

## Abstrak

### HUBUNGAN PERSEN LEMAK, PERSEN MASSA OTOT, ASUPAN PROTEIN, DAN DURASI LATIHAN DENGAN VO<sub>2</sub>MAX ATLET *ENDURANCE* PERMAINAN

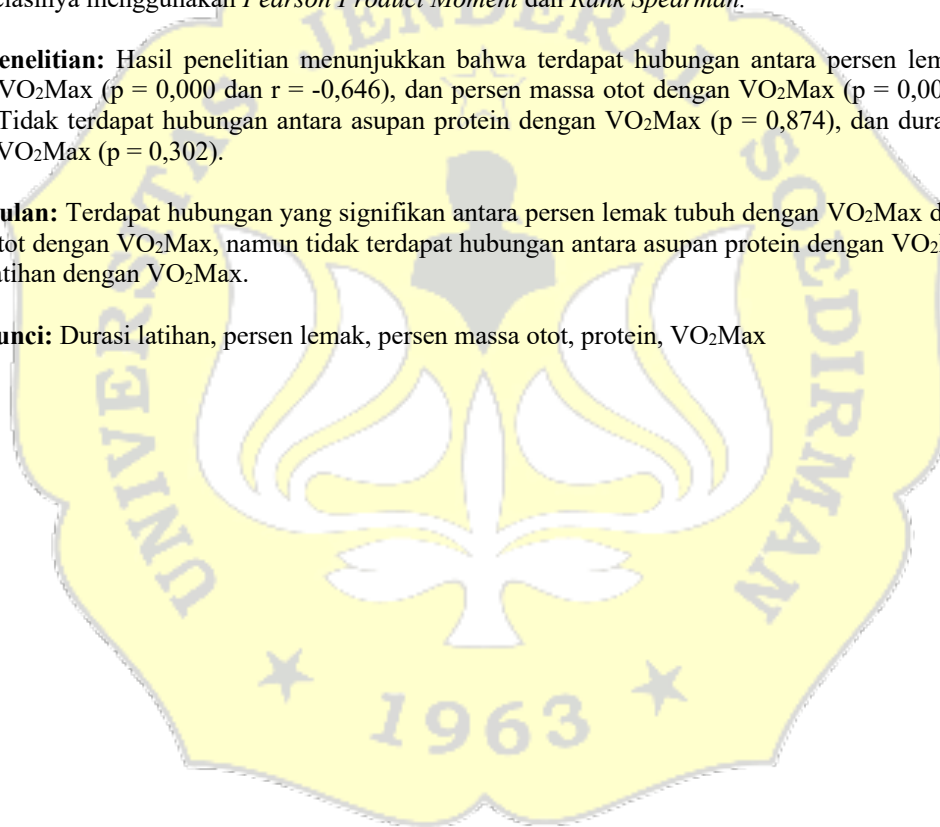
**Latar Belakang:** Atlet *endurance* permainan membutuhkan kesegaran jasmani yang baik, sehingga mempengaruhi performa atlet dan menunjang prestasi atlet. Performa atlet dapat dipengaruhi oleh komposisi tubuh, asupan zat gizi harian, serta latihan yang rutin dilakukan oleh atlet. Penelitian ini bertujuan untuk mengetahui hubungan antara persen lemak, persen massa otot, asupan protein, dan durasi latihan dengan VO<sub>2</sub>Max pada atlet *endurance* permainan.

**Metodologi:** Penelitian *cross-sectional* dengan sampel penelitian 52 atlet menggunakan teknik *purposive* dan *snowball sampling*. Persentase lemak dan persentase massa otot diukur menggunakan *Bioelectrical impedance analysis*, asupan protein diukur menggunakan *food recall* 3x24 jam, durasi latihan diukur menggunakan kuesioner, serta VO<sub>2</sub>Max diukur dengan metode *cooper test*. Data tersebut diuji hubungan dan korelasinya menggunakan *Pearson Product Moment* dan *Rank Spearman*.

**Hasil Penelitian:** Hasil penelitian menunjukkan bahwa terdapat hubungan antara persen lemak tubuh dengan VO<sub>2</sub>Max ( $p = 0,000$  dan  $r = -0,646$ ), dan persen massa otot dengan VO<sub>2</sub>Max ( $p = 0,000$  dan  $r = 0,615$ ). Tidak terdapat hubungan antara asupan protein dengan VO<sub>2</sub>Max ( $p = 0,874$ ), dan durasi latihan dengan VO<sub>2</sub>Max ( $p = 0,302$ ).

**Kesimpulan:** Terdapat hubungan yang signifikan antara persen lemak tubuh dengan VO<sub>2</sub>Max dan persen massa otot dengan VO<sub>2</sub>Max, namun tidak terdapat hubungan antara asupan protein dengan VO<sub>2</sub>Max serta durasi latihan dengan VO<sub>2</sub>Max.

**Kata Kunci:** Durasi latihan, persen lemak, persen massa otot, protein, VO<sub>2</sub>Max



## Abstract

### RELATIONSHIP BETWEEN BODY FAT PERCENTAGE, MUSCLE MASS PERCENTAGE, PROTEIN INTAKE, AND TRAINING DURATION WITH VO<sub>2</sub>MAX OF ENDURANCE GAME ATHLETES

**Background:** Achieving optimal physical fitness is crucial for endurance athletes, as it directly impacts their performance and overall success. Athlete performance is impacted by body composition, daily nutrient intake, and regular training routines. This study seeks to examine the relationship between body fat percentage, muscle mass percentage, protein intake, training duration, and VO<sub>2</sub>Max in endurance game athletes.

**Methodology:** This cross-sectional study included a sample of 52 athletes selected through purposive and snowball sampling techniques. Body fat and muscle mass percentages were assessed using Bioelectrical Impedance Analysis, while protein intake was measured using 3x24-hour food recalls. Training duration was determined using a questionnaire, and VO<sub>2</sub>Max was evaluated using the Cooper test method. Pearson Product Moment and Rank Spearman correlation analysis was employed to assess relationships between variables.

**Results:** Analysis revealed significant correlations between body fat percentage and VO<sub>2</sub>Max ( $p = 0,000$ ,  $r = -0,646$ ), as well as between muscle mass percentage and VO<sub>2</sub>Max ( $p = 0,000$ ,  $r = 0,615$ ). However, no significant correlations were found between protein intake and VO<sub>2</sub>Max ( $p = 0,874$ ) or between training duration and VO<sub>2</sub>Max ( $p = 0,302$ ).

**Conclusion:** The findings indicate that higher body fat percentage is associated with lower VO<sub>2</sub>Max, while greater muscle mass percentage correlates positively with VO<sub>2</sub>Max in endurance athletes. Interestingly, protein intake and training duration did not demonstrate significant associations with VO<sub>2</sub>Max.

**Keywords:** Fat percentage, muscle mass percentage, protein, training duration, VO<sub>2</sub>Max