

## EXAMINING AWARENESS, ATTITUDE, AND EXPERIENCE OF YOUNG ATHLETES TOWARDS BANNED USAGE OF ILLEGAL DRUGS IN SELANGOR

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**Abstract:** Drug abuse occurs in all sports and at most levels of sports competition. A young athlete may lead to drug abuse for several reasons including pressure to perform, treatment of injuries, and release from physical pain. This study examines the relationship between awareness, attitude, and experiences of young athletes towards the banned usage of illegal drugs in the University of Selangor. The present study conducts a quantitative research approach and collects data through a questionnaire survey from 150 undergraduate students between 18 to 27 years old. Statistical Package for Social Science (SPSS) software is used to analyse the data. It is found that awareness, attitude, and experience have a significant relationship with the knowledge, and understanding of students towards the usage of banned drugs. Although young athletes acquire information about banned illegal drugs and realise the negative impact of the drugs, they tend to consume due to their attitude and desire to win a competition. The present study implies that universities need to increase the awareness among university students of the hazardous impact of using illegal drugs in sports and implement strict measures to curb the untoward incidents that might happen to the young athletes for taking the drugs. Besides, the prevention of drug abuse should be placed as a top priority as far as the sports agenda is concerned in this country.

**Keywords:** Illegal drugs, young athletes, sports, drug abuse, students

### 1. Introduction

A drug is well-defined as a substance that modifies the physiological processes of the body which is used for the prevention, diagnosis, and treatment of disease (Emran, Hossain, Salek, Khan, Ahmed, Khandaker, & Islam, 2014), while misuse signifies injudicious or irrational application. The use of performance-enhancing drugs is one of the main problems facing sports today. Despite intense efforts by professional and sporting bodies to eradicate the problems, it remains widespread (Gerdes, 2008). Corrigan and Kazlauskas (2000), found that the most common drugs used in sports are anabolic androgenic steroids, *ketum*, diuretics, stimulant narcotics and, beta agonist. According to Parnabas, Mahamood, Nagoor, Mohd and, Nazarudin (2013), most young athletes in Malaysia use narcotics to win and as their coping strategy to reduce fatigue and increase power. Besides, the performance enhancer drug has different functions and effects on the human internal body. As a result, they will become addicted and is highly reliant on the substance and leads to damage their self, society, family, and country (Galea, Nandi, & Viahov, 2004).

A prohibited drug is a prescription drug that somebody has dangerously modified (Morgan, Noronha, Muetzfeldt, Fielding, & Curranlan, 2013) while recreational drugs, such as heroin, cocaine, and ecstasy, for example, are categorised as illegal drugs. Most athletes that engage in competitive sport with a strong drive to win can be fierce and, these circumstances led some athletes to use drugs to increase performance in the competition despite knowing it is against the rule. One of the plausible reasons is that young athletes have little knowledge and understanding about the effects of illegal drugs on them (Nicholls, Cope, & Bailey, 2017). Besides personal achievement, athletes often aim for a winning medal to make their country proud and secure a sport in a professional team. In such an environment, the use of performance-enhancing substances has become progressively common. Some athletes seek advice from their doctors to ensure they use a legal quantity as suggested by the doctors for their daily supplement. Drug abuse in the sports arena is known as doping in that the use of prohibited substances for performance enhancement has become an imperative issue in every sport and has been discovered on athletes of all ages and at every level of competition.

According to Baron, Martin, and Abolmagd (2007), doping is considered as the use of a substance such as anabolic beta-blocker, steroid, amphetamine, human growth hormone, or erythropoietin, or medical technique. Many changes occur in the body of an athlete both physically and psychologically due to using the prohibited drugs (Reardon, & Creado, 2014). Some of these side effects occur immediately, while others only happen over time. Every side effect of drug use has the potential to be severe, but the physical effects can lead to serious, and harmful health hazards. People should therefore try to avoid combining drug use with any type of physical activity. According to Matthew, Sarah, Guy, Peter, and John (2014), most athletes choose to do dope even though they are aware of the risky, harmful, and possible lethal impact of their decisions. Depending on the substance used, the amount ingested, and one's gender, doping can change the testicular size, masculinisation in women and reduce hormone production, liver dysfunction, impotence, diabetes, and arthritis.

Taegyung and Young (2017) stated that understanding is a psychological process related to an intangible or tangible object, such as a person, situation, or message whereby one can think about it and use concepts to deal effectively with that object. Understanding is a relation between the knower and an object of understanding. Understanding involves capabilities and dispositions concerning an object of knowledge that is sufficient to support intelligent behaviour. However, understanding, and awareness about illegal drugs among young athletes in Malaysia is still scarce (Lim, Ahmad, & Tuan, 2018). Therefore, due to misinformed, lack of awareness, athlete attitude, and experience on illegal drugs may give a significant negative impact on young athletes' level of understanding and knowledge that may lead to an undesirable decision making of taking illegal drugs. Therefore, the purpose of this current study is to examine the relationship between awareness, attitude, and experiences of young athletes towards the banned usage of illegal drugs in the University of Selangor.

## 2. Research Problem

The use of illegal drugs among young athletes creates an unacceptable situation about the culture of drugs that have been happening in sports. It is found that the main motive for the usage of performance-enhancing drugs is about victory (Parnabas et al., 2013). Athletes consume enhancing performance drugs to improve their achievement and at the same time to lower their anxiety phase (Weinberg, & Gould, 2010). High expectations from friends, and media family, fear of a certain group of people or rivals, and misgivings of being failed contribute to the reasons why the athletes keep taking the illegal drug in competition. There were several cases of young potential athletes using performance-enhancing during the Malaysian games in 2016. Up to four medallists were found positive in doping tests including two archery athletes, and two weightlifter athletes because they were taking performance enhancer drugs as reported (Bernama, 2016). Leach (2002) states that the number of athletes who become illegal drugs user keeps growing if drugs abuse issues are not handled promptly. Zulkarnain and Nik (2020) conducted a survey among the young athletes during the Malaysian Universities Games in Kuala Lumpur 2014 and found that university athletes have poor knowledge about doping and antidoping.

Lim et al., (2018) also conclude that young athletes had a poor to moderate level of knowledge regarding doping. They found that about 1.5-1.8% of the studied athletes have positive behaviour towards doping practice and, some of them are also willing to involve in a doping environment. One of the main reasons for banned substances intake is to boost performance, the importance attached to winning, and encouragement from their peer (Peter, Adams, Barnes, Hines, Jones, Krebs, & Keider, 2005). Previous studies show that athletes who are involved in taking illegal drugs after a long period encounter problems such as organ system functional failure, mental illness, cancer, increase in individual behaviour problems, and discipline problems (Asbah, & Zainal, 2016). This is because illegal drugs contain toxic elements that can affect the internal and external bodies of humans. In addition, this condition exposes the risks of cutting their sports career short. On the psychological risk factor, other studies show that addicted to drug abuse are thrice more likely to suffer from depression and negative attitude (Pilowsky, Wickramaratne, Talati, Wisniewski, & Fava, 2008). One of the most often recreational drugs used worldwide is cocaine types of drugs. Previous studies found that the use of cocaine is steadily increasing over recent years at 6.6% within 16 to 24 years old athletes.

According to Baker, Graham, and Davies (2006), those addicted to cocaine usually are prone to chronic cardiovascular disease. Other performance enhancement drugs, such as stimulants are typically able to affect the central nervous system, however concurrent effect on the cardiovascular system is often. Many cases of serious opposing cardiovascular diseases have been reported including fatalities that linked with the use of stimulants as performance-enhancing drugs (Sigei, 2014). According to the United Nations Drug Control Programme (UNDCP), Malaysia, among Southeast Asian nations, ranks fifth in the number of drug addicts. Almost 1.2 million Malaysians are drug addicts, a considerable number considering Malaysia's population of 28.3 million. From this number, approximately 10% of them are still in school. This percentage is very worrying as students today are the next generation that will lead the nation in the future. Lim, et al., (2018) studied knowledge, attitude, and practice on doping in

Malaysia and found that more than 90% of young athletes are unaware of the official anti-doping organisations in Malaysia. Therefore, young athletes should equip themselves with knowledge on the dangers of using enhancing performance drugs. Besides, the prevention of drug abuse should be a top priority in this country. In addition, it is essential to deliver information about the issues and at the same time to address the knowledge and awareness about the banned usage of illegal drugs among athletes in Malaysia.

### 3. Literature Review

The use of the banned substance in any level of sports is a major global problem among athletes. It is conservative to brief that the use of prohibited substances occurred naturally through human history. The prevalence of illegal drugs or well known as performance-enhancing drug use among young athletes and the public has led the World Health Organization to recognise the use of these drugs as a public health issue (Barkoukis, Lazuras, & Tsorbatzoudis, 2013). To win huge prize money, fame and trophies, some athletes do not hesitate to use whatever performance-enhancing substance to meet their goal. Besides, some athletes used sport as critical social indicators until struggled to win the competition. In addition, athletes that compete in the highest level of competition are often under the pressures of coaches, parents, proponents, politicians, and some organisations to achieve sports victories. Due to the situation, some athletes seek physiologic supremacy, ergogenic aids, and mental biomechanics at any cost. Hence, these factors lead athletes to engage in doping (Petróczi, Mazanov, & Naughton 2013).

Many studies investigate the knowledge level of illegal drugs consumers on side effects throughout the world. However, most of the results showed that athletes were not sufficiently considerate and aware of using these drugs furthermore, they attempted consuming regardless of the obtained bad physical and behavioural side effects (Bahrke, Yesalis, Kopstein, & Stephens, 2012). Consistent with the previous studies, Samira and Shima (2014), found that young athletes have low awareness levels whereas, their attitudes toward doping substances as enhancing motivation, self-reliance, and wining likelihood were more than average. Many studies that have been conducted abroad focus on university athletes to better understand their knowledge and attitude toward illegal drugs in sport. However, most of the researchers found that young athletes have a moderate level of knowledge and continue to use it if they knew that they will not get caught (Lim et al., 2018).

Rintaugu and Mwangi, (2021) found that the awareness of young athletes on the adverse impact of performance-enhancing substances was not adequate. Therefore, they should be educated on the doping issue to create awareness, change perceptions and determine their attitudes to doping in sports at all levels of competition. Similarly, the previous studies about German young athletes, it was found that they have poor knowledge towards illegal substance use in sport (Chebet, 2014). Based on that finding it is pointed out that the need to improve the limited knowledge of athletes is apparent and it can be done by establishing more educational courses on the illegal drug in sport. Research in Kenya found that 20.5% of athletes used illegal drugs and most of them played in team sports (Rintaugu, & Mwangi, 2021).

In Malaysia, from 2008 to 2021 the statistics show that drug use is widespread among children aged 13–15 years and older (National Anti-Drug Agency NADA, 2012). Calfee and Fadale (2016) found that American high school football players used anabolic-androgenic steroids starting at a young age with an average of 14 years of age. Hauw and Mohamed (2015) stated that several factors such as attitudes, knowledge, motivation, and personality, are a great influence on the changes of normative to deviant behaviours. Other studies indicate that some athletes are aware of the side effect of taking the substance at variable degrees however, others need more deep knowledge and education on various illegal substances (Ama, Betnga, Ama, & Kamga, 2003). According to Banaji and Heiphetch (2010), an attitude refers to the preferences such as like or dislike that people form concerning specific objects of their thought. Banaji and Heiphetch (2010) also stated that attitudes relate to doping behaviour intentions while sometimes the intentions are expected in the later use of doping substances among both sedentary and athletes.

Rintaugu and Mwangi (2020) found that attitudes are the strongest indicators of an intention to use illegal substance in sports. Corluka, Gabrilo, and Blazevic (2011) reported that age and sports experience are significantly related to knowledge of doping. The young athletes who knew someone who had experience with taking banned substances had a more accommodating attitude to doping. The argument is that doping knowledge increases with age and level of competition (Bassoli, Boncinelli, Brizzi, Curci, Signorelli, Pazardjklian, & Pellai, 2004). Singhammer (2012) found that older people appear to hold more negative attitudes to banned substances. Regarding gender and banned substances, many studies found that male athletes are higher in statistics to dope than females (Adegboyega, 2014; Kirby, Moran, Guerin, & Macintyre, 2008). Therefore, prevention activities should be conducted periodically using different approaches to reinforce their knowledge about illegal drugs.

Based on the above argument, a conceptual framework is formed that relates awareness, attitude, and experience towards knowledge, and understanding on banned usage of illegal drugs. Figure 1 illustrates the conceptual framework of this study.

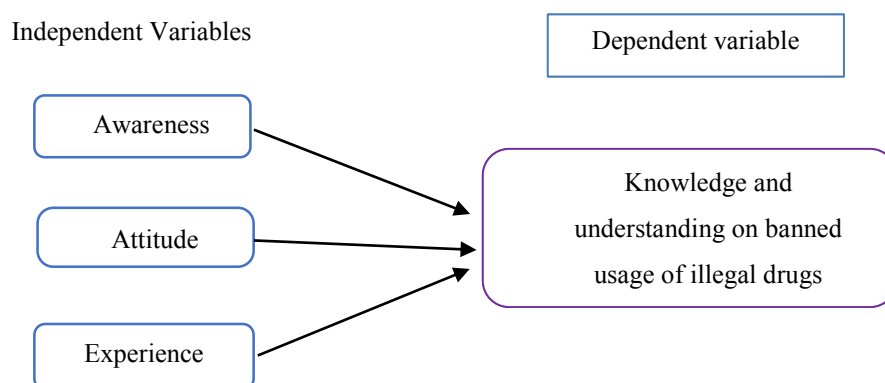


Figure 1: The Conceptual Framework

## 4. Method

This study utilises a quantitative research approach, and primary data is collected by administering a survey questionnaire among students comprising 150 University of Selangor (UNISEL) young athletes' students from 18 to 26 years old. The academic higher institution is chosen due to its active participation in the high level of sports competition from the diploma of sports industry programme. A survey was conducted through an online platform. Participants were explained about the purpose of the study and if they agreed to participate, they were asked to proceed to answer the survey. Besides, participation in the study was voluntary and no incentives were given. The questionnaire for this study was adapted from previous literature in the area.

The questionnaire consists of four sections: A, B, C, and D. Section A contains demographic background including age, gender, level, and types of sports involvements. Section B is about the awareness of young athletes towards illegal drugs during competition and the negative effect of using it. Section C is about the attitude of young athletes that have experience participating in a competition that may expose them to using banned drugs. Section D is about issues that athletes experience in sports. To measure all the variables, a 5-point Likert scale was presented in the questionnaire. The highest mean rank indicates that there are a greater number of high scores within it and vice versa.

The data collected was analysed using Statistical Package for Social science (SPSS 20.0). Descriptive statistics for all variables were presented as frequencies and percentages. Pearson Correlation test was used to determine the relationship between attitude, awareness, and experience towards knowledge and understanding on banned usage of illegal drugs among young athletes. The level of significance at  $p < 0.01$  was set for the Pearson correlation test. Besides, the strong correlation refereed is based on the Guilford rules of thumb (Guilford, 1956).

## 4.0 Results

### 4.1 Demographic Analysis

Table 1 shows the frequencies and the percentage of respondents based on their gender, age, type of sports ad years of experience in sports. The total number of participants in this study was 150, whereby 82 (54.7%) were male and 68 (45.3%) were female. The frequency and percentage of age show that the highest number of respondents in this study were aged 21 to 23 years old with 58 (38.7%), followed by 18 to 20 years old, 49 (32.7%) and 24 to 26 years old, 43 (28.7%). Next, in terms of the type of sports, the highest is in the outdoors type of sports with 114 (76%) compare to indoor sports only 36 (24%). The last part is based on the years of experience in sports whereby the highest is between 5 to 10 years, 66 (44%) and, the lowest respondent years of experience in sports is more than 15 years 13 (8.7%).

Table 1: Demographic Characteristic of Respondents (N=150)

		Frequency	Percent
<b>Age</b>	18 – 20	49	32.7
	21 – 23	58	38.7
	24 – 26	43	28.7
<b>Gender</b>	Female	68	45.3
	Male	82	54.7
<b>Type of sports</b>	Indoor Sports	36	24.
	Outdoor Sports	114	76.
<b>Years of experience in sports</b>	11 - 15 years	22	14.7
	5 - 10 years	66	44.0
	Less than 5 years	49	32.7
	More than 15 years	13	8.7
<b>Total</b>		<b>150</b>	<b>100.0</b>

Table 2 shows the correlation value of awareness towards knowledge and understanding of illegal drugs in sports was 1.00. Thus, it shows that there was a significant and strong relationship between these two variables, ( $r=1.00$ ,  $p < 0.01$ ). In short, this recent study shows that generally, the respondents are still not aware of the banned drugs that will give a negative effect on the human physical body. Besides, more than 90% of the respondents were unaware of the official anti-doping agency in Malaysia being the Anti-Doping Agency of Malaysia (Adamas). This is most probably due to the lower awareness of the respondents on the issues of illegal drugs.

Next, is the correlation value of attitude towards knowledge and understanding of illegal drugs in sports was 0.412. Therefore, it shows that there was a moderate relationship between these two variables, ( $r=0.412$ ,  $p < 0.01$ ). Normally, higher achievement in sport would place the athletes at a higher pressure and desire to win, thus using performance enhancers more acceptable for them. In this current study, some of the respondents disagreed that illegal drugs are necessary to be competitive. The respondents think that athletes should feel guilty about breaking the rules and taking banned drugs in sports. Despite that, effort must be done to improve athletes' knowledge to empower them to make better decisions when confronted with any performance enhancer situation.

The last correlation value between the years of athlete's experiences in sports towards knowledge and understanding on illegal drugs variable was at 0.408. This shows that there was a moderate relationship between these two variables ( $r=0.408$ ,  $p < 0.01$ ). This study had revealed that respondents who had more experience in sports still moderate in knowledge and understanding of illegal drugs. Perhaps, most of them are still less educated about the banned drugs in sports. Although the athletes consider coaches as the most reliable source of information, they are not professionally trained in this sector. Healthcare professionals shall

play a more important role in providing information to the athletes. Although the use of supplements seems to be safe and it is a common practice for athletes to take supplements.

Table 2: Correlation analysis of Awareness, Attitude and Experience

Variable	Pearson Correlation	Knowledge and understandings
Awareness	Pearson Correlation	1.00**
	Sig. (2-tailed)	0.01
	N	150
Attitude	Pearson Correlation	.412**
	Sig. (2-tailed)	.000
	N	150
Experiences	Pearson Correlation	.408**
	Sig. (2-tailed)	.000
	N	150

## 5. Discussion

In this study, it is found that the relationship between awareness, attitude, experience towards knowledge, and understanding of banned usage of illegal drugs among young athletes is significant. The researchers believe that respondents have knowledge and understanding towards banned illegal drugs although the amount of information is limited. Besides, the recent study has shown that generally, the respondents are still not aware of the banned drugs that will give a negative effect on the human physical body. Even though they know that using a performance enhancer is guilty, effort must be done to improve athletes' knowledge to empower them to make a better decision when confronted with any performance enhancer situation. It can be implied that university students still lack knowledge and awareness about illegal substances in sport. Therefore, they should be equipped with knowledge on the risks of illegal substances. Consistent with the previous study, it is found that awareness and understanding about illegal drugs among young athletes in Malaysia is still scarce (Lim, Ahmad, & Tuan, 2018).

In addition, regarding the explanation of doping in the World Anti-Doping Code, it is found that commonly, young athletes do not have a good understanding of the doping issues and the usage of illegal drugs. While athletes are aware of the negative impact brought by banning illegal drugs, due to attitude and desire to win, they tend to consume the illegal banned drugs in competition. This action may jeopardise their career in sports. According to Bloodworth, Bailey, Pearce, and McNamee (2018), these include any compounds taken to increase power, strength, speed, or endurance or to change their physical body for the sake of boosting athletic performance. Another substance that they use is linked with physical activity purposely to improve their physical ability. According to Donnelly, Darnell, Wells, and Coakley (2007) in this modern era, most of the athletes in the world have been using drugs in



any kind of form to become excellent athletes. Hence, young athletes should be equipped with knowledge on the risks of illegal substances and have a strong bearing against doping.

Qiu, Cai, Bonn, Chee, Hoang, and Rozainee (2015), found that teenagers would like to engage with social media, radio, and television, therefore certain authorities should mobilise the medium of information to disseminate materials to educate the students on the danger of using banned drugs in sports. This effort might prevent youngsters and students to incline themselves into being involved with drugs, particularly in sports. University authorities may consider that prevention education is important, hence conducting compulsory programs to increase the awareness and understanding about the danger of using illegal drugs in sports would be beneficial. University or relevant party has to make more effort in providing information relating to the effect and penalty given to athletes using illegal drugs and especially in ensuring the well-being of the young athletes. Athletes represent many sides of society. Naturally, they tend to exhibit the same anxieties, tensions, and problems as the rest of society until choosing the wrong decision to take the performance-enhancing drug. Therefore, it is important to educate student-athletes to identify and control the pressures they encounter.

University can establish a department of consultation or professional assistance for athlete students. Where they can refer problems appropriately. Counselling resources should include a range of sense modalities compatible with students. When athletes express the desire to join a support group or enter counselling, the department must immediately make the necessary arrangements to facilitate participation, while maintaining confidentiality and privacy. At the same time establishing a mentoring program are all ways schools and university level can use to prevent substance abuse. Here, the athletes' roles within the university community should be defined, and athletes should be reminded that they are students first and must excel in the classroom. As social media and the internet were one of the easy and preferred methods for sharing information, universities also can take initiative to create a website related to the prohibition of illegal drugs on campus. The media team in the university can set one Facebook account and invite others to join where the main objective is weekly posting related to prevention messages, tips for healthy living, time management, healthy eating, and any message that can motivate and support students in their daily life. The top management must examine all information that is relayed to a potential student-athlete regarding illegal drug users at university with random drug testing among student-athletes.

A policy of random drug testing has significantly reduced drug use among university athletes. Besides, in the future universities not only ask the athletes' students to attend the drug testing but are open for all campus communities so that it is essential to establish drug prevention efficacy. In addition, the lecturers or facilitators of sports education in universities need to incorporate Anti-drug in sport so that they can educate students more specifically about the performance enhancer drugs in sport. The researchers also recommend that there is a need to integrate illegal drugs education in all the courses offered in different diploma and sport-related degree programmes. University can implement a program called "Zero-

Drug in campus” were to provide knowledge among campus residents, increase awareness and strengthen self-resilience against the effects of the drug. Disciplinary actions for violations of performance enhancer drugs policies must be appropriate to the infraction, clearly specified, well disseminated, and uniformly enforced. They should apply to all sports and should not be administered separately by individual coaches for individual players.

Disciplinary action must be uniform for negative or undesirable behaviours, regardless of the status of the student-athlete. Besides, University can serve many activities or healthy things to the students. In this initiative, students will be busy and enjoy doing healthy things. One of the best initiatives is to develop a volunteering club in university. The researcher believes that behaviours such as community service and civic engagement might be effective in reducing illegal drug intake among university students. College, athletic department, and families should encourage all students’ athletes to spend time providing a community service that they care about. Students are also encouraged to build up team clubs that promote healthy decisions and behaviours. It is hoped that this team will distribute educational materials during health fairs, festivals, and other campus-wide events.

## 6. Conclusion

Many enhancement products contain elements that are prohibited in sport or that have been associated with significant morbidity and mortality. For athletes, lack of knowledge or missing information is still considered the main cause of using illegal drugs in sports despite numerous sources of information available on the danger of consuming the drugs. The reasons and implications of unsupervised and unrestricted supplement use require further attention. In addition to the necessity of appropriate regulation of dietary supplements, nutritional education and scientifically sound guidance for athletes are required. Intervention and prevention efforts should be particularly targeted from a young age. Besides, this research can shed some prevention strategies to provide early awareness of and exposure to the dangers of drug abuse among young athletes. In addition, this outcome can be beneficial in formulating a more focused and complete anti-banned substances awareness intervention to help in controlling the use of illegal substances in Malaysia, especially among young athletes. Moreover, this study will support the continuation of efficient education in cocurricular to protect our young athlete’s health from inappropriate use of drugs in sport and develop their good ethics and morals within sports. Other than that, the findings from this study can also be used as references not only to the coaches, and sports organisations but also to the university that provides the programme of specialisation in sports. Nevertheless, this paper might have missed some relevant work that has been published in other areas that have not been taken into consideration. This study employs data that were only collected in one higher learning institution in Malaysia where the findings of this study cannot be generalised to other athletes due to the different environments and situations.

## References

- Ama, P. F., Betnga B., Ama Moor, V. J., and Kanga J. P. (2003). Football and doping: study of African amateur footballers. *Journal of Sport Medicine*, 37(4), 10-307
- Asbah, R., and Zainal, M. (2016). Issues and Challenges of Drug Addiction among Students in Malaysia. *Advances in Social Sciences Research Journal*, 3 (8), 77-89

- Banaji, M.R. and Heiphetz, L. (2010). Attitudes. *Journal of Psychology* 4 (2), 353 – 393.
- Baker, Graham and Davies (2006), Doping in sport: a review of elite athletes' attitudes, beliefs, and knowledge. *Sports Med*, 43(6):395-411.
- Barkoukis, V., Lazuras, L., and Tsorbatzoudis, H. (2013). Beliefs about the causes of success in sports and susceptibility for doping use in adolescent athletes. *J Sports Sci*. 2014;32(3):212-9.
- Bahrke, M., S., Yesalis, C., E., Kopstein, A., N., and Stephens, J., A. (2012). Risk factors associated with anabolic-androgenic steroid use among adolescents. *Sport Medicine*, 29(6):397-405.
- Baron, D., Martin, D., and Abolmagd, S. (2007). Doping in sports and it's spread to at-risk populations: an international review. *Journal of World Psychiatry*, 6(2), 118-123.
- Bassoli, L., Boncinelli, S., Brizzi, L., Curci, R., Signorelli, D., Pazardjiklian, I., Pellai (2004). Survey of physical activity and doping in a sample of 6,915 students aged 14-18 years. *Minerva Pediatric*, 56(3):317-26.
- Bernama. (2016). Come Forward on Sukma Doping, Sport Associations Told. New Straits Times; 2016. Available from: <https://www.nst.com.my/news/2016/10/178066/come-forward-sukma-doping-sport-associations-told>
- Bloodworth, A., J., Petróczi, A., Bailey, R., Pearce, G., and McNamee, M., J. (2012). Doping and supplementation: the attitudes of talented young athletes. *Journal of Medicine Sport*, 22(2), 293- 301.
- Calfee, R., and Fadale, P. (2016) Popular Ergogenic Drugs and Supplements in Young Athletes. *Journal of paediatric*. 117(3):e577-89
- Chebet, S. (2014). Evaluation of knowledge, attitudes and practices of doping among elite middle- and long-distance runners in Kenya. *Journal of Medicine*, 22 (3) 4-24.
- Corluka, M., Gabrilo, G., and Blazevic, M. (2011). Doping factors, knowledge and attitudes among Bosnian and Herzegovinian football players. *Journal of Kinesiologia Slovenica*, 17(3), 349–59.
- Corrigan. B. and Kazlauskas. R. (2000). Drug testing at the Sydney Olympics. *The Medical journal of Australia*, 173(6):312-3.
- Emran, M. A., Hossain, S. S., Salek, A., Khan, M. M., Ahmed, S. M., Khandaker, M. N., and Islam, M. T. (2014). Drug abuse in sports and doping. *Bangladesh Medical Journal*, 43(1), 46–50.
- Galea. S., Nandi. A., and Viahov. D., (2004). The social epidemiology of substance use. *Medical Journal*, 26:36-52.
- Gerdes, L. (2008). Performance Enhancing Drugs. *Sport Psychology*, 17 (2), 299-318.
- Hauw, D. and Mohamed, S. (2015). Patterns in the situated activity of substance use in the careers of elite doping athletes. *Journal of Psychology Sport Exercise*, 16, 63-156.
- Lim, M., C., Ahmad, F., S., and Tuan, M., T., M. (2018). Knowledge, Attitude, And Practice on Doping of Malaysian Student Athletes. *Journal of Pharmaceutical and Clinical*, 5 (2) 1-10.
- Matthew, K., Sarah, B., Guy, F., Peter, D., and John, C. (2014). Sport participation and alcohol and illicit drug use in adolescents and young adults: A systematic review of longitudinal studies. *Journal of Addictive Behaviour*, 13(3), 497-506.
- Morgan, C., Noronha, L., Muetzelfeldt, M., Fielding, A., and Curranlan, V. (2013). Harms and benefits associated with psychoactive drugs: findings of an international survey of active drug users. *Journal of Pharmacology*, 27(6), 497–506.

- Muwonge, H., Zavuga, R., and Kabenge, P., A. (2015). Doping knowledge, attitudes, and practices of ugandan athletes': A cross-sectional study. *Subst Abuse Treat Prev Policy*, 6 (3) 4-12.
- National Anti-Drug Agency (NADA) (Malaysia) (2012). Laporan dadah tahun [Internet]. Kajang: Ministry of Home Affairs, Policy, Planning and Research Department Retrieved from: <http://www.adk.gov.my/html/laporandadah/2012/Laporan%20Dadah%20Dis%202012.pdf>
- Nicholls, A., R., Cope, E., and Bailey, R. (2017). Children's first experience of taking anabolic-androgenic steroids can occur before their 10th birthday: a systematic review identifying 9 factors that predicted doping among young people. *Journal of Psychology*, 8, 1015-1025.
- Parnabas. V, Mahamood. Y., Nagoor. M., Mohd. S., Nazarudin. M., N. (2013) The drug use motivation among Malaysian athletes. *Jurnal Psikologi Indonesia*, 10 (2). pp. 1-12.
- Peter, R.J., Adams, L.F., Barnes, J.B., Hines, L.A., Jones, D.E., Krebs, K.M. and Keider, S.H. (2005) Beliefs and Social Norms about Ephedra Onset and Perceived Addiction among College Male and Female Athletes. *Subst Use Misuse*, 40: 125 – 135.
- Petróczi, A., Mazanov, J. and Naughton, D.P. (2011). Inside athletes' minds: Preliminary results from a pilot study on mental representation of doping and potential implications for anti-doping. *Subst Abuse Treat Prev*, 6, (10) 4-20.
- Pilowsky, D., Wickramaratne, P., Talati, A., Wisniewski, S., and Fava, M. (2008). Children of depressed mothers 1 year after the initiation of maternal treatment: findings from the STAR\*D-Child Study. *Journal Psychiatry*, 165(9):1136-47.
- Qiu T., L., Cai L., T., Bonn, G., Chee P., W., Hong, M., D., and Rozainee, K. (2015). Drug Abuse, Relapse, and Prevention Education in Malaysia: Perspective of University Students Through a Mixed Methods Approach. *Journal of Psychistray* 6(6), 65-78.
- Razali, A., and Madon, Z. (2016). Issues and Challenges of Drug Addiction among Students in Malaysia. *Advances in Social Sciences Research Journal*, 3(8).1-4
- Rintaugu, E., G. and Mwangi, F., M. (2020). Knowledge, attitudes and perceptions on doping among university students in physical education and sport science related degree programmes. *Journal of Human Sport and exercise*, 1(1),1-13.
- Samira, A., and Shima, H. (2014). The Relation Between Awareness, Attitude and The Amount Of Doping Substances and Illegal Supplements In Body Builders Of Sanandaj, Iran. *Journal of Business and Management*, 4 (3), 1-9
- Singhammer. J. (2012). Age and Gender Specific Variations in Attitudes to Performance Enhancing Drugs and Methods. A Cross-Sectional Study. *Journal of Medicine*. 63, (1) 17-54.
- Sigei, C. (2014). Evaluation of knowledge, attitudes and practices on doping among elite middle and long distance runners in Kenya (Ph.D Thesis). Kenyatta University, Nairobi, Kenya
- Taegy, K., and Young, H. K. (2017). Korean national athletes' knowledge, practices, and attitudes of doping: a cross-sectional study. *Journal of Treatment, Prevention and Policy*, 12(7), 2-8.
- Wells, J. Coakley (2007). The use of sport to foster child and youth development and education. *Addictive Behaviours*, 12, (2),22-40.
- Zulkarnain, J., and Nik, H. (2020). Doping in sports among Malaysian universities athlete:

survey of the knowledge, beliefs, and perception during Malaysian universities games in Kuala Lumpur 2014. *Journal Sport Physical Fitness*, 60(5):794-799.