ABSTRAK

SYAHRUL MULYA GUNAWAN. 2026. **Analisis Hubungan VO2max dan *Power* Otot Tungkai Dengan Kecepatan Renang Gaya Bebas 50 Meter pada Atlet *Swim Academy Center* Tasikmalaya**. Jurusan Pendidikan Jasmani. Fakultas Keguruan dan Ilmu Pendidikan. Universitas Siliwangi.

Penelitian ini bertujuan untuk menganalisis hubungan antara kapasitas VO2max dan *power* otot tungkai dengan kecepatan renang gaya bebas 50 meter pada atlet *Swim Academy Center* Tasikmalaya. Latar belakang penelitian berangkat dari temuan bahwa beberapa atlet usia muda mengalami performa sprint tidak stabil, yang diduga berkaitan dengan ketidakseimbangan antara kapasitas daya tahan kardiorespirasi dan kemampuan eksplosif tungkai. Metode penelitian yang digunakan adalah deskriptif kuantitatif dengan teknik *purposive sampling*, melibatkan 9 atlet berusia 9 sampai 14 tahun. Instrumen penelitian meliputi *multistage fitness test* untuk VO2max, *vertical jump test* untuk *power* otot tungkai, serta tes kecepatan renang gaya bebas 50 meter. Analisis data dilakukan melalui statistika deskriptif, uji normalitas *Liliefors*, korelasi Pearson, uji t untuk signifikansi korelasi, korelasi berganda, uji F, serta koefisien determinasi. Hasil uji korelasi menunjukkan bahwa terdapat hubungan antara VO2max dengan kecepatan renang (r = 0,82) dan hubungan antara *power* otot tungkai dengan kecepatan renang (r = 0,83). Analisis korelasi berganda menghasilkan hubungan antara kedua variabel bebas terhadap kecepatan renang (R^2 = 0,6889; Fhitung = 6,64 > Ftabel = 5,14). Koefisien determinasi menunjukkan bahwa VO2max dan *power* otot tungkai secara simultan memberikan kontribusi 68,89% terhadap kecepatan renang gaya bebas 50 meter, sementara 31,11% dipengaruhi faktor lain di luar penelitian. Simpulan penelitian ini menegaskan bahwa terdapat hubungan VO2max dengan kecepatan renang gaya bebas 50 meter, terdapat hubungan *power* otot tungkai dengan kecepatan renang gaya bebas 50 meter, serta terdapat hubungan VO2max dan *power* otot tungkai dengan kecepatan renang gaya bebas 50 meter pada atlet *Swim Academy Center* Tasikmalaya.

Kata kunci: VO2max, *Power* Otot Tungkai, dan Kecepatan Renang Gaya Bebas 50 Meter.

ABSTRACT

SYAHRUL MULYA GUNAWAN. 2026. ***Analysis of the Relationship between VO2max and Leg Muscle Power with 50 Meter Freestyle Swimming Speed in Athletes at the Swim Academy Center Tasikmalaya.*** *Department of Physical Education. Faculty of Teacher Training and Education. Siliwangi University.*

This study aimed to analyze the relationship between VO2max capacity and leg muscle power with 50-meter freestyle swimming speed among athletes at Swim Academy Center Tasikmalaya. The study was motivated by observations that several young athletes exhibited unstable sprint performance, presumably attributable to an imbalance between cardiorespiratory endurance capacity and lower-limb explosive power. A quantitative descriptive method with purposive sampling was employed, involving nine athletes aged 9 to 14 years. The research instruments comprised the multistage fitness test to measure VO2max, the vertical jump test to assess leg muscle power, and a 50-meter freestyle swimming speed test. Data were analyzed using descriptive statistics, the Liliefors normality test, Pearson correlation, t-tests for correlation significance, multiple correlation analysis, F-tests, and the coefficient of determination. The correlation results indicated a significant relationship between VO2max and swimming speed (r = 0,82) and between leg muscle power and swimming speed (r = 0,83). Multiple correlation analysis revealed a significant relationship between the two independent variables and swimming speed (R^2 = 0,6889; F = 6,64 > F-table = 5,14). The coefficient of determination demonstrated that VO2max and leg muscle power simultaneously contributed 68,89% to 50-meter freestyle swimming speed, while the remaining 31,11% was attributed to other factors beyond the scope of this study. These findings confirm that VO2max, leg muscle power, and their combination each bear a significant relationship with 50-meter freestyle swimming speed among athletes at Swim Academy Center Tasikmalaya..

Keywords: VO2max, Leg Muscle Power, and 50 Meter Freestyle Swimming.