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## Nutrition and recovery interventions effectiveness of Vietnamese elite female athlete in the training period to prepare for the 29th Southeast Asian Games - Malaysia in 2017

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### Abstract

The purpose of the study was the effectiveness of nutritional and rehabilitation interventions and the requirements related to the use of foods and food ingredients to stabilize health and improve the athletes's effectiveness of competitive exercises. It has effectuated through recovery indicators such as Hematocrits, Hemoglobin, Testosterone, Creatinine, Rest lactic acid, Maximum Lactic Acid, Creatinine, Blood pressure, weight. The results of the study has showed that, after 6 weeks of experimentation, the athletes' health was maintained well, the athletes' fitness and ability to adapt to competitive exercises were good, and the athletes won 3 gold medals at the World Championships. competed at the 29th SEA Games in 2017 in Malaysia.

**Keywords:** Adaptation, food supplements, health, nutrition, physical

### 1. Introduction

According to many sports scientists and practice, the stage of training to prepare for competition is an important stage, related to many issues that are decisive to the performance of athletes, including such as nutrition and recovery.

To study the impact of nutrition and recovery on Vietnamese high-level athletes during the preparation period for major competitions, we study the recovery characteristics of female athlete Trinh Tu Le who is a female athlete. excellent in athletics in Vietnam through 9 biomedical indicators reflecting recovery: Hematocrits (%), Hemoglobin (g/dl), Testosterone (ng/dl), Creatinine (mg/dl), Saline lactic acid Static (mmol/l), Max Lactic Acid (mmol/l), Base Pulse (l/min), Blood Pressure (mmHg), Weight (kg).

### 2. Mythology

**2.1 Research method:** During the research, the topic used experimental methods, biomedical methods and statistical mathematics to evaluate the effectiveness of nutritional interventions and recuperation for female athletes running 100m, 200m in the pre-competition training phase.

**2.2 Research subjects:** female athlete - Chinh Tu Le who specializes in running 100m, 200m was born in 1996, with a height of 157cm, and a weight of 54kg. She won a gold medal in the 100m race at the "National Championships" in Hanoi in 2016 and a gold medal at the 2016 Asian Youth Athletics Championships in Ho Chi Minh City (Vietnam)

**2.3 Research period:** The study was carried out during the 6-week training period (from July 15, 2017 to August 19, 2017) before competing at the 29th SEA Games 2015 in Malaysia.

### 3. Result

#### 3.1. Daily diet in pre-competition stage for athletes

The diet that provides nutrition for athletes is determined by the energy requirement (Kcal) in accordance with the amount of daily exercise to ensure health and physical stability.

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At the same time, it also ensures training goals and sports performance development goals in the preparation stage before the 29th SEA Games in Malaysia.

Based on research and through research documents in Vietnam and abroad, the project has developed and implemented a diet with enough energy (Kcal) during the preparation for the 2017 SEA Games in Malaysia in 6 weeks for female athlete Chinh Tu Le. As follows.

#### Regarding energy requirements for daily exercise

- Research has shown that the daily diet for short distance runners needs carbohydrates from 6 to 10g, protein from 1.5 to 1.7g and fat from 0.8 to 1.2g.
- Research has also shown that female athletes need to use about 55 Kcal/kg/day in training every day during the pre-competitive training period. With a body weight of

54kg, we will know how many kcal athlete Chinh Tu Le needs to use for each training day. As follows:

Carbohydrates:  $54\text{kg} \times 6 - 10\text{g/kg body weight/day} = 324\text{g} - 540\text{g/day} \rightarrow 1296 - 2160\text{kcal/day}$ .

Protein:  $54\text{kg} \times 1.5 - 1.7\text{g/kg body weight/day} = 81\text{g} - 91.8\text{g/day} \rightarrow 352 - 367.2\text{ kcal/day}$ .

Fat:  $54\text{kg} \times 2.4\text{g/kg weight/day} = 129\text{g/day} \rightarrow 1161\text{ kcal/day}$ .

Thus, with a weight of 54kg, female athlete Chinh Tu Le will have an energy requirement for daily practice during the competition preparation period will be 2809 - 3688.2 Kcal/day.

To meet the daily training energy needs for training in the pre-competition stage as calculated above for athlete Chinh Tu Le. The topic has proposed the nutrition for athletes as follows:

**Table 1:** Daily training energy needs for training in the pre-competition stage for athlete Chinh Tu Le

Daily meals	Nutrition
Breakfast	<ul style="list-style-type: none"> <li>75g oat porridge + 250ml fat-free milk + 1 teaspoon sugar</li> <li>2 slices of toast + olive oil spread + peanut butter</li> <li>1-2 boiled eggs</li> <li>250ml fresh juice</li> </ul>
Mid morning	<ul style="list-style-type: none"> <li>50g carbohydrates (spagetty noodles) + 30g peas + 100g tuna</li> <li>1 piece of fruit</li> <li>Green tea</li> </ul>
Lunch	<ul style="list-style-type: none"> <li>150g rice + lean beef or lean pork or large mackerel fillet.</li> <li>100g roasted beans &amp; dried fruit</li> <li>Mixed salads</li> <li>Low-fat, low-sugar yogurt</li> <li>Water</li> </ul>
Mid-afternoon	<ul style="list-style-type: none"> <li>2 energy bars (sport bars)</li> <li>1 large banana</li> <li>Green tea</li> </ul>
30 minutes before workout	<ul style="list-style-type: none"> <li>2-3 oat cakes</li> <li>20g whey protein powder mixed with water</li> <li>100g mixed nuts &amp; dried fruit</li> <li>Water (swallow plenty of water or isotonic drinks if possible)</li> </ul>
Right after finishing training	<ul style="list-style-type: none"> <li>25g whey protein powder + 1 pack of sugar concentrate mixed with water</li> </ul>
Dinner	<ul style="list-style-type: none"> <li>Lean steak or chicken breast or fish + salad vegetables</li> <li>Potatoes or rice or dry baked sweet potatoes or pasta.</li> <li>Green vegetables</li> <li>Low-fat yogurt, no added sugar</li> <li>Water</li> </ul>
1 hour before going to bed	<ul style="list-style-type: none"> <li>2-3 tangerines</li> <li>50g mixed nuts (roasted).</li> <li>Water</li> </ul>

**Table 2:** Functional supplements food needs in the pre-competition stage for athlete Chinh Tu Le

No.	Supplement foods	Use time
1	Synthetic tonic - Centrum	<ul style="list-style-type: none"> <li>1 tablet at 11:30</li> </ul>
2	Energy gel (32g/pack): 1 pack	<ul style="list-style-type: none"> <li>Before training - 1 pack mixed with water</li> <li>During practicing - 2 packs mixed with water</li> <li>After practicing - 3 packs mixed with water</li> </ul>
3	Sugar (Vitagor 75g/bag)	<ul style="list-style-type: none"> <li>Before training - 1 pack mixed with water</li> <li>During exercise - 3 packs mixed with water</li> <li>After training - 2 sachets mixed with water</li> </ul>
4	Whey Powder (30 gr)	<ul style="list-style-type: none"> <li>1 time right after finishing morning training</li> <li>1 time right after finishing afternoon training.</li> </ul>
5	Vitamine B12	<ul style="list-style-type: none"> <li>1 tablet at 12:00</li> <li>1 tablet at 21:30</li> </ul>
6	Creatine	<ul style="list-style-type: none"> <li>2 capsules 15 minutes before exercise</li> </ul>
7	Glutamine	<ul style="list-style-type: none"> <li>1 tablet at 6:00</li> <li>1 tablet at 11:00 am</li> <li>1 tablet at 17:00</li> </ul>
8	Beta Alanine	<ul style="list-style-type: none"> <li>1 tablet at 7:30</li> </ul>

		- 1 tablet at 15:30
9	Amino axit	- 1 capsule after morning workout - 1 capsule after afternoon workout
10	Ginseng (ginseng tea form)	- Can be mixed with water and used during or post-workout.
11	Replenish water for the body	- Always rehydrate at the start of a workout to reduce the risk of becoming dehydrated during exercise. - Athletes drink about 500 ml of water 1 to 2 hours before training or competition. - During exercise, it is necessary to drink at least 1 liter of water per hour. - Drinking water should take place slowly, should be divided into several times, 10 to 20 minutes apart.

### 3.2. Effect of nutritional intervention and recovery in the pre-competition period with female athlete Chinh Tu Le

#### 3.2.1. Recovery through biomedical indicators

Through 6 weeks of application of daily nutrition and dietary supplements during training and rest in the 6-week period of competition preparation, the study evaluated the effectiveness

of nutritional intervention and recovery at this stage with female athlete Chinh Tu Le's health. The study has also examined a number of specific indicators reflecting the recovery of athletes at the beginning of the competition preparation phase and at the end of the competition preparation phase.

**Table 3:** Test results of some biomedical indicators assessing athlete Chinh Tu Le's recovery capacity after 6 weeks of training in the pre-competition stage

Parameters	1st time (July 15, 2017)	Second time (August 19, 2017)	Reference <sup>[1]</sup>
Hematocrits (%)	42.1 ± 3	42.0 ± 3	40 to 50
Hemoglobin (g/dl)	13.9 ± 1.2	14.0 ± 0.8	13.5 to 18
Testosterone (ng/dl)	28.13 ± 1.2	28.2 ± 1.3	8.0 to 60.0
Creatinin (mg/dl)	0.81 ± 0.2	0.82 ± 0.2	0.5 – 1.5
Quiet lactic acid (mmol/l)	2.0 ± 10.0	2.0 ± 5.7	0.5-2.2 mmol/l
Lactic Acid Max (mmol/l)	15.0 ± 8.5	15.3 ± 6.3	12 – 18 mmol/l
Base circuit (l/min)	55 ± 2.0	56 ± 3	50 – 60 l/min
Blood pressure (mmHg)	70/110	70/110	80/120 mm Hg.
Weight (kg)	54.1	54.5	N/A

#### 3.2.2. Results from the 29th SEA Games Malaysia 2017

In the Vietnam Athletics team attending the 29th SEA Games

in Malaysia, athlete Chinh Tu Le excellently won 3 gold medals in the following competitions:

**Table 4:** Chinh Tu Le's achievements in 2016 compared to one at the 2017 SEA Games

“National Championships” and “Asia Youth Athletics Championships” 2016				29th SEA Games 2017		
Contents of the competition	Competition venue	Achievements	Medal	Contents of the competition	Achievements	Medal
100m	Ha Noi	11”64	Gold medal	100m	11”56 National record	Gold medal
200m	Ho Chi Minh city	23”94		200m	22”32 National record	
				4x100m relay	National record teammate	

The essence of recovery is the restoration of the body to full fitness, functional capacity and repair of biological damage. Through the results of the recovery assessment test presented in Table 3, the biomedical indicators through the two tests were quite stable. The athlete's health has always well restored because the indicators are almost unchanged. This has reflected that the athlete's body has adapted to the amount of exercise and the intervention of nutrition. Clearly, the athlete's recovery process at this stage has brought about clear results and benefits for the athlete.

Table 4 shows that athlete Chinh Tu Le participated in 3 competitions at the 2017 SEA Games and won 3 gold medals. This performance is much better than 2016's (the 100m run increased by 0.7% and the 200m by 6.7%). This also shows that nutrition and recovery interventions for athlete Chinh Tu Le have brought convincing results.

Experimental results have also shown that the preparation period of 6 weeks is appropriate (shorter time is not enough to create the ability to adapt and adapt to competition, while longer time it reduces the ability to adapt to the athlete's competition).

The results also confirm that, today towards to elite athletes,

nutritional and rehabilitative interventions are crucial and an integral part athletic training and coaching process.

#### 4. Conclusion

The study has developed and implemented a diet to ensure adequate energy (Kcal) during the preparation time for SEA Games 2017 Malaysia with 6 weeks for female athlete Chinh Tu Le.

After 6 weeks of applying daily nutrition and dietary supplements during training and rest in the pre-competition phase, the results showed: The biomedical indicators through 2 tests are quite stable, the athlete's health is always well restored because the indicators have almost no fluctuations. This reflects the athlete's body adapting to the amount of exercise and the intervention of nutrition and recovery for athletes at this stage has brought about clear effects and benefits.

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