
PERCEPTION OF HERBS USED IN SPORT: PRE-STUDY AMONG COACHES AND ATHLETES

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Abstract

This study was meant to identify a certain level of knowledge in using herbs amongst coaches and athletes. Herbs are a natural product that can increase human body performance. For example, most people know that herbs like *ginseng* if taken in small measures help people in sexual performance, and that *ulam raja* can be used as an ingredient in beauty products. However, they are not aware of other secret properties in herbs that can increase athletes' performance or human body metabolism. Data were collected from 50 coaches (from MSN) and 30 athletes (from UiTM). All 50 coaches were represented by 25 males and 25 females, as for the athletes (individual game), they were divided into 15 males and 15 females. The data was collected using 'Perception of Using Herbs amongst Coaches and Athletes' and also interviews. All data have been analyzed using descriptive analysis. We have concluded that most of the respondents are not aware of or have no good knowledge about herbs being used in sports to improve athletes' performance. The percentage of the herbs-knowledge survey has shown 56.7% (17) as undecided. In the survey, 33.3% (1) gave no as an answer, whereas others who responded with yes were 40% (12). From this finding, all participants mainly assume that herbs can only increase the release of sexual hormones and can influence sexual potency; but instead, they should think that taking herbs can also improve human body performance. Nevertheless, this study provides an understanding of how herbs can be taken and applied as a cure or remedy in sports.

Keywords: Perception of herbs, Malaysian herbs, coach, athlete

BACKGROUND OF STUDY

Using up herbs nowadays is not as popular as taking drugs (medicines). Intake of herbs must be a long-term continuous process for one to get better results, but most people think that drugs are something to be taken in to get a faster result. Herbs are natural products that can be used to increase athletes' performance. Recognized are various Malaysian herbs that have good antioxidant properties, such as *ulam raja* (*Cosmos caudatus*), *curry leave* (*Murayya koenigii*), *pegaga* (*Centella Asiatica*), *mengkudu* (*Morinda citrifolia* L), *Tongkat Ali*, *kacip Fatimah*, *misai kucing* (*Orthosiphon stamineus*, Benth), *jarum mas* (*Striga Asiatica*), *gambir* (*Uncaria Ramulus*) (Zin, Abdul-Hamid & Osman, 2001).

A finding by Abas (2001) estimated that 80% of the world population uses some form of herbal medicine. Herbs can not only be used as a treatment for depression, but herbs are also good for relaxation after a game or training (Liu, Liu, Wang, Li & Li, 2015). Several articles show that herbs appear an excellent choice in a human's balanced diet and healthy eating, and they appear to be proper nutrition supplements, too. Braun and Cohen (2015) founded the Chinese Ginkgo is believed to exert its best effect when its active ingredients, the flavonoids, and terpenoids, work in unison. One

of the effects on muscle tissue has been stimulated and identified, namely the release of endothelium-derived relaxing factor which may enhance the muscle tissue blood to flow through an improved microcirculation; such an effect could improve the aerobic endurance by enhancing muscle tissue oxidation, at all (Nishida & Satoh, 2004). Ginkgo biloba may improve one's physical performance, as this has been evaluated in patients with the peripheral arterial disease (PAD) via performing walking activities over certain distances. However, although Ginkgo biloba supplement may improve exercise endurance in patients with PAD, there is no evidence that similar effects occur in either young or old healthy athletes (Williams, 2006).

In Malaysia, it is not a common practice to conduct a broad study on herbs alongside another country, because we assume that herbs are a traditional medicine and most people know about that. But still, it must consider that the Malaysian herbs must be explored and recorded as knowing and knowledge for next generations.

For an athlete any injury is crucial, therefore it is of extreme importance to be well taken care of and to make sure that consistent athletic performance is maintained for greater achievements ahead. Since the athlete is injured, it can affect their performance and it may have a detrimental impact on their long-term career. And yet, by using the drug to maintain their performance, it may somehow affect their health, as well. For example, the way it can affect their health could be manifested through kidney failure, hypertension, high blood pressure, as quite crucial may also be the fact that not proper using of herbs may show side-effects on the urine (Fatima & Nayeem, 2016). So the main question remains: *Did coaches and athletes know that some herbs can help them to prevent injury and can be used as medicine in sport?* For example, a previous finding says that taking ginger as a supplement may reduce pain after exercise (Stephen, 2010). Besides, to support the truth that ginger can help reduce injury condition comes the following fact: steamed ginger supplement can reduce pain following an induced injury upon *eccentric exercises*. It is proven that ginger will help reduce pain caused by muscle spasms (Black, Herring, Hurley & O'Connor, 2010).

Some people are not clear about the function of herbs in the human body daily. They are familiar with *ginseng* and *Tongkat Ali* knowing that they can improve human performance by increasing the levels of testosterone, but how about *misai kucing*, *pegaga*, *jarum mas*, *mengkudu*, being plants that have more nutritious benefits for athletes? Herbs can help improve muscular strength, maximal oxygen uptake, workout capacity, fuel homeostasis, serum lactate, heart rate, visual and auditory reaction time, alertness, and psychomotor skills can also have a positive effect by using herbs (Bucci, 2010).

As an athlete, one should maintain a relatively high level of energy, as he/she is expected to build greater endurance. Kundrat (2005) stated that they are several herbs that can help boost athlete performance. Some common herbs used for sports performance are Eleuthero, Fo-ti, ginseng, codonopsis, dang gui, nettles, dandelion root, Dipsacus, Muira Pauma, cayenne, ginseng, caffeine, coffea arabica, guarana, green tea, theobromine, mate, ephedrine, ginger, tribulus terrestris, rhodiola rosea, cordyceps sinensis, ginkgo biboba, and others. This study has been also conducted to look into the coaches' opinion on the use of herbs, and into their perception on the matter. This study has the purpose to identify that the perception about and the knowledge of the Malaysian coaches and athletes about using local herbs in sports.

LITERATURE REVIEW

As we know the intake of herbs may account for good health in humans, but most individuals are not familiar with the benefits of herbs. Most of them know that herbs, such as ginseng, can increase human sex hormones. But still, these herbs show greater benefits to the overall human performance.

Malaysian people are familiar with traditional medicine, but they only focus on certain types of herbs. Other than that, they think that herbs like ginseng are only meant to increase sex hormone levels, for they do not know that other properties of ginseng may give even greater benefits for them, e.g., ginseng can also increase the oxygen uptake, can provide faster recovery for athletes after

exercise, may increase their performance, may optimize metabolic efficiency, as it may also help improve race-times.

Taking herbs is not popular among Malaysian coaches and athletes compared to other counterparts. The history of herbal use began in early colonial days when health care was provided by women at home (Institute of Medicine (US) Committee (IMC), 2001). Initially, they used homemade botanical remedies, and later purchased similar products as patent medicines. Recognition of the increasing use of herbal medicine and other nontraditional remedies led to the establishment of the office of Alternative Medicine by the National Institute of Health (IMC, 2005).

One of the earliest mentions of performance-enhancing substance was made by Gelonos, a Greek physician who practiced sports medicine, often Anglicized as Galen and sometimes known as Galen of Pergamon. A report from the early Olympic Games stated that athletes used herbs, animal proteins, and mushrooms to improve their performance. In the 19th century, a French athlete reportedly drank a concoction of wine and cocoa leave to reduce the physical sensations of fatigue and hunger (Woods, 2007). Cases of used herbs among Malaysian athletes had been reported whereby most of them took herbal supplements without advice from pharmacists or medical person.

In herbal medicine and performance, there are several herbs been used by athletes to show greater energy and higher levels of endurance; herbal remedies are safe and effective for many sports, and the related use of some of the herbs is shown below (Chen, Muhamad & Ooi, 2012). The herbs are listed in Table 1 and Table 2 are not so well known in Malaysia, nor are available in the pharmacy.

Table 1. Ten Popular Herbs

Name of herbs	Herb contains	Benefits
<i>Eleuthero (Siberian ginseng)</i>	<ul style="list-style-type: none"> • Caffeine is the most popular and widely used drug in the world, its substance is found in the leaves, seeds, or the fruit of some plant species, such as coffee and tea. • Caffeine is a stimulant that acts on the central nervous system to speed up the messages to and from the brain. • It is made up of elements such as carbon, hydrogen, nitrogen, and oxygen. 	<ul style="list-style-type: none"> • Helps the body to neutralize its functions. • Helps adapt to stress. • Increases oxygenation of cells and tissue in the body • Positive influence on endurance. • Helps the cell deal with lactic and other by-products of body metabolism.
<i>Fo-Ti</i>	Protein and sugar complex are known as lectins (anthraquinones and phospholipids)	<ul style="list-style-type: none"> • Replenishes blood and counteracts general weaknesses and its benefits for cardiovascular systems
<i>Ginseng</i>	Caffeine	<ul style="list-style-type: none"> • Increases oxygen uptake • Faster recovery period • Performance and metabolism gain • Improves time in races
<i>Codonopsis (Panax Ginseng)</i>	Caffeine	<ul style="list-style-type: none"> • Improves digestive power, thereby increases overall energy • Used to fight weakness, fatigue, and everyday stress. • It has a strengthening effect on the body.
<i>Dang gui (Chinese angelica or Dong Quai)</i>	Phytoestrogens Phytochemicals	<ul style="list-style-type: none"> • An all-around tonic and strengthened • A blood builder and regulator • Prevents cardiovascular disease. • Fight inflammation

<i>Nettles Urtica dioica</i>	Protein	<ul style="list-style-type: none"> • Highly potent nutrient • Good for bones' structure • Prevents or fights fatigue
<i>Dandelion root</i>	<ul style="list-style-type: none"> • Vitamin A • B complex • Vitamin C • Vitamin D • Iron, potassium, and zinc. 	<ul style="list-style-type: none"> • Used as a gentle and cleansing tonic • It is used to detoxify and cool the liver; it helps an athlete recover more quickly after a workout.
<i>Dipsacus (Family Dipsacacea)</i>	<ul style="list-style-type: none"> • Phenolic acid such as caffeic acid and cinnamic acid. • Glycosides such as loganin, triplastoside A 	<ul style="list-style-type: none"> • Stimulates metabolism • Strengthens bone and ligament • Liver and kidney tonic • Alleviates soreness in the lower back and knee
<i>Muira Pauma</i>	Sterol can help create hormones such as testosterone	<ul style="list-style-type: none"> • Increases production of a hormone

(Chen, Muhamad & Ooi, 2012; Kundrat, 2005)

While in the table below, these are examples of Malaysian herbs that can increase athletes' performance.

Table 2. Malaysian herbs

Malaysian herbs	Herbs contain	Benefit
<i>Gambir (Uncariae Ramulu)</i>	<ul style="list-style-type: none"> • Tannin (Tannin is a substance found in different plants. But in Gambir there is a low level of tannin) 	<ul style="list-style-type: none"> • Relieves muscle spasms • Lowers blood pressure • Treats hypertension and dizziness • Slows respiration • Decreases heart rate • Treats epilepsy and anxiety
<i>Ulam Raja (Cosmos caudatus)</i>	<ul style="list-style-type: none"> • 0.3 % of protein • 0.4 % fat and carbohydrate • Rich in calcium and vitamin A • The leaves are rich in antioxidants 	<ul style="list-style-type: none"> • Anti-fungal and anti-bacterial properties • Anti-aging benefits • Helps to tone up blood circulation • Strengthens the bones.
<i>Curry leave (Murraya Koenigii)</i>	<ul style="list-style-type: none"> • 2.6% volatile essential oil • 21000µg total carotene • 93.9µg folic acid • 0.21µg riboflavin • 0.93mg iron • 830mg calcium • 57mg phosphorus • 0.20mg zinc 	<ul style="list-style-type: none"> • Anti-diabetic • Good antioxidant • Anti-inflammatory
<i>Pegaga (Centella Asiatica)</i>	<ul style="list-style-type: none"> • Triterpenoid glycoside • Volatile oils • Pectin • Amino acid • Myositol 	<ul style="list-style-type: none"> • Its tonic is good for overall health • Increases body temperature
	<ul style="list-style-type: none"> • Antioxidant • Xeronine 	<ul style="list-style-type: none"> • For men, the ability of hormone production

<i>Mengkudu</i> (<i>Morinda Citrifolia L.</i>)	<ul style="list-style-type: none"> • Plant steroids • Alizarin • Lycine • Sosium • Caprylic acid • Arginine • Magnesium 	<ul style="list-style-type: none"> • Also, can increase human performance. • Increases the production of mitochondria to generate energy.
<i>Misai Kucing</i> (<i>Orthosiphon Stamineus</i>)	<ul style="list-style-type: none"> • 12% mineral • Phytosterols • Saponins • 0.7% Essential oil 	<ul style="list-style-type: none"> • Diuretic and removes uric acid.
<i>arum Mas (Striga Asiatica)</i>	<ul style="list-style-type: none"> • Good antioxidant 	<ul style="list-style-type: none"> • Reduces muscle and nerve pain

(Chen, Muhamad & Ooi, 2012; Huda-Faujan, Noriham, Norrakiah, & Babji, 2007)

Huda-Faujan et al. (2007) study on selected local herbs such as *Ulam Raja (Cosmos Caudatus)*, *Kesum (polygonum minus)*, *Selom (Oenanthe javanica)*, *Pegaga (Centella Asiatica)*, and *Curry leaves (Murraya koenigi)* that investigated their antioxidant properties provided evidence that many herbs possess highly potent antioxidant features and serve as natural antioxidants. For example, when such herbs contain higher levels of *vitamin A*, they are good for the skin, bones, eyes, reproduction system, and for one's growth; when rich in *vitamin C* - good against stress, for cartilage, and bones. Antioxidants rich in *vitamin E* are good to protect cells from oxidative damage, muscle integrity, the reproduction system, and may also inhibit fat oxidation. *Riboflavin* is good against stress, eye function, skin integrity, muscle strength, *Zinc* is good for Stress, immune response, wound healing, *Manganese* is good for bones, tendons, muscles, birth weight, *Copper* is used to improve our body immune response, as it is also good for hair color, and reproduction. *Selenium* is good to fight stress, muscle integrity, for reproduction. Of all local-herbs extract analyses, *Kesum (polygonum minu)* showed the highest total phenolic content (44.35mg / 100g fresh weight) and the greatest potency in reducing ferum. However, *Curry Leaves (Murraya koeniigi)* and *Pegaga (Centella Asiatica)* showed the best antioxidant activity. All that shows that antioxidant activities of Malaysian herbs, when studied well, can be a potential source of natural antioxidants in food.

Gradiner et al. (2007) examined the pattern of herbs and dietary supplements used among young adults. Adolescent and adult athletes have been reported to have used herbs and the most frequent conditions for herb use were head or chest cold (30%), musculoskeletal conditions (16%), and stomach or intestinal illness (11%). It is because conventional medical treatments were too expensive included being uninsured, having poor health, and being older (Gardiner, Kemper, Legedza & Phillips 2007).

Upon researches on selected herbals and human performance, it has been found that the intake of herbal preparations can increase human performance. Humans consume herbs to enhance their long term endurance performance, e.g. in cycling, rowing, swimming, and walking; also to induce muscular hypertrophy and strength, e.g. in bodybuilding, weight lifting, wrestling, and strength sports, or to enhance performance in sports events, to improve both sports skills and those needed for recreational activities. The researcher has labeled the herbs as ergogenic aids. In his study, it was said that ginseng is one of the major herbs which help to increase human performance (Bucci, 2010)

Nowadays, herbs can be used in weight loss programs, as they can be taken in as a supplement, and followed by healthy eating and exercise. These herbs can not only help increase the body's digestive and metabolic efficiency, but herbs can also make easier the process of long-term health and weight management (Stern, Peerson, Mishra, Mathukumalli & Konda, 2013). The principle behind weight loss is that the energy intake must not exceed the energy expenditure. What you eat must have fewer calories than what you put out in day-to-day activities. A body composed of lean muscle mass (built from protein and conditioned upon exercises) will use more calories than an unexercised body. When athletes take diuretics to lose weight, they remove water from the body, but by using herbs they can burn fat and no affect their health (Stern et al., 2013). Examples of other

herbs that can help weight loss and make this process more efficient are Green Tea, Flaxseeds, Psyllium, and Chromium (Alraei, 2010).

Green Tea is not only a powerful anti-oxidant but a fat-burner as well. Consuming green tea can help lower both body fat and cholesterol. These compounds enhance the nervous system activity at the fat cell level, causing it to strip more fat. Researchers speculate that a special antioxidant compound in green tea can lead to fat oxidation and thermogenesis. Green tea is amongst the herbs that have been proven efficient in encouraging weight loss (van Baak & Mariman, 2019; Kundrat, 2005).

Ginger has been used to treat depression, to increase appetite, against colic, to tackle diarrhea, to fight drug withdrawal symptoms, for indigestion, motion sickness, nausea, and vomiting (Bhatt, Waly, Essa & Ali, 2013). Many clinical studies on ginger have found that some benefits were manifested in patients who had undergone surgery. There are fewer supportive facts about ginger as a deterrent to motion sickness. Other than that, it was found that a ginger-extract intake of 170 mg 3 times per day, or 255mg twice per day can alleviate pain after long-standing or walking, and can as well ease joint stiffness in some patients after surgery (Altman & Marcussen, 2001). It can be concluded that herbs have become a rather popular solution to maintaining a healthy lifestyle.

Other than that, according to the Heart American Association, 1.5 million Americans will have a heart attack. Ayurvedic physicians use arjuna, as in a wide variety of cardiovascular diseases it is virtually a panacea-like in cardiac failure, hypertension, angina, endocarditis, pericarditis, and adema (Khalsa & Tierra, 2008). In Ayurvedic medicine, it treats all heart disease, and they use *guggul* for high cholesterol, and garlic also can reduce blood pressure level by about 5 to 10%. Herbs are safe, and herbs and other nutritional supplements can be used safely to increase athletes' performance (Bradly, 2004).

Coffee or caffeine also can improve athletes' performance. It is described that coffee or caffeine can enhance athletes' performance and improve stamina. A British study in which researchers had made 18 runners race at one-mile distance observed that after having been given a half (1/2) cup of coffee, either regular or decaffeinated, athletes who consumed caffeine would run 4.2-second faster (Mehra & Pant, 2017).

Back pain problems can be resolved by taking barberry, black cohosh, blackcurrant, and feverfew (Spiteri, 2011). It must be mixed and one can drink it by mixing in water. Other than that, these herbs can help heal bruises or cure skin injuries (Wynn & Fougère, 2007) e.g., by taking two pieces of dried blackcurrant leaves, and mix it with two raspberry leaves and one piece of oak Bach, then cook it with water and drink the entire herbal concoction. Cichoke (2001) suggested that the boiled herbal mixture for 20 minutes, can also strengthen the capillaries.

All herbs mentioned above have proved that Malaysia is rich in herbs that can be used daily as medicine. But most people do know the benefits of it in medication, but not in muscle movement or sports activities; not only for medication. Drugs can give a faster effect on their body, but how about the long-term effect? Using drugs can affect their life. For example, athletes believe that taking a drug as a supplement can give a big impact on their performance but it can affect their health and their career too. In sports, athletes who take drugs to increase their performance get suspended. It can affect their achievement too. So, if they use herbs daily, it cannot affect anything because herbs are natural products extracted from nature, which can be absorbed by the human body.

Besides that, supplement and herbs additional intake for physical exercise, bodybuilding, and sports performance discuss that herbal supplement can be an inefficient supplement if not well balanced in the daily diet. The program will be more productive if the balance supplements between workout days. In Russia, Germany, Japan, and Korea, herbs are extremely popular amongst sports enthusiasts and athletes. The herbal supplement works better in combination and they work best when taken on an exercise day, either in the morning with a protein drink, or 30 minutes before work out. Below, some proof is provided that herbs work well and can be effective for athletes' performance (Yavuz & Özkum, 2014)

METHODOLOGY

Research methodology is a systematic way to solve a problem and it is a science of studying how research is to be carried out. The purpose of this study is to identify the *Perception of using Herbs amongst coaches and athletes*. The type of research is descriptive and in this study, our data collection has been obtained via a survey procedure by having distributed a questionnaire. The interview has been done as a follow-up to further investigate their responses.

Sampling

The purposive sampling chosen for this study consists of (i) coaches that represent state level and above which from Majlis Sukan Negara (MSN); (ii) athletes that represent state level and above who study in UiTM; (iii) athletes are those who involve in individual sports activities; (iv) ability to converse in both English and Bahasa Malaysia; (v) willing to participate in the study.

Amongst the 80 respondents involved in this study were coaches (n=50; 62.5%) and athletes (n= 30; 37.5%); otherwise represented by 40 male respondents (50%) and 40 female respondents (50%). Coaches outnumbered the number of athletes because it was expected that they have had greater knowledge, and most importantly they should know better what the athletes must take to improve their performance.

Instrumentation

Questionnaire and interview questions have been certified by three pharmacists for detail to point out the problems with the questions (O'Leary, 2014). As it is a new study, locally, there was no previous questionnaire that we could use as a reference. The set of questions consists of 30 questions that include the general question about herbs, and also questions about specific beneficial features of herbs. The instrument used was the 3-Likert scale, as it was rather suitable to test the knowledge of the respondents. The Likert scale is a type of scaling technique by which respondents have presented a series of statements and asked to indicate the degree to which they agree or disagree. In this study we used the following degrees 1: undecided, 2: no, 3: yes.

To create a relatively good set of questions, one must follow certain requirements and procedures such as to achieve validity and assess the reliability of all questions. A pilot study had shown that the questionnaire was valid with $\alpha = 0.760$ (Cohen, Manion & Morrison, 2019). Other than that, an interview with each of the respondents of the two groups was conducted, and here below are their answers. The respondents were picked randomly, i.e., only 10 subjects - 5 coaches and 5 athletes had an interview.

RESULTS AND FINDINGS

Other than running a survey upon a designed questionnaire, there was an interview with the respondents. The feedback fed by them for the study was very supportive. They shared that they mostly know about the general use of herbs but not about other more specific properties. So, this study will give some extra knowledge for a sportsperson and others, and it can be used as a reference for further research.

Most coaches know about the general uses of herbs to improve health, and also about using herbs as ingredients in beauty products but without larger awareness or focus on their broader application in the sports industry.

“ Most people know about general herbs, example herbs help for health. But mostly in sport industry herbs uses not seriously..... “

1st coach

“..... Mostly know general herbs, but not specific uses. Other than that, herbs not currently use in Malaysian sports.....”

2nd coach

“..... Good study but herbs use not familiar even it very safe compare than drug uses....”

Training coordinator

But athletes feel that the use of herbs in sports is important for injury healing and to enhance performance.

“... Always use ginseng for endurance, but control by coach but not seriously and never know have other herbs can improve endurance level....”

Athletics athlete

“..... In combat sport, injuries always happen. We try to use herbs from traditional feedback from our family. But, not seriously because mostly we don't receive any formal information about herbs uses....”

Taekwondo player

Table 3. Interview Responses

Name / Position	Responses
Master trainer	<i>‘This study very good, you try to observe not a new study but most people do not know this information. So, I support you for this study’</i>
1 st coach	<i>‘Most people know about general herbs; for example, herbs help for health. But mostly in the sport industry herbs uses not seriously’</i>
Training Coordinator	<i>‘Good study but herbs use not familiar even it very safe compare than drug uses.’</i>
2 nd coach	<i>‘Mostly know general herbs, but not specific uses. Other than that, herbs not currently used in Malaysian sports.’</i>
3 rd coach	<i>‘Most people know that herbs good for a beauty product. It is for women and herbs for a sexual product for men. This perception will make herbs not familiar as in Europe.’</i>
Handball player	<i>‘Mostly know general information for herbs not in specific.’</i>
Cheer-leader	<i>‘Know that herbs can affect fat loss, can give good skin but never use in daily for sports performance.’</i>
Athletics athlete	<i>‘Always use ginseng for endurance, but control by coach but not seriously and never know have other herbs can improve endurance level.’</i>
Tennis player	<i>‘Know general only, not specific uses of herbs in sports.’</i>
Taekwondo player	<i>‘For combat sport, injuries always happen. We try to use herbs from traditional feedback from our family. But, not seriously because mostly we don't receive any formal information about herbs uses.’</i>

Table 3 represents the results on *Knowledge about the uses of herbs amongst coaches and athletes*. For the interpretation of the *mean score*, Barnett, Bernal and Nores (2020) interpretation scale was used as a reference one, as it shows a mean score of 1.00 – 2.33, which is low. Mean score in-between 2.34 – 3.66 is considered moderate, and lastly, a mean score within 3.67 – 5.00 is deemed high. In Table 4, the entire result on *Knowledge about the uses of herbs amongst coaches and athletes* is presented. For interpretation and ranking of a mean score, Barnett et al., (2020) interpretation scale was used as a reference. *Mean rank levels* are as follows: mean score of 1.00 – 2.33 is low. The mean score of 2.34 – 3.66 is moderate, and lastly, the mean score within 3.67 – 5.00

is considered high. Based on the result above, it is shown that sportspersons (coaches and athletes) realize or know that *Cosmos Caudatus* possesses some anti-aging properties (M=2.80; SD=0.58), and then, herbs can be used for injury prevention (M=2.74; SD=0.65). And sportspersons' perception (knowledge) about the use of *Murraya koenigii* in sports and daily life were low (M=1.30; SD=0.64; M1.34; SD=0.65)

Mostly, they know general information about herbs, but they are not familiar with certain specific uses of herbs in sports. Besides that, researchers have also done interviews with the respondents about their scope and type of information. Mostly they answered that they have general information but do not have or are not aware of specific information discussing herbs uses (Table 3)

Table 4. Knowledge of herbs amongst coaches and an athletes

No.	Description	UD	Y	N	M	SD
Q1	Herbs can be used to replace other medication during injury recovery	9 (11.3)	68 (85)	3 (3.8)	2.74	.65
Q2	Gambir (<i>Uncariae Ramulus</i>) can relieve muscle spasms.	61 (76.3)	13 (16.3)	6 (7.5)	1.40	.76
Q3	Gambir (<i>Uncariae Ramulus</i>) can relieve lower blood pressure, treats hypertension and dizziness	68 (78.8)	12 (15)	5 (6.3)	1.36	.73
Q4	Herbs can reduce muscle and nerve pain.	23 (28.8)	54 (67.5)	3 (8.8)	2.39	.91
Q5	Gambir (<i>Uncaria Ramulus</i>) also can decrease heart rate, can treat epilepsy and anxiety	60 (75)	13 (16.3)	7 (8.8)	1.41	.76
Q6	Herbs can also strengthen the bones, to avoid injury.	37 (46.3)	37 (46.3)	6 (7.5)	2.00	.97
Q7	Ginger can be uses as medication to prevent(cure) athlete's foot cause of fungus.	36 (45)	40 (50)	4 (5)	2.05	.98
Q8	Herbs have tonic which is very good for health and can increase body temperature to avoid muscle cramps.	37 (46.3)	41 (50)	3 (3.8)	2.04	.99
Q9	Ulam raja (<i>Cosmos Caudatus</i>) also contains anti-aging properties (awet muda).	7 (8.8)	71 (71)	2 (2.5)	2.80	.58
Q10	Herbs can be used in therapy, for relaxation after any competition.	22 (27.5)	52 (65)	6 (7.5)	2.36	.89
Q11	Ulam raja (<i>Cosmos Caudatus</i>) can also tone up the blood circulation and strengthen the bones.	44 (55)	34 (42.5)	2 (2.5)	1.88	.99
Q12	Anxiety can be reduced by using herbs.	49 (61.3)	14 (17.5)	16 (20)	1.68	1.31
Q13	Curry leave (<i>Murraya koenigii</i>) contains nutrients that are good for athletes.	63 (78.8)	10 (12.50)	7 (8.8)	1.30	.62
Q14	Hypertension can be treated by using herbs.	48 (60)	29 (26.3)	3 (3.8)	1.76	.96
Q15	Curry leave (<i>Murraya koenigii</i>) is a good antioxidant.	52 (65)	16 (20)	12 (15)	1.55	.81
Q16	Herbs can activate the body function, as	41	37	2	1.95	.99

	they can also generate mitochondria (generate energy).	(51.3)	(46.3)	(2.5)		
Q17	Curry leave (<i>Murraya koenigii</i>) is also anti-inflammatory.	61 (76.3)	8 (10)	11 (13.8)	1.34	.65
Q18	Pegaga (<i>Centella asiatica</i>) is also good for athletes, because it has tonic.	54 (67.5)	0 (0)	26 (32.5)	1.65	.94
Q19	Herbs also can improve the maximum oxygen uptake.	33 (41.3)	43 (53.8)	4 (5)	2.22	.94
Q20	Pegaga (<i>Centella asiatica</i>) increases body temperature.	58 (72.5)	11 (13.8)	11 (13.8)	1.41	.72
Q21	Using herbs can improve alertness and psycho-motor skills.	50 (62.5)	21 (30.0)	9 (7.5)	1.64	.88
Q22	Mengkudu (<i>Morinda citrifolia</i> L.) can activate the body function and produce more mitochondria to generate energy.	50 (62.5)	24 (30.0)	6 (7.5)	1.68	.91
Q23	Herbs contain steroids.	25 (31.3)	11 (13.8)	44 (55.0)	1.83	.65
Q24	Misai kucing (<i>Orthosiphon stamineus</i> , Benth) is used as a diuretic, as it can help to remove acid uric from the human body.	47 (58.5)	31 (38.8)	2 (2.5)	1.80	.97
Q25	Herbs are not banned in sports by WADA (World Anti-Drug Association)	14 (17.5)	61 (76.3)	5 (6.3)	2.59	.77
Q26	Jarum mas (<i>Striga asiatica</i>) can help reduce muscle and nerve pain.	59 (73.8)	5 (6.3)	16 (20.0)	1.46	.81
Q27	Herbs will be used by coaches and athletes as supplement in their daily intake.	26 (32.5)	6 (7.5)	48 (60.0)	2.28	.93
Q28	Ginger can be used to reduce muscle pain.	31 (38.8)	6 (7.5)	43 (53.5)	2.15	.96
Q29	Green tea can reduce cholesterol levels in human body.	16 (20.0)	3 (10.0)	56 (70.0)	2.50	.81
Q30	Coffee or sources of caffeine can increase the oxygenation of cells and tissue in the body	17 (21.3)	10 (12.5)	53 (66.3)	2.40	.83

UD = Undecided

Y = Yes

N= No

DISCUSSION AND CONCLUSION

The discussion may begin upon having obtained the overall results on the level of knowledge amongst coaches and athletes by answering a questionnaire on herbs, herbal mixtures, and their usage, as it had placed the objective to identify the perception of using herbs amongst coaches and athletes. The discussion was focused on the use and benefits of herbs on a day-to-day basis for increasing their performance. By raising awareness of the wider range of herbs healing properties and benefits, both coaches and athletes may be able to change their habits and lifestyle, improve wellbeing, and navigate their sports careers in a much better way. It is because they can make decisions more confidently to improve their performance.

Perception of using Herbs among Coach and Athlete

Possessing a higher level of knowledge, people can undeniably change their life habits and more, especially athletes and their coaches. Being an athlete, apart from displaying good skills while performing one must also have a wider knowledge, because a learned person may provide a good piece of advice and help others make proper decisions. When athletes are health-conscious and willing to stay in good shape they can improve their performance compared to before. Another example: coffee or caffeine also can improve athletes' performance. It has been described that coffee or caffeine can enhance athletes' performance and may improve their stamina. A British study in which researchers had made 18 runners race at a one-mile distance observed that after having been given a half (1/2) cup of coffee, either regular or decaffeinated, athletes who consumed caffeine ran by 4.2 seconds faster (Mehra & Pant, 2017)

Besides, athletes get benefits from proper nutrition to improve their performance, apart from doing physical exercise or conducting training sessions. As for the coaches, they are the leaders who are responsible to feed new information and take care of the athletes by designing and updating training programs. As a good leader, they must consider all the things related to improving their athletes' performance, such as a good training process and also proper nutrition.

The data from the conducted survey has shown that the level of *Knowledge of herbs uses* among coaches and athletes were at a low level. This is the case because most of the respondents have only general information about herbs and do not know more about their specific uses. Herbs are natural products that a person does not get addicted to in the long term. Besides that, taking any herb is good for health, especially when people are familiar with its function, its nutrients, and know how to take it. The discussion in the last chapter proves that herbs contain good extracts that are good for health. In fact, in Malaysia using herbs daily is not as common as in Europe. In Russia, Germany, Japan, and Korea, herbs are extremely popular amongst sports enthusiasts and athletes. Herbal supplements work better in combination and they work best when taken on an exercise day, either in the morning with a protein drink, or 30 minutes before work out. Below, some proof is provided that herbs work well and can be effective for athletes' performance (Yavuz & Özkum, 2014).

From the survey, the respondents knew general information about herbs. They knew that herbs can give benefits but they did not know any specific herbs that are good for them. Table 4.1, mean score for 1.00 - 2.33 is considered as low, 2.34 - 3.66 is moderate, and 3.67 - 5.00 is high (Barnett et al., 2020). Mean for the whole questionnaire is Q13 (M = 1.30, SD = 0.62), as it shows the moderate mean is Q9 (M = 2.80, SD = 0.58). It showed that the level of knowledge of all the respondents about the herbs is very low. They are not familiar with the uses of herbs that can help improve their performance. Besides, they only knew some general information and their perception about herbs was that some herbs can only help increase one's sexual potency like when using ginseng; respondents seem to know about some traditional use of herbs through a word of mouth but they are not familiar with other specific uses.

From the finding, several recommendations may be suggested to improve coaches' and athletes' overall knowledge of herbs and herbal mixture's uses, as well as on raising awareness on the specific uses of herbs that are good for their health and performance. Although there might be a certain number of coaches and athletes who are aware of herb(s) use, and also demonstrate knowledge on the fact that specific herbs can enhance athletes' performance, there are others who are not familiar with such information. It means that both athletes and coaches should stay updated on the latest research on herbs and learn more about their medicinal benefits, as they may not think that the best solution to enhance performance is by simply taking drugs, even if they may know of the side effects drugs can cause on humans.

All the respondents had been chosen upon having looked into their level of knowledge and reviewed their achievements in sport. For example, the researchers chose UiTM's students from the faculty of Sport Sciences and Recreation as respondents because not only do they compete at a state level, but they also have good knowledge. But still, the result is low. To change the perception on *using herbs to increase athletes' performance*; managers, educators, and who in involve in managing sports in Malaysia e.g.: ADAMAS, MSN, ISN should play their main role to promote a new syllabus where the subject on herbs be included and studied to make sure that this generation of students will be exposed to this information. Besides that, for one to become a good student and a high-level athlete

they must be involved in a broader reading to explore any new information to make sure they stay updated with the latest and gain some new knowledge, too. Following the athletes' responses: 'all of them know about the general uses of herbs but are not familiar with other specific uses. Such statements show that most Malaysians are misled about the information on herbs compared to most people in Europe.

Coaches must be known as they should be updated on the new researches. In this study, the answers to the questionnaire provided by the coaches-respondents will be distributed at Majlis Sukan Negara (MSN). MSN may also invite someone learned to give a talk on herbs benefits or may organize a seminar about the benefits of knowing herbs related to sports. In this research was found out that most coaches know about the general use of herbs but they do not have other specific information on herbs specific properties. They must know that herbs may have a good effect and healthier functions on a human's body.

CONCLUSION

According to a study on awareness of knowledge of using herbs amongst coaches and athletes, we can assume that coaches and athletes were still not aware of the use of herbs in daily life and in sports itself. The results from this study have revealed a picture of no awareness, no understanding, and no good knowledge about taking herbs, and more specific use of herbs. In this study, we can also conclude that the respondents' general knowledge and overall information on herbs are not very good, either.

Malaysia sport enforcers such as ADAMAS need to raise the bar on its enforcement on the influx of banned or unverified and untested supplements in the market. More importantly, there is a necessity for better education for athletes, their families, coaches, and even sports authorities towards needing to be careful in the supplements that they take.

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