ABSTRAK

HUBUNGAN INDEKS MASSA TUBUH (IMT) DENGAN *VO2MAX* PADA SISWA SEKOLAH SEPAK BOLA (SSB) KALKER KECAMATAN BUMIAYU

Alfhy Febri Gallingga, Panuwun Joko Nurcahyo, Yudhi Teguh Pambudi

Latar Belakang: Sepak bola merupakan olahraga yang menuntut kapasitas kebugaran kardiorespirasi tinggi, terutama pada fase pembinaan usia muda. Indeks Massa Tubuh (IMT) sebagai indikator status gizi diduga memiliki hubungan dengan Volume Oksigen Maksimal (*VO_2max*) yang merupakan parameter utama kebugaran aerobik. Penelitian mengenai hubungan kedua variabel pada siswa Sekolah Sepak Bola (SSB) tingkat lokal di wilayah non-metropolitan masih terbatas.

Metodologi: Penelitian ini menggunakan desain kuantitatif korelasional dengan pendekatan cross-sectional pada 49 siswa laki-laki SSB Kalker rentang usia 9–16 tahun yang dipilih menggunakan teknik purposive sampling. Pengukuran IMT dilakukan menggunakan timbangan digital dan stadiometer, kemudian dihitung menggunakan WHO AnthroPlus. Pengukuran *VO_2max* dilakukan menggunakan *Multistage Fitness Test* (MFT). Analisis data diawali dengan uji normalitas Shapiro-Wilk untuk menentukan distribusi data. Hasil uji normalitas menunjukkan data IMT tidak berdistribusi normal ($p < 0,05$) sementara data VO_2max berdistribusi normal ($p > 0,05$), sehingga analisis korelasi menggunakan uji non-parametrik Rank Spearman dengan tingkat signifikansi $\alpha = 0,05$.

Hasil Penelitian: Distribusi status gizi berdasarkan IMT menunjukkan 26 responden (53,06%) kategori gizi normal, 19 responden (38,78%) gizi buruk, 3 responden (6,12%) gizi kurang, dan 1 responden (2,04%) obesitas. Tingkat VO_2max menunjukkan 25 responden (51,02%) kategori sedang, 18 responden (36,73%) kategori kurang, dan 6 responden (12,25%) kategori baik. Uji korelasi Rank Spearman menunjukkan hubungan negatif signifikan antara IMT dengan *VO_2max* ($r = -0,358$; $p = 0,011 < 0,05$) dengan kekuatan hubungan kategori sedang.

Kesimpulan: Terdapat hubungan negatif yang signifikan antara IMT dengan *VO_2max* pada siswa SSB Kalker Kecamatan Bumiayu. Peningkatan IMT cenderung diikuti oleh penurunan nilai *VO_2max*. Pemantauan status gizi dan program latihan kardiorespirasi yang terstruktur perlu ditingkatkan untuk mengoptimalkan kebugaran aerobik siswa SSB.

Kata Kunci: Indeks Massa Tubuh, *VO_2max*, Sepak Bola, Sekolah Sepak Bola, Kebugaran Kardiorespirasi

ABSTRACT

THE RELATION BETWEEN BODY MASS INDEKS (BMI) AND *VO2MAX* IN STUDENTS OF SSB KALKER, BUMIAYU DISTRICT

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Background: *Football is a sport that demands high cardiorespiratory fitness capacity, particularly during youth development phases. Body Mass Index (BMI) as an indicator of nutritional status is hypothesized to have a relationship with Maximum Oxygen Volume (VO_2max), which serves as a primary parameter of aerobic fitness. Research on the relationship between these two variables in local Football School students in non-metropolitan areas remains limited.*

Methodology: *This study employed a quantitative correlational design with a cross-sectional approach involving 49 male students of SSB Kalker aged 9–16 years, selected using purposive sampling technique. BMI measurements were conducted using digital scales and a stadiometer, then calculated using WHO AnthroPlus. VO_2max measurements were performed using the Multistage Fitness Test (MFT). Data analysis was initiated with the Shapiro-Wilk normality test to determine data distribution. The normality test results indicated that BMI data were not normally distributed ($p < 0.05$), while VO_2max data were normally distributed ($p > 0.05$); therefore, correlation analysis employed the non-parametric Spearman Rank test with a significance level of $\alpha = 0.05$.*

Results: *Nutritional status distribution based on BMI showed 26 respondents (53.06%) in the normal nutrition category, 19 respondents (38.78%) severely thin, 3 respondents (6.12%) thin, and 1 respondent (2.04%) obese. VO_2max levels indicated 25 respondents (51.02%) in the moderate category, 18 respondents (36.73%) in the poor category, and 6 respondents (12.25%) in the good category. The Spearman Rank correlation test demonstrated a significant negative relationship between BMI and VO_2max ($r = -0.358$; $p = 0.011 < 0.05$) with moderate correlation strength.*

Conclusion: *There is a significant negative relationship between BMI and VO_2max in students of SSB Kalker, Bumiayu District. An increase in BMI tends to be followed by a decrease in VO_2max values. Monitoring of nutritional status and structured cardiorespiratory training programs need to be enhanced to optimize the aerobic fitness of football school students.*

Keywords*: Body Mass Index, VO_2max, Football, Football School, Cardiorespiratory Fitness*