

**PERBANDINGAN PEMBERIAN AIR KELAPA MUDA  
(*Cocos nucifera L*) VARIETAS HIBRIDA DENGAN  
ISOTONIK BERMERK TERHADAP DENYUT NADI  
DAN VO<sub>2</sub>MAKS SETELAH LATIHAN**

**Studi di Sekolah Sepak Bola Universitas Diponegoro**

**COMPARISON OF GIVING TENDER COCONUT WATER (*Cocos  
nucifera L*) HYBRID VARIETIES WITH BRANDED ISOTONIC TO  
PULSE And VO<sub>2</sub>MAX AFTER TRAINING  
Studied in Diponegoro University Football Schools**



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**Magister Ilmu Gizi**

**Muhammad Hatta  
22030113410003**

**FAKULTAS KEDOKTERAN  
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## ABSTRAK

### **PERBANDINGAN PEMBERIAN AIR KELAPA MUDA (*Cocos nucifera L*) VARIETAS HIBRIDA DENGAN ISOTONIK BERMERK TERHADAP DENYUT NADI DAN VO<sub>2</sub>MAKS SETELAH LATIHAN Studi di Sekolah Sepak Bola Universitas Diponegoro**

Muhammad Hatta<sup>1</sup>, Hardhono Susanto<sup>1</sup>, M. Zen Rahfilludin<sup>2</sup>

**Latar belakang:** Atlet sepak bola membutuhkan tingkat VO<sub>2</sub>maks yang tinggi yang dipengaruhi oleh tersedia energi. Air kelapa muda dan isotonik sebagai minuman energi yang mengandung karbohidrat dan ion-ion elektrolit tubuh yang dapat mencegah dehidrasi. Peningkatan denyut nadi menggambarkan keadaan dehidrasi.

**Tujuan:** Mengetahui perbandingan air kelapa hibrida dan isotonik bermerk terhadap denyut nadi dan tingkat VO<sub>2</sub>maks atlet Sekolah Sepak Bola Universitas Diponegoro

**Metode:** Studi eksperimental dengan pendekatan *randomized pre-post control group* pada 41 atlet sepak bola berusia 13-15 tahun di Sekolah Sepak Bola Universitas Diponegoro Tembalang pada bulan Agustus 2015. Kelompok perlakuan mengkonsumsi 250 mL air kelapa hibrida (n=13), isotonik bermerk (n=14) dan kelompok kontrol mengkonsumsi air mineral (n=14) setiap 15-30 menit sebanyak 5 kali pemberian cairan. Pengamatan *pre test* dan *post test* 1,2,3 setelah latihan dengan jeda waktu 3 hari, atlet melaksanakan tes denyut nadi dengan metode palpasi selama 15 detik dan VO<sub>2</sub>maks melalui *multistage fitness test*.

**Hasil:** VO<sub>2</sub>maks dan denyut nadi pemulihan diawal penelitian pada ketiga kelompok adalah sama (p=0,454 dan p=0,294). *Post test* 1 VO<sub>2</sub>maks pada ketiga kelompok sama (p=0,841) tetapi denyut nadi pemulihan lebih baik pada kelompok air kelapa muda dan isotonik bermerk (p=0,006). *Post test* 2 VO<sub>2</sub>maks dan denyut nadi pemulihan lebih baik pada atlet yang diberi air kelapa muda hibrida dan isotonik bermerk (p=0,004 dan p=0,017), begitu juga pada *Post test* 3 VO<sub>2</sub>maks dan denyut nadi pemulihan (p=0,001 dan p=0,004).

**Simpulan:** Pemberian air kelapa muda hibrida dan isotonik bermerk berbanding sama terhadap pemulihan denyut nadi dan peningkatan VO<sub>2</sub>maks pada atlet Sekolah Sepak Bola Universitas Diponegoro.

**Kata Kunci:** Air kelapa hibrida, isotonik bermerk, denyut nadi, VO<sub>2</sub>maks, *multistage fitness test*

## ABSTRACT

### COMPARISON OF GIVING TENDER COCONUT WATER (*Cocos nucifera* L) HYBRID VARIETIES WITH BRANDED ISOTONIC TO PULSE AND VO<sub>2</sub>MAX AFTER TRAINING Studied in Diponegoro University Football Schools

Muhammad Hatta<sup>1</sup>, Hardhono Susanto<sup>1</sup>, M. Zen Rahfilludin<sup>2</sup>

**Background:** Football players requires a high level of VO<sub>2</sub>max which is influenced by the available of energy. Tender coconut water and branded isotonic are as energy drinks containing of carbohydrates and the body's electrolyte ions that can prevent dehydration. The increasing pulse describes a the condition of dehydrated players during match or training.

**Objective:** To Examine comparison of tender hybrid coconut water and branded isotonic to pulse and the plyer's level of VO<sub>2</sub>max in the Diponegoro University Football School in Tembalang, Semarang.

**Methods:** Experimental study with an approach of randomized pretest - post test control group design at 41 soccer's player aged 13-15 years at Diponegoro University Football School Tembalang in August 2015. The treatment group consumed consumed 250 mL tender coconut water (n=13) and branded isotonic (n=14) and group control consumed mineral water (n=14) every 15-30 minutes for 5 times. Observation pre test and post test 1,2,3 with interval of 3 day after physical training, athletes test the pulse to palpation techniques for 15 seconds and VO<sub>2</sub>max test with multistage fitness test.

**Result:** The VO<sub>2</sub>max and pulse recovery in the beginning of research for 3 group was similar ( $p = 0,454$  and  $p = 0,294$ ). *Post test 1* VO<sub>2</sub>max on three group are same ( $p = 0,841$ ) but the recovery pulse is better on the group of tender coconut water and branded isotonic ( $p = 0.006$ ). *Post test 2*, VO<sub>2</sub>max and recovery pulse is more good by players who were given tender hybrid coconut water and branded isotonic ( $p = 0,004$  and  $p = 0,017$ ), as the same *post test 3* VO<sub>2</sub>max and recovery pulse ( $p = 0.000$  and  $p = 0,004$ ).

**Conclusion:** Giving the tender hybrid coconut water and branded isotonic to same to recovery pulse and increased VO<sub>2</sub>maks on athlete school football diponegoro unversity

**Keywords:** Hybrid coconut water, branded isotonic, pulse, VO<sub>2</sub>Max, multistage fitness test