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EFFECT OF ACUTE HIGH AND LOW GLYCEMIC INDEX CONSUMPTION ON ANAEROBIC PERFORMANCE AMONG HANDBALL PLAYERS

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ABSTRACT

Introduction: The glycemix index was effected the blood concentration based on carbohydrate types in blood either its rapidly rises or slow. This blood glucose level in body can affect on energy storage in muscles. Both of high and low glycemic index was given an effect towards the performance of athletes before, during and after exercise. *Purpose:* This study will investigate the effect of acute high and low glycemic index consumption on anaerobic performance among handball players. *Methods:* Twenty-three handball athletes (N=23) were recruited by using convenience sampling methods. The familiarization was conducted three days before the pretest and also fill in consent form and weight in. The subject assessed through anaerobic performance test (30 meters sprint test, standing broad jump test) on pretest. One week wash period was given to the subject recovery time before post testing. During post test, athletes was consumed HGI and LGI two hours before test after an overnight fast. Each of athletes was completed three trials of 30 meters sprint test and standing broad jump test. *Results:* All of athletes achieved an improvement of performance on high GI treatment ($P < .05$) while the low GI treatment does not achieved improvement in performance ($P > .05$). *Conclusion:* The results indicate that HGI consumption can improved anaerobic performance however LGI better for endurance performance.

Keywords: Glycemic Index, High glycemic index, Low gycemic index, Anaerobic Performance

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

The blood glucose level in human body was affected by glycemic index based on the type of carbohydrates (Jenkins, Wolever, Taylor, Barker, Fielden, Baldwin, Bowling, Newman, Jenkins, & Goff, 1981). According to Clark (2014), carbohydrate was the main source of energy. The glycemic index were type of carbohydrate that absorbed and digested after meal. Its absorbed from the small intestine then diffused to the bloodstream to become as energy (Jenkins et al., 1981). The glycemic index promoted the blood glucose level of the body either its high or low blood glucose (Michele Sadler, 2011). There were three type of glycemic index which are high GI (>70), moderate GI (69-56) and low GI (<55) (Donaldson, Perry,& Rose, 2010). It is important for the athletes to manage their food intake in order to get more or extra energy to do exercise in competition (Baranauskas, Stukas, Tubelis, Zagminas, Surkiene, Svedas, Giedraitis, Dobrovolskij, & Abaravicius, 2015). The main reason in nutrition is to ensure the compensation of increased energy consumption and the need for supplements within the athlete's body by (Baranauskas et al., 2015).

This study was involved the high and low glycemic index carbohydrate. The high GI was reported can increased the blood glucose level of human body (Alfenas, & Mattes, 2005). Thus the energy supply was faster due to rapidly diffused in bloodstream (McGonigal, & Kapustin, 2008). Next, the low GI was absorbed more

CHAPTER 2

LITERATURE REVIEW

2.1 GLYCEMIC INDEX

The glycemic index is used to compare different type carbohydrate that contain in foods based on their effects toward postprandial blood glucose levels in human body (Campbell et al., 2017). This glycemic carbohydrate was absorbed in the small intestine after consumed meal. In addition, the glycemic index are diffused into bloodstream and can increasing the blood glucose level in the body (Sadler, 2011).

Different type of carbohydrates contained different type of glycemic index responded. Besides, the rises and fall of the blood glucose concentration was affecting according to the type of glycemic that been consumed (Arvidsson-Lenner, Asp, Axelsen, Bryngelsson, Haapa, Järvi, Vessby, 2004). This researcher also stated that carbohydrate such as glucose can caused rapidly increase in blood glucose concentration but it also rapidly fall back to actual level. Its happen due to the hormone released by body that caused the blood glucose level to fall down (Arvidsson-Lenner et al., 2004). A list of carbohydrates with their glycemic values is showed below. A carbohydrates GI with 70 or more was in high GI category, carbohydrate GI in range of 56 to 69 inclusive medium GI category, and carbohydrate GI with 55 or less was in low GI category (Mendosa, 2008).