PERANAN SATURASI OKSIGEN (SmO2) TERHADAP PERFORMA FISIK ATLET GULAT

(Studi Pada Otot *Latissimus Dorsi*)

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Diajukan untuk memenuhi syarat memperoleh gelar sarjana pendidikan program studi Pendidikan Jasmani Kesehatan dan Rekreasi

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ABSTRAK

PERANAN SATURASI OKSIGEN (SMO2) TERHADAP PERFORMA FISIK ATLET GULAT (STUDI PADA OTOT *LATISSIMUS DORSI*)

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Penelitian ini bertujuan untuk mendeskripsikan pentingnya peranan profil saturasi oksigen otot latissimus dorsi (SMO2) terhadap performa fisik atlet gulat, menguji hubungan SMO2 dengan performa fisik atlet gulat melalui beberapa variable yaitu, VO2Max, total hemoglobin (THB), denyut jantung (*Heart rate*), waktu aktivitas, dan jumlah repetisi pull up pada atlet gulat. Penelitian ini menggunakan pendekatan kuantitatif dengan desain korelasional, melibatkan 15 atlet gulat sebagai sampel. Data SMO2 pada otot latissimus dorsi diukur selama aktivitas fisik menggunakan teknologi NIRS (Near-Infrared Spectroscopy) dan dianalisis dengan uji normalitas Shapiro-Wilk dan uji korelasi Spearman melalui SPSS versi 26. Hasil uji normalitas menunjukkan semua variabel berdistribusi normal (p-value > 0,05). Penelitian ini menunjukkan bahwa saturasi oksigen otot (SMO2) pada otot latissimus dorsi atlet gulat memiliki distribusi normal dengan rata-rata 48,13% dan rentang 23–86%. Terdapat variasi performa fisik di antara atlet berdasarkan parameter THB, *Heart rate*, Waktu, *Pull Up*, dan VO2Max. Hasil uji korelasi Spearman menunjukkan hanya VO2Max yang memiliki peranan yang signifikan dan sangat kuat terhadap SMO2 ($r = 0,864$; $p = 0,000$) sedangkan variabel lainnya tidak menunjukkan hubungan yang signifikan. Hal tersebut menunjukkan bahwa SMO2 yang lebih tinggi pada otot latissimus dorsi berkontribusi pada performa fisik yang lebih baik terutama pada nilai VO2Max.

Kata Kunci: Saturasi Oksigen Otot (SMO2), VO2Max, Total Hemoglobin (THB), Uji Korelasi, Atlet Gulat.

ABSTRACT

THE ROLE OF MUSCLE OXYGEN SATURATION (SMO2) ON THE PHYSICAL PERFORMANCE OF WRESTLING ATHLETES: A STUDY ON THE LATISSIMUS DORSI MUSCLE

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This study aims to describe the importance of muscle oxygen saturation (SmO2) in the latissimus dorsi and its role in the physical performance of wrestling athletes, as well as to examine the relationship between SmO2 and physical performance through variables including VO2Max, total hemoglobin (THb), heart rate, activity duration, and pull-up repetitions. Employing a quantitative correlational design, the study involved 15 male wrestling athletes. SmO2 data from the latissimus dorsi were measured during physical activity using Near-Infrared Spectroscopy (NIRS) and analyzed with the Shapiro-Wilk normality test and Spearman correlation test using SPSS version 26. The normality test indicated that all variables were normally distributed ($p > 0.05$). Results showed that SmO2 in the latissimus dorsi had a normal distribution with an average of 48.13% and a range of 23–86%. Variations in physical performance were observed based on THb, heart rate, activity duration, pull-up repetitions, and VO2Max. The Spearman correlation test revealed a significant and strong relationship between SmO2 and VO2Max ($r = 0.864$; $p = 0.000$), while other variables showed no significant correlation. These findings suggest that higher SmO2 levels in the latissimus dorsi significantly contribute to improved physical performance, particularly in VO2Max.

Keywords: Muscle Oxygen Saturation (SmO2), VO2Max, Total Hemoglobin (THb), Correlation Test, Wrestling Athletes

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