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THE RELATIONSHIP BETWEEN HYDRATION STATUS AND FLUID INTAKE AMONG BASKETBALL ATHLETES

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Abstract

In addition to nutritional needs, athletes also require good hydration and fluid intake. This research aims to determine perceptions of fluid requirement (hydration) and good fluid intake both while doing excises and having a match among 18-year-old male and female basketball athletes.

This is correlation research employing a mix method design because the data were collected and then processed using two methods, namely qualitative and quantitative methods. The quantitative method was performed in the analysis of fluid intake, while the qualitative method was performed to determine hydration status by performing PURI measurement. The "Food Beverage" questionnaires were distributed to collect data, which included fluid intake, drinking habits consisting of frequency, type, and source of drink, and knowledge of fluid. The sampling technique used in this research was population sampling. The research population consisted of male and female basketball athletes participating in Regional Championship of Indramayu Regency, with a total of 24 athletes.

Based on the research findings, it is revealed that (1) in relation to the hydration status of basketball athletes, the majority of them dehydrated, i.e. from 23 athletes, 12 of them or 52.2% dehydrated while the rest ranged from having good hydration status, dehydrating, and dehydrating a lot; (2) in relation to the fluid intake among basketball athletes participating in Regional Championship of Indramayu Regency, the majority of them still did not have sufficient fluid intake, i.e. as many as 47% (11 people) of the total respondents; and (3) the resulting product moment correlation coefficient (*Pearson correlation*) of fluid intake and hydration status r_{XY} is equal to -0.185 with p (sig.) = 0.399. Furthermore, it is revealed that $p > 0.05$ and the direction is negative (-), thus H_0 is accepted while H_a is rejected. So, it can be concluded that there is no significant negative relationship between the amount of fluid intake and hydration status among 18-year-old basketball athletes

Keywords: Hydration Status, Fluid Intake, and Basketball

Basketball athletes' achievement is influenced by several factors, one of which is related to nutrition. Among the important elements of nutrition is water. Inadequate fluid intake may affect fatigue, hydration status, and performance of an athlete. Fatigue can be experienced by all athletes in various sports, one of whom is a basketball athlete. The high intensity in basketball causes the athletes to often experience fatigue before the game is over. According to (Manz, Friderich MD, 2005), fatigue occurs because the amount of sweat that comes out during the game is not counterbalanced by sufficient fluid intake to maintain balanced bodily

fluid so as to increase the risk of dehydration. Dehydration is excessive bodily fluid as a result of insufficient fluid replacement due to intake that does not meet the amount of fluid intake required by the body and an increased loss of water (Dougherty et al., 2006).

An athlete should pay attention to his/her physical condition every day in order to perform excellently in each match. While doing exercises to improve achievement in the field of sports, it is vital for every stakeholders to maintain a good diet. Therefore, the period before having a match or while doing exercises should be intended to improve the energy reserve system of the concerned athletes in order that at the time of the tournament, they already have high energy reserves. Insufficient fluid intake that causes dehydration is harmful to health and increases the workload of the body. According to (Murray, B., 2007), while doing workouts, dehydration decreases the ability to concentrate and reaction speed, increases body temperature, and slows down the rate of energy production. Dehydration and reduced carbohydrate reserves are two main factors causing a decrease in body performance while doing workouts. Therefore, athletes/sports enthusiasts are expected to have a good drinking strategy to keep their body hydrated. With a variety of reasons ranging from 'feeling as if their stomach was carrying something heavy', 'feeling full' or 'afraid of having to go to the toilet often', so many athletes and individuals do not think that adequate fluid intake before taking exercise/having a match is important.

According to (Emma Derbishire, 2013), the easiest and most accurate way to know the hydration status/level of the body before workouts is to look at the color and volume of urine while urinating. Urine with a bright color and large volume indicates a good hydration level, while urine with a dark color or which is turbid with small volume indicates a low hydration level. Ideally, during exercise or while having a match, it is advisable for athletes to drink water regularly to maintain the hydration level of the body. It is important for athletes to maintain the hydration level of their body through a regular fluid intake pattern both before and during workouts, and after doing workouts in order that the body functions can work well, especially thermoregulation (Hornery, D.J. et al., 2007). This regular fluid intake pattern is also expected that the amount of bodily fluid one loses during exercise/a match is not more than 2%, if so, this will cause performance of the body to reduce by 10%. Thus, it is imperative do research into the Relationship between Hydration Status and Fluid Intake among Male and Female Athletes for the Category of Athletes Aged 18 Years Old Participating in "Kejurda" (Regional Championship) of Indramayu Regency.

LITERATURE REVIEW

Hydration

According to Murray, B. (2007), hydration refers to balanced bodily fluid and is an important requirement to ensure the functioning of body cell metabolism. While dehydration means lack of fluid in the body because the amount released is greater than the amount absorbed. Humans secrete fluid through breathing, sweat, urine and feces. The need for drinking water varies. It depends on age, sex, and activity. The body's total water needs are 1 milliliter per kilocalories of the body's energy needs. For example, the energy needs among teenagers and adults range from 1800 to 3000 kcal, so their fluid needs range from 1.8 to 3 liters a day. Generally, one third of it is met from food, so the consumption of water drunk directly is about 2 liters a day. Drinking fruit juice is one of the ways to meet the needs of bodily fluid. In addition to meeting the body's fluid needs, fruit juice also contains many antioxidants that are very important for health.

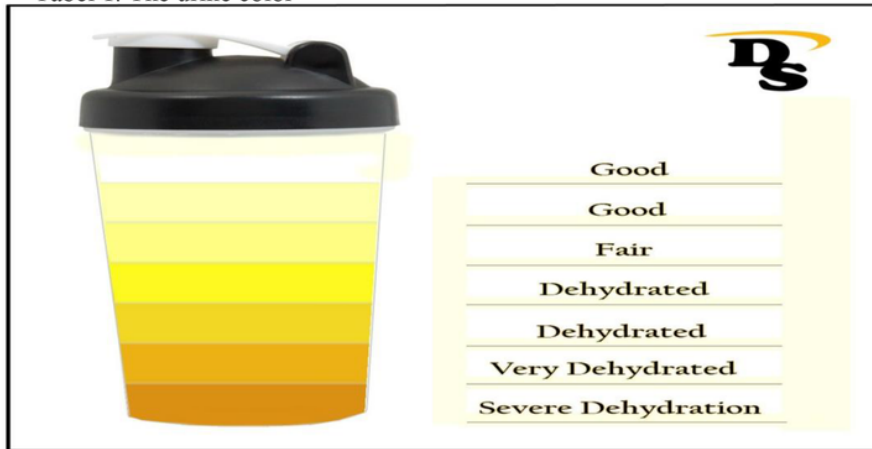
According to (P. Anastasio. 2001), hydration levels can be identified by the color of urine secreted. The following are guidelines to determine whether you suffer from acute dehydration or not. To ensure that one's body does not lack fluid, one can check the color of urine he/she secretes. The urine color level indicates the state and balance of water in the body. The Indonesian Doctors Association (IDI) has issued guidelines to detect one's hydration level, which are called *PURI*, which stands for *Periksa Urin Sendiri* (check your urine yourself). These guidelines provide a table of urine colors, consisting of eight colors starting from a clear one to deep yellow. If the color of urine is clear, it indicates good hydration status. But, if it is deep orange, it means that the body needs to get more water intake immediately to replace bodily fluid released and to maintain balanced bodily fluid.

Hydration Status

Hydration status is a condition that illustrates the amount of fluid in one's body that can be detected by examining the urine color using the *Periksa Urin Sendiri* (PURI) card. The level of urine colors indicates the state and balance of water in the body. The Indonesian Doctors Association (IDI) has issued guidelines to detect one's hydration level, which are called *PURI*, which stands for *Periksa Urin Sendiri* (check your urine yourself). These guidelines provide a table of urine colors, consisting of eight colors starting from a clear one to deep yellow. If the

color of urine is clear, it indicates good hydration status. But, if it is deep orange, it means that the body needs to get more water intake immediately to replace bodily fluid released and to maintain balanced bodily fluid. The urine color table is presented below.

Tabel 1. The urine color



Sumber: www.google.com/search?q=urin+colour+chart&client=firefox-a&rls=org

Fluid Needs of the Body

According to (Sunita Almatsir, 2005:220) the body can survive for weeks without food, but only a few days without water. Water or bodily fluid constitutes the main part of the body, i.e. 55-60% of the weight in adults or 70% of the lean body mass. This figure is greater among children. In the aging process, people lose water. The water content of a newborn baby is 75% of his/her weight and it decreases into 50% in the elderly. Most of such a loss consists of extracellular fluid.

The body water content is relatively different among humans, depending on the ratio between the muscle tissue to the fat tissue (Bompa. T.O, 1994). According to (W.L. Kenney et al., 2006) the body that contains relatively more muscles contains more water, and thus athletes have a higher water content than those who are not an athlete, and the water content in men is higher than that in women and young people have a higher water content than parents. The metabolically active cells such as muscle cells and viscera (the organs inside the cavities of the body, such as the lungs, heart, and offal) have the highest water content, while cells of bone tissue and tooth tissue contain the lowest water content.

Fluid Needs While Doing Exercises/Having a Sports Match

According to (Manz, Friderich.MD, 2005), in addition to functioning as an early measure to prevent dehydration, sufficient fluid intake prior to exercises/ having a match will have a good effect on the body when it perform physical activities such as (1) to keep sweat breaking out properly, (2) to keep the body heat regulation (thermoregulation) running normally, (3) to maintain the energy metabolism process, (4) to reduce the risk of heat stroke. During 3 hours to 15 minutes prior to workouts, drinking mineral water can be an option, but if the exercise/sports match will last with high intensity or for a long period of time such as tennis, badminton, football, basketball, marathon, cycling and so on, the addition of carbohydrates (glucose, sucrose, and maltodextrins) or less condensed fruit juice besides mineral water can be an ideal choice as they do not only help maintain the hydration level but also provide benefits to increase energy reserves, prevent hypoglycemia (decreased blood glucose), and maintain body performance while doing workouts (Djoko Pekik Irianto. 2006: 56).

Studies and research findings show that athletes/individuals who start their workouts/ match with a good body hydration level will have more optimal endurance, speed of responses or reactions, and performance. This is why a good hydration strategy is an integral part for the world's professional athletes not only to maintain their sports performance but also to keep their body healthy.

Fluid Needs After Doing Exercises/Having a Sports Match

Fluid or water can be said to be the most important nutrient for the body. Human bodies can survive for about 3 days without food, but no more than 1 day without fluid (Derbyshire, Emma. Dr, 2013). Similarly, while doing workouts, a reduced amount of bodily fluid due to sweating is one of the factors that cause fatigue and decreased performance. According to (Cerika Rismayanthi, 2014), the rate of sweat release varies between individuals. Besides the influence of external factors such as workout intensity (low, medium, high), workout duration, temperature, and environmental conditions during workouts, the amount of sweat secreted will also be influenced by the internal characteristics of individuals such as genetic factors, body weight, and fitness levels.

According to (Moston, Muska. 1992), on the average the rate of sweat secreted during workouts at the competitive level ranges from 0.4 to 1.4 L per hour or under extreme conditions it may reach 0.4 to 2.6 L per hour. Ideally, during exercises or while having a match, it is advisable for athletes to drink water regularly to maintain the hydration level of the body.

(Hornery, D. J. et al., 2007) state that with a fluid intake pattern, it is expected that decreased bodily fluid after exercises/a match can return to normal. The following are guidelines for fulfillment of fluid needs after doing excercises or having a match:

- a. After doing excercises or having a sports match, there are 2 factors that must be quickly replenish in the body, namely fluid to replace the sweat breaking out and carbohydrates to replenish the 'fuel' reserves used while doing workouts.
- b. Drink at least 1 to 1.5 L of fluid for each 1 kg reduction in the body weight.
- c. Drink gradually in the interval between 0 to 2 hours after workouts. Drink choices: water, sports drink, or (dilute) fresh fruit juice.
- d. Sports drink and (dilute) fresh fruit juice can simultaneously supply carbohydrates and fluid quickly to the body.
- e. Another alternative to supplying carbohydrates and fluid to the body is the combination of fresh fruit and water. Choose fresh fruit that can be absorbed by the body quickly so it is more optimal in replacing energy after workouts such as papaya, watermelon, banana, raisins.
- f. Look again at the urine color to ensure a good hydration level.

RESEARCH METHOD

This is correlation research employing a mix method design because the data were collected and then processed using two methods, namely qualitative and quantitative methods. The quantitative method was performed in the analysis of fluid intake, while the qualitative method was performed to determine hydration status among basketball athletes by performing PURI (*Periksa Urin Mandiri*) measurement. The research population consisted of all male and female basketball athletes participating in "Kejurda" (Regional Championship) of Indramayu Regency for the category of athletes aged 18 years old. The sampling technique used in this research was population sampling as the whole research population was employed as the research sample. The research population consisted of male and female basketball athletes belonging to the category of athletes aged 18 years old in Indramayu Regency, with a total of 24 athletes.

RESEARCH FINDINGS

Hydration Status

Determination of hydration status of the respondents in this research was based on results of the urine color test. Urine sampling was done after the athletes finished competing in a basketball match, then the urine color was compared with the urine color indicator, with the following description: 1 to 2 indicates good hydration status, 3 indicates moderate hydration status, 4 to 5 indicates dehydration, 6 indicates fairly severe dehydration, and 7 indicates severe dehydration. Based on the frequency distribution above, it is known that from 23 research respondents, 2 (8.7%) had good hydration status; 5 (21.7%) had moderate hydration status; 12 (52.2%) experienced dehydration; and 4 (17.4%) experienced fairly severe dehydration. The data suggest that the majority of athletes participating in the Regional Championship for the category of athletes aged 18 years old, i.e. by 52.2% experienced dehydration. Thus, it can be concluded that the hydration status of athletes participating in the Regional Championship aged 18 years old falls into the dehydration category. Frequency distribution of hydration status of athlete of the 18th Anniversary of Birth Attendance can be seen in diagram 1 below.

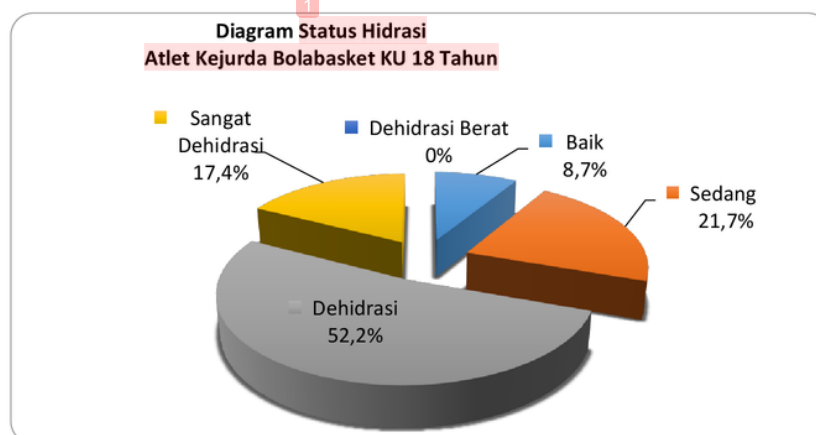


Figure 1. Status of Athlete Hydration

Fluid Intake

The fluid intake assessment of athletes participating in the Regional Championship aged 18 years old in this research was performed using the instrument of Foode Beverage questionnaires, followed by calculation of the amount of fluid intake. The amount of fluid intake recommended by the Institute of Medicine for a male athlete ranges from 19 to 20 glasses per day which are equivalent to 4.75 liters to 5 liters per day, while for female athletes, it ranges from 14 to 15 glasses per day which are equivalent to 3.5 to 3.75 liters per day. The total fluid intake is divided into three categories, i.e. insufficient fluid intake, sufficient fluid intake, and

excessive fluid intake. The data on the fluid intake frequency distribution of athletes participating in the Regional Championship aged 18 years old can be seen in Table 1 below.

Table 1. Fluid Intake Frequency Distribution Based on Fluid Intake Categories of Athletes Participating in the Regional Championship Aged 18 Years Old

Sex	Amount of Fluid Intake (Liters/Day)	Fluid Intake Category	Frequency	
			f (n)	%
Male	< 4.75	Insufficient	7	30.4
	4.75-5	Sufficient	1	4.4
	>5	Excessive	4	17.4
Total Amount			12	52.2
Female	< 3.5	Insufficient	4	17.4
	3.5-3.75	Sufficient	3	13
	>3.75	Excessive	4	17.4
Total			11	47.8
Cumulative Total Amount			23	100

The following table presents 2 distribution of frequency of liquid consumption in detail based on the type of fluid consumption.

Table 2. Frequency Distribution of Liquid Consumption Based on Liquid Type

Type of Drinking	Drink intensity	Number of Glass / Drink						Total f(n)
		0 f(n)	<3/4 f(n)	1 f(n)	1 1/2 f(n)	2 f(n)	> 2 1/2 f(n)	
Mineral Water	2+ times / days	0	0	0	0	0	2	2
	3+ times / days	0	0	1	0	0	20	21
Total		0	0	1	0	0	22	23
100% Fruit Juice	Never	10	1	1	0	0	0	12
	1x/ week	0	0	6	0	2	0	8
	2-3x/ week	0	0	1	0	1	0	2
	1x/ day	0	0	1	0	0	0	1
Total		10	1	9	0	3	0	23
Instant Fruit Juice	Never	3	4	0	0	1	0	8
	1x/ week	0	0	5	1	0	0	6
	2-3x/ week	0	0	7	1	0	0	8
	2+x/ day	0	0	1	0	0	0	1
Total		3	4	13	2	1	0	23

100%	never	16	4	0	0	0	0	20
Vegetable	1x/ week	0	0	1	0	0	0	1
juice	2-3x/ week	0	0	1	0	0	0	1
	1x/day	0	0	1	0	0	0	1
Total		16	4	3	0	0	0	23
MILK	never	1	0	0	0	0	0	1
	1x/ week	0	0	2	0	0	0	2
	2-3x/ week	0	0	4	0	1	0	5
	4-6x/ week	0	0	1	0	0	0	1
	1x/ day	0	0	9	0	0	0	9
	2+ x/ day	0	0	2	0	2	0	4
	3+ x/day	0	0	1	0	0	0	1
Total		1	0	19	0	3	0	23
Low Fat	never	18	3	0	0	0	0	21
Milk	1x/ week	0	0	1	1	0	0	2
Total		18	3	1	1	0	0	23
Soft Drink	never	5	0	4	0	2	0	11
	1x/ week	0	1	5	0	0	0	6
	2-3x/ week	0	0	1	1	3	0	2
	4-6x/ week	0	0	0	1	0	0	1
Total		5	1	10	2	5	0	23
Low Sugar	never	11	1	3	0	0	0	15
Soft Drink	1x/ week	0	0	5	0	0	0	5
	2-3x/ week	0	0	3	0	0	0	3
Total		11	1	11	0	0	0	23
Soft Drink	never	1	0	1	0	1	0	3
without	1x/ week	0	0	3	0	0	0	3
soda	2-3x/ week	0	0	4	1	0	0	5
(pop ice,	4-6x/ week	0	0	4	1	2	0	7
teh botol	1x/ day	0	0	2	0	1	0	3
dll)	2+x/day	0	0	1	0	0	0	1
	3+x/day	0	0	0	0	0	1	1
Total		1	0	15	2	4	1	23
Tea	never	0	0	1	0	0	0	1
Hot/Ice	1x/ week	0	0	5	0	0	1	6
	2-3x/ week	0	0	4	0	3	0	7
	4-6x/ week	0	0	5	0	2	0	7
	2+ x/ day	0	0	0	0	1	1	2
Total		0	0	15	0	6	2	23
Coffee	never	11	1	3	0	0	0	15
with	1x/ week	0	0	2	0	0	0	2
Cream and	2-3x/ week	0	0	5	1	0	0	6
Sugar								
Total		11	1	10	1	0	0	23
Drink Tea	never	14	1	2	0	0	0	17
and coffee	1x/ week	0	1	4	0	0	0	6
without	2-3x/ week	0	0	0	1	0	0	1
sugar								
Total		14	2	6	1	0	0	23
Drink	never	2	0	0	1	0	0	3
without	1x/ week	0	0	2	0	0	0	2
Alkhhohol	2-3x/ week	0	0	6	0	0	2	8

(sirup, nutrisari, dll)	4-6x/week	0	1	4	1	2	0	8
	1x/day	0	0	1	0	0	0	1
	3+x/ day	0	0	0	0	0	1	1
Total		2	1	13	2	2	3	23
Drink	never	3	3	1	0	0	0	7
Hipo/ Isotonik	1x/ week	0	0	5	0	1	0	6
	2-3x/ week	0	0	2	2	0	0	4
	4-6x/ week	0	1	3	1	2	0	7
Total		3	3	11	3	3	0	23
Energy drink	never	15	1	3	0	0	0	19
	1x/ week	0	0	1	1	0	0	2
	2-3x/ week	0	0	1	0	0	0	1
	4-6x/ week	0	0	0	0	0	1	1
Total		15	1	5	1	0	1	23
Fruit Ice	never	21	0	2	0	0	0	23
Total		21	0	2	0	0	0	23
Coconut water	never	21	0	0	0	0	0	21
	2-3x/ week	0	0	2	0	0	0	2
Total		21	0	2	0	0	0	23

Based on the frequency distribution for the intake of kinds and types of fluid above, it is revealed that the beverage consumed the most by the respondents is mineral water, i.e. as many as 20 respondents with the intensity of more than 3 times per day, more than 2 glasses and a half every time they drank. As for the beverages consumed the least by the respondents are energy drinks, low-fat milk, *es doger*, and iced coconut water, i.e. by more than 80% of the respondents with the intensity of “never” or “rarely” (less than 1 times per week), a maximum of less than 1 glass.

The beverages whose average consumption intensity falls into the category of “drunk often” (at least once a day) are mineral water and milk. beverages whose average consumption intensity falls into the category of “drunk occasionally” (a maximum of 4 to 6 times per week) are packaged fruit juice, sweet tea, non-alcoholic beverages (syrup, *fruit tea*, *nutrisari*, etc.), and soft drinks without soda. As for the beverages whose average consumption intensity falls into the category of “drunk rarely or never” (a maximum of once a week), they are 100% fruit juice, vegetable juice, low-fat milk, low-sugar soft drinks, coffee with creamer, sugarless coffee or tea, hypo/isotonic drinks, energy drinks, *fruit ice*, and coconut water.

Discussion of the Research Findings

Results of the analysis of research data indicate that fluid intake of basketball athletes participating in the Regional Championship belonging to the category of athletes aged 18 years old falls into the insufficient category. A total of 11 respondents (47.8%) of the total

respondents consisting of 7 male respondents and 4 female respondents showed insufficient fluid intake. This may result from the athletes' insufficient knowledge of fluid intake requirement. Based on the data on fluid intake of basketball athletes participating in the Regional Championship belonging to the category of athletes aged 18 years, there are 3 types of fluid which the respondents usually often consumed, namely mineral water, milk, and sweet tea. As for the type of fluid included in the category of "consumed sometimes", there are 5 types, namely genuine fruit juice, genuine vegetable juice, packaged fruit juice, soft drinks without soda, and non-alcoholic beverages. The fluid that is included in the category of "consumed rarely or by never" by the respondents consists of 6 types, namely low-fat milk, soft drinks, low-sugar soft drinks, coffee with cream and sugar, hypo/isotonic drinks, and energy drinks.

Results of the research hypothesis testing indicate that there is no significant relationship between the amount of fluid intake and hydration status among basketball athletes participating in the Regional Championship belonging to the category of athletes aged 18 years. However, statistics show a negative correlation ($r = -0.185$), which means that the higher the fluid intake is, the closer the hydration status value to a low scale is, i.e. by 1, which indicates better hydration status. The null hypothesis which states that there is no significant relationship between the amount of fluid intake and hydration status among basketball athletes participating in the Regional Championship belonging to the category of athletes aged 18 years may be rejected by minimizing the effects of the other factors that may affect the results of this research.

According to Andayani (2013), a person's water needs are affected by age, gender, ambient temperature, physical activities, body size, or nutritional status. Gender, nutritional status, and other factors may influence these research findings. In addition, the null hypothesis is likely to be rejected if the research respondents only consume bodily fluid-adding fluid and do not consume fluid that can cause dehydration. According to the International Olympic Committee (IOC) in Penggalih & Hayati (2007:193), consuming coffee, tea, and alcohol in high doses can cause a decrease in bodily fluid because such drinks or fluid causes a diuretic effect. According to Putriana (2014: 15), carbonated beverages should be avoided because the gas contained in such beverages can make the stomach feel full, thus reducing the amount of fluid intake. Drinking water only does not stimulate the intention of drinking and can increase the amount of urine secreted and cause decreased intake and increased secretion. Recommended drinks to maintain hydration status are those that contain carbohydrates and

electrolytes, such as fruit juice, vegetable juice, milk, and sports drinks. Respondents in this research did not only consume bodily fluid-adding fluid but also drinks or fluid that can reduce bodily fluid. Most of the respondents consumed mineral water and a few carbohydrates and electrolyte drinks. This may influence the relationship between the amount of fluid intake and hydration status.

SUGGESTIONS

It is necessary to control fluid intake among athletes before, during, and after having exercises. It is expected that athletes avoid or reduce the consumption of fluid that can lead to decreased bodily fluid and increase consumption of fluid that can increase bodily fluid such as fruit juice, vegetable juice, milk, and sports drinks. The following are recommendations to meet the need for fluid (hydration) during exercises/a match, namely:

- a. Drinking a sufficient amount regularly to avoid a decrease in body performance due to dehydration.
- b. Dehydration by 2% decreases body performance by 10-20%. Dehydration by 5% decreases the aerobic ability of the body by 30%.
- c. In order to avoid feeling as if the stomach was carrying something heavy, drinking 1-2 gulps regularly every 10-15 minutes is better than drinking a large quantity of water all at once.
- d. Do not wait until feeling thirsty. The ideal fluid intake pattern is to drink 100-150 ml every 10-15 minutes or each athlete can also decide the fluid intake pattern which suits best for them.
- e. Avoid beverages with diuretic effects such as coffee and tea and soft drinks as well.
- f. Choose the ideal sports drinks:
 - 1) Low-intensity workouts lasting for < 45 minutes, drink mineral water
 - 2) Moderate-to-high intensity workouts lasting for > 45 minutes, drink sports drinks or (dilute) fruit juice
 - 3) Workouts for endurance lasting for > 45 minutes, drink sports drinks or (dilute) fruit juice.
 - 4) Carbohydrates in sports drinks can speed up absorption of fluid, increase energy, and prevent hypoglycemia (decreased blood glucose). In addition, electrolyte minerals contained therein can also maximize rehydration during workouts and prevent muscle cramps.

- 5) Scientifically, sports drink consumption is also proven to help maintain performance and improve endurance and speed so that professional athletes drink it whether during exercises and while having a match.
- 6) Another alternative source of carbohydrates during workouts to increase energy is fresh fruit such as oranges, apples, bananas, or watermelons as what the world's professional tennis players, marathon athletes, and cycling athletes do.

CONCLUSIONS

An athlete needs to control his/her fluid intake before, during, and after exercises. It is necessary to increase consumption of fluid that can increase bodily fluid such as fruit juice, vegetable juice, milk, and sports drinks, and avoid or reduce the consumption of fluid that can cause decreased bodily fluid. In addition, it is necessary to educate athletes relating to fluid intake and hydration status in order that they can control their fluid intake to maintain good hydration. An athlete should pay attention to his/her physical condition every day in order to perform excellently in each match.

While doing exercises to improve achievement in the field of sports, it is vital for every stakeholders to maintain a good diet. Therefore, the period before having a match or while doing exercises should be intended to improve the energy reserve system of the concerned athletes in order that at the time of the tournament, they already have high energy reserves. Insufficient fluid intake that causes dehydration is harmful to health and increases the workload of the body. While doing workouts, dehydration decreases the ability to concentrate and reaction speed, increases body temperature, and slows down the rate of energy production. Dehydration and reduced carbohydrate reserves are two main factors causing a decrease in body performance while doing workouts. Therefore, athletes/sports enthusiasts are expected to have a good drinking strategy to keep their body hydrated. With a variety of reasons ranging from 'feeling as if their stomach was carrying something heavy', 'feeling full' or 'afraid of having to go to the toilet often', so many athletes and individuals do not think that adequate fluid intake before taking exercise/having a match is important.

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