

**THE EFFECT OF GIVING SIWALAN SAP (*Borassus flabellifer.L*) ON VO₂
MAX AND HEART RATE RECOVERY IN STUDENTS FOOTBALL
SCHOOL PUTRA SATRIA TUBAN DISTRICT**

**Devi Sita Rahmawati
Clinical Nutrition Study Program
Department of Health**

ABSTRACT

*Football athletes often experience decreased endurance and stamina. Quantitatively, endurance can be measured through cardiorespiration during exercise. Cardiorespiratory endurance can be measured through VO₂ max and heart rate. To stabilize heart rate and VO₂ max, rehydration fluids containing glucose and electrolytes are needed. Siwalan sap is a natural drink that contains glucose, potassium and sodium. The purpose of this study was to examine the effect of giving siwalan sap (*Borassus flabellifer.L*) on VO₂ max and heart rate in Putra Satria SSB students. This study used a Quasi-Experimental research design with a Pretest-Posttest With Control Group design. The research subjects were 34 SSB Putra Satria aged 12-15 years who met the inclusion criteria and were divided into 2 groups, namely the treatment group and the control group. The control group was given mineral water while the treatment group was given 500 ml of siwalan sap before training. VO₂ max measurement using MFT (Multistage Fitness Test) and pulse rate using palpation technique. Based on the Mann whitney test, there was a significant difference between the VO₂ max values in the control and treatment groups after the intervention ($p=0.001$). Based on the Independent test, there was a significant difference between the pulse rate in the control group and the treatment after the intervention ($p=0.006$). It can be concluded that there is an effect of giving siwalan sap on the VO₂ max value and pulse rate of Putra Satria SSB students.*

Keywords: *Siwalan sap, endurance, VO₂ max, heart rate recovery, sodium, potassium, glucose*