

ABSTRAK

Miriam Novika br Purba: Pengaruh Pemberian Jus Jambu Biji (*Psidium guajava* L.) Terhadap Tingkat Kelelahan Atlet Lari di Klub Dumpang Atletik Medan. Skripsi. Fakultas Teknik Universitas Negeri Medan. 2026.

Kelelahan akibat aktivitas fisik berintensitas tinggi dapat menurunkan performa atlet akibat stres oksidatif, deplesi glikogen, serta ketidakseimbangan cairan dan elektrolit. Jus jambu biji merah (*Psidium guajava* L.) mengandung vitamin C, karbohidrat, kalium, dan antioksidan yang diduga membantu pemulihan serta menurunkan kelelahan. Penelitian ini bertujuan mengetahui karakteristik atlet lari di Klub Dumpang Atletik Medan, menggambarkan tingkat kelelahan setelah pemberian air mineral dan jus jambu biji merah, serta menganalisis pengaruh pemberian jus jambu biji merah terhadap tingkat kelelahan atlet lari. Penelitian ini menggunakan metode *quasi experimental* dengan rancangan *crossover design* (2×2) yang dilaksanakan pada 18–20 Mei 2026. Subjek penelitian berjumlah 40 atlet *sprint* laki-laki berusia 16–18 tahun yang dipilih menggunakan teknik *total sampling*. Setiap subjek menerima dua perlakuan secara bergantian, yaitu 250 mL jus jambu biji merah dan air mineral sebagai kontrol dengan periode *washout* selama dua hari. Tingkat kelelahan diukur menggunakan *Running-based Anaerobic Sprint Test* (RAST) berdasarkan nilai *Fatigue Index*. Analisis data menggunakan *sequence effect* untuk memastikan tidak terdapat pengaruh urutan perlakuan, *paired samples t-test* untuk membandingkan rerata tingkat kelelahan antarperlakuan, serta *effect size* (*Cohen's d*) untuk menentukan besar pengaruh intervensi. Rerata *Fatigue Index* setelah pemberian air mineral sebesar $12,42 \pm 2,49$, sedangkan setelah pemberian jus jambu biji merah sebesar $7,61 \pm 1,64$. Hasil *sequence effect* menunjukkan tidak terdapat pengaruh urutan perlakuan ($p = 0,102$). Hasil *paired samples t-test* menunjukkan perbedaan yang bermakna ($p < 0,001$; selisih rerata 4,80; 95% CI: 3,96–5,65), sedangkan nilai *Cohen's d* sebesar 1,82 menunjukkan efek intervensi yang sangat besar. Dengan demikian, jus jambu biji merah efektif menurunkan tingkat kelelahan atlet lari dibandingkan air mineral.

Kata kunci: Atlet lari, *Fatigue Index*, Jus jambu biji, RAST.

ABSTRACT

Miriam Novika br Purba: The Effect of Guava Juice (*Psidium guajava* L.) on the Fatigue Level of Runners at the Medan Dumpang Athletics Club. Thesis. Faculty of Engineering, State University of Medan. 2026.

Fatigue due to high-intensity physical activity can reduce athlete performance due to oxidative stress, glycogen depletion, and fluid and electrolyte imbalances. Red guava juice (*Psidium guajava* L.) contains vitamin C, carbohydrates, potassium, and antioxidants that are thought to aid recovery and reduce fatigue. This study aims to determine the characteristics of running athletes at the Medan Dumpang Athletics Club, describe the level of fatigue after being given mineral water and red guava juice, and analyze the effect of red guava juice on the level of fatigue of running athletes. This study used a quasi-experimental method with a crossover design (2x2) which was conducted on May 18–20, 2026. The study subjects were 40 male sprint athletes aged 16–18 years who were selected using a total sampling technique. Each subject received two treatments alternately, namely 250 mL of red guava juice and mineral water as a control with a two-day washout period. The level of fatigue was measured using the Running-based Anaerobic Sprint Test (RAST) based on the Fatigue Index value. Data analysis used sequence effect to ensure there was no effect of treatment order, paired samples t-test to compare the mean fatigue level between treatments, and effect size (Cohen's *d*) to determine the magnitude of the intervention effect. The mean Fatigue Index after administration of mineral water was 12.42 ± 2.49 , while after administration of red guava juice was 7.61 ± 1.64 . The sequence effect results showed no effect of treatment order ($p = 0.102$). The paired samples t-test results showed a significant difference ($p < 0.001$; mean difference 4.80; 95% CI: 3.96–5.65), while the Cohen's *d* value of 1.82 indicated a very large intervention effect. Thus, red guava juice was effective in reducing the level of fatigue in runners compared to mineral water.

Keywords: Runner, Fatigue Index, Guava juice, RAST.