisah Sejari
Faculty of Pharmacy and Health Sciences, Royal College of Medicine Perak, Universiti Kuala Lumpur, 30450 Ipoh, Perak, Malaysia.
Email: nurhanisah.sejari@unikl.edu.my

Introduction: Rehabilitation is crucial for recovery and functionality regain of stroke patients. However, more than 60% of stroke patients in Malaysia don't receive sufficient rehabilitation which leads to permanent disability. From our previous studies on the immediate clinical effect of Malay massage, recovery and treatment outcomes can be greatly enhanced with Malay massage, effective medication management and physiotherapy exercise. This project aims to validate the prototype STroke REhabilitation A-TeaM (STREAM) toolkit in form of mobile application and e-book to verify its effectiveness for stroke rehabilitation. **Methodology:** Validation of the contents of STREAM toolkit consists of four phases. The first level 4-session STREAM toolkit and module were developed by practitioner-cum-academics. The participant's training module includes a series of educational video and booklet, mobile apps that covers all the education topics and a set of goal setting sheets were distributed before the starts of programme. Session 1: introduction of stroke and implementation of Malay massage and physiotherapy exercise. Session 2: Disease conditions, prevention and providing Malay massage technique and physiotherapy training to caregiver. Session 3: Blood thinning medicine awareness for stroke condition. Session 4: Medication adherence that suits for stroke condition. **Results:** All the content was embedded in the STREAM mobile application and e-book. The STREAM toolkit was obtaining intellectual property for protect its unique features, content, and functionality. **Conclusions:** The STREAM toolkit is a comprehensive tool that assists caregivers and healthcare providers in understanding and delivering stroke treatments. In the future, this toolkit could become a marketable solution for broader community use.

Keywords: Medication Adherence, Rehabilitation, Stroke, Traditional Malay Massage.

IMMEDIATE EFFECT OF MUSCLE ENERGY TECHNIQUE TOWARDS NECK RANGE OF MOTION AMONG UNIKL RCMP STUDENTS

Farah Hanani Abdul Rahman, Santibuana Abd Rahman*, Mohd Murtadha Ramly

Faculty of Pharmacy and Health Sciences, Universiti Kuala Lumpur, Royal College of Medicine Perak, 30450 Ipoh, Perak, Malaysia.

*Corresponding author:
Santibuana Abd Rahman
Faculty of Pharmacy and Health Sciences, Royal College of Medicine Perak, Universiti Kuala Lumpur, 30450 Ipoh, Perak, Malaysia.
Email: santibuana@unikl.edu.my

Introduction: The neck range of motion can be affected by neck pain which will cause limitation in neck movements. There is limited study to prove that MET is the best treatment for immediate effect of neck ROM compared to other treatments. Therefore, this study is done to investigate the immediate or sudden effect of a method called Muscle Energy Technique on the neck's range of motion. This study aimed to investigate the immediate effect of muscle energy technique (MET) on neck range of movement (ROM) among UniKL RCMP students. **Methodology:** This study employed an experimental study design involving 52 participants that was done in Electrotherapy Laboratory of UniKL RCMP from February 2023 to March 2023 using convenience sampling technique. Range of motion was measured using goniometer to identify the range of neck movements. The data was analysed using the SPSS version 23. **Results:** The study results revealed that the MET treatment was significant in intervention group ($p<0.05$). There also was significant immediate effect of neck ROM between intervention and control groups ($p<0.05$). **Conclusions:** It is proven that MET treatment is an effective treatment in increasing the range of motion of neck. However, the outcome will be more effective if MET is done together with other conventional rehabilitation treatments. Nevertheless, this study shows that MET has immediate effects towards neck ROM.

Keywords: Muscle energy technique, Neck range of motion.

THE FUZZY DELPHI METHOD: DESIGN PHASE OF THE DEVELOPMENT OF A SELF-ASSESSMENT INSTRUMENT OF DOPING KNOWLEDGE, ATTITUDES AND PRACTICES AMONG NATIONAL YOUTH ATHLETES

Rosly Yusoff [*], Siti Aishah Md Yusop, Mohd Hafizuddin Baki, Norhazira Abdul Rahim

Fakulti Sains Sukan dan Kejurulatihan, Universiti Pendidikan Sultan Idris, 35900 Tanjong Malim, Perak, Malaysia.

*Corresponding author:
Rosly Yusoff
Fakulti Sains Sukan dan Kejurulatihan, Universiti Pendidikan Sultan Idris, 35900 Tanjong Malim, Perak, Malaysia.
Email: rosly78@yahoo.com

Introduction: This study aims to obtain expert consensus on the main constructs and elements as well as the order of priority for each item in the development phase of the self-assessment instrument of doping knowledge, attitudes and practices among the country's youth athletes. **Methodology:** In this research phase, the Fuzzy Delphi method was used with five Likert scales. This study was conducted with the aim of developing a self-assessment instrument capable of assessing the level of knowledge, attitudes and practices of national youth athletes related to doping according to expert consensus. Therefore, the researcher obtained the consensus of 11 experts from various fields, especially the field of sports organization and sports coaching. This questionnaire has 22 items involving three constructs, namely (i) knowledge, (ii) attitude and (iii) practice. The ranking (ranking) of each item is determined by using the Defuzzification Process. **Results:** The findings of this study show expert consensus on all items in the main construct. The findings of this study show that 21 out of 22 items were accepted and passed the three Fuzzy conditions, namely the threshold value (d) not exceeding or equal to 0.2, the percentage of expert agreement exceeding or equal to 75% and the Defuzzification value (alpha cut) exceeding or equal to 0.5. **Conclusions:** The development of a self-assessment instrument can provide a new way to measure the level of knowledge, attitudes and doping practices among adolescent athletes.

Keywords: Design, Development, Doping, Fuzzy Delphi, Instrument.

KNOWLEDGE, ATTITUDES AND PRACTICES TOWARDS DOPING AMONG YOUTH ATHLETES OF THE NATIONAL FOOTBALL ACADEMY

Rosly Yusoff [1*], Siti Aishah Md Yusop[1], Azali Rahmat[1], Norashikin Mustafa[2], Norhazira Abdul Rahim[1]

[1] *Fakulti Sains Sukan dan Kejurulatihan, Universiti Pendidikan Sultan Idris, 35900 Tanjong Malim, Perak, Malaysia.*
[2] *Department of Nutrition Sciences, Kulliyyah Allied Health Sciences, International Islamic University Malaysia.*

*Corresponding author:
Rosly Yusoff
Fakulti Sains Sukan dan Kejurulatihan, Universiti Pendidikan Sultan Idris, 35900 Tanjong Malim, Perak, Malaysia.
Email: rosly78@yahoo.com

Introduction: The purpose of this study is to measure the level of knowledge, attitude and practice of drug use in sports among youth athletes of the National Football Academy. **Methodology:** This study was conducted in the form of a questionnaire among the athletes of the National Football Development Program in Gambang Pahang. Participation in this study is voluntary and there is no incentive or coercion. A total of 133 athletes were involved in this study and all of them are male football athletes who have experience participating in many domestic and foreign football competitions. **Results:** The level of knowledge of football athletes in this study is at a medium level with a mean score of 67.01%. While the results of the study related to athletes' attitudes towards the use of prohibited substances show an average mean score of M=2.41 which explains that athletes have a negative attitude or reject the use of prohibited substances in sports. In addition, overall, the athletes involved in this research showed a good level of practice related to the use of 'doping' in sports where the mean score was (M=5.68). **Conclusions:** these teenage athletes should be equipped with knowledge related to the dangers of using prohibited substances in sports. Education programs and courses related to prohibited substances should be provided to ensure that athletes have a broad knowledge of the dangers of using prohibited substances.

Keywords: Attitude, Doping, Football, Knowledge, Practice, Wada.

ENHANCING ANTI-DOPING EDUCATION AMONG MALAYSIA SPORTS SCHOOLS ATHLETES: A FUNDAMENTAL APPROACH

Mohd Hafizuddin Baki *, Nur Ikhwan Mohamad

Faculty of Sports Science and Coaching, Sultan Idris Education University (UPSI), 35900 Tanjong Malim, Perak, Malaysia.

*Corresponding author:
Mohd Hafizuddin Baki
Faculty of Sports Science and Coaching, Sultan Idris Education University (UPSI), 35900 Tanjong Malim, Perak, Malaysia.
Email:m.hafizuddin@fsskj.upsi.edu.my

Introduction: The concept paper titled *"Enhancing Anti-Doping Education among Malaysia Sports Schools Athletes: A Fundamental Approach"* highlights the urgent need for improved anti-doping education within Malaysia's sports schools. While global efforts to combat doping continue to make progress, gaps in awareness and understanding persist, particularly among young athletes. As the competitive sports landscape evolves, it is critical to equip emerging athletes with the knowledge and ethical values necessary to promote a culture of clean sport. This paper proposes a comprehensive educational framework aimed at instilling the principles of fair play and ethical conduct, as well as raising awareness of the long-term health benefits of avoiding doping. **Methodology:** The proposed framework integrates both theoretical knowledge and practical guidelines concerning prohibited substances, doping risks, and athletes' ethical responsibilities. The approach advocates for the use of interactive learning techniques, real-life case studies, and continuous assessments to ensure effective retention and application of anti-doping knowledge. Drawing on studies that demonstrate the effectiveness of educational interventions (Pawlak et al., 2020; Waddington & Smith, 2009), this strategy aims to enhance the overall understanding of doping prevention among young athletes. The initiative is backed by the Ministry of Higher Education through the Early Career Fundamental Research Grant Scheme (EC-FRGS), fostering collaboration among key stakeholders including ADAMAS, educators, coaches, and sport governing bodies. This collaborative approach creates a supportive ecosystem that encourages compliance with anti-doping regulations and minimizes the risk of doping among young athletes. **Conclusions:** In conclusion, the proposed educational model serves as a vital tool in protecting the health of athletes and upholding the integrity of sports. By embedding anti-doping education into the foundational training of athletes, this initiative can foster a generation that is informed, vigilant, and committed to clean sport. The collaborative efforts between various stakeholders ensure a holistic approach, contributing significantly to reducing doping cases in Malaysia. Furthermore, this framework paves the way for future research on the effectiveness of anti-doping programs and informs policy recommendations tailored to the Malaysian sports education system. Through this initiative, Malaysia has the potential to become a leader in anti-doping education.

Keywords: Anti-Doping Education, Athlete Development, Knowledge Practice Application, Malaysia Sports Schools.