

**ABSTRAK**  
**PERBANDINGAN INTENSITAS LATIHAN BERDASARKAN ANAEROBIC THRESHOLD PADA LAKI-LAKI DENGAN TINGKAT AKTIVITAS RENDAH TERHADAP FUNGSI PARU**

Nura Eky Vikawati<sup>1</sup>, Erna Setiawati<sup>2</sup>, I Made Widagda<sup>3</sup>

<sup>1</sup>PPDS-1 Kedokteran Fisik dan Rehabilitasi, Fakultas Kedokteran Universitas Diponegoro / RSUP Dr. Kariadi Semarang

<sup>2</sup>Departemen Kedokteran Fisik dan Rehabilitasi, Fakultas Kedokteran Universitas Diponegoro, Semarang

<sup>3</sup>Departemen Kedokteran Fisik dan Rehabilitasi, Fakultas Kedokteran Universitas Diponegoro / RSUP Dr. Kariadi Semarang

**Latar belakang.** Aktivitas fisik rendah menyebabkan penurunan fungsi paru. Latihan aerobik berdasarkan *anaerobic threshold* (AT) dari *cardiorespiratory exercise testing* (CPET) dianjurkan oleh ACSM kapanpun memungkinkan untuk mencegah penurunan fungsi paru.

**Tujuan.** Untuk mengetahui perbedaan pengaruh latihan intensitas di atas AT dan di bawah AT terhadap fungsi paru pada laki-laki dengan aktivitas rendah.

**Metode.** Penelitian ini merupakan *randomized control trial* pada 24 laki-laki dengan aktivitas fisik rendah, yang dibagi menjadi kelompok perlakuan di atas AT (n=12) dan kelompok perlakuan di bawah AT (n=12). AT ditentukan dari hasil CPET. Kedua kelompok melakukan latihan aerobik *treadmill* dengan intensitas pada rentang 10-20% di atas AT (kelompok di atas AT) dan 20-10% dibawah AT (kelompok di bawah AT). Intervensi latihan dilakukan 3x/minggu, selama 4 minggu. Pengukuran fungsi paru berupa FVC dan FEV1 dilakukan sebelum dan sesudah intervensi pada kedua kelompok.

**Hasil.** Terdapat perbedaan bermakna pada rerata nilai FVC sebelum dan setelah intervensi baik pada kelompok di atas AT (p=0,003) dan kelompok di bawah AT (p=0,012). Peningkatan signifikan rerata FEV1 sebelum dan setelah intervensi hanya ditunjukkan pada kelompok di atas AT dibanding di bawah AT (p =0,046 vs p=0,215) Terdapat perbedaan signifikan rerata selisih/delta FVC kelompok di atas AT dengan di bawah AT (p=0,043). Rerata selisih/delta FEV1 tidak berbeda signifikan antara kelompok di atas AT dengan di bawah AT (p=0,175).

**Kesimpulan.** Latihan diatas AT memberikan kenaikan fungsi paru yang lebih baik dibandingkan latihan dibawah AT pada laki-laki dengan tingkat aktivitas rendah.

**Kata kunci:** *aktivitas fisik rendah, anaerobic threshold, latihan aerobik treadmill, FVC, FEV1*

## **ABSTRACT**

### **COMPARISON OF EXERCISE INTENSITY BASED ON ANAEROBIC THRESHOLD IN MEN WITH LOW ACTIVITY LEVELS ON PULMONARY FUNCTION**

Nura Eky Vikawati<sup>1</sup>, Erna Setiawati<sup>2</sup>, I Made Widagda<sup>3</sup>

<sup>1</sup>Physical Medicine and Rehabilitation Resident, Diponegoro University Faculty of Medicine / Dr. Kariadi General Hospital Semarang

<sup>2</sup>Physical Medicine and Rehabilitation Departement, Diponegoro University Faculty of Medicine

<sup>3</sup>Physical Medicine and Rehabilitation Departement, Diponegoro University Faculty of Medicine / Dr. Kariadi General Hospital Semarang

**Background.** *Low physical activity could decrease lung function. Aerobic exercise based on anaerobic threshold (AT) from cardiorespiratory exercise testing (CPET) is recommended by ACSM whenever possible to prevent declining of lung function.*

**Objective.** *To determine the difference effect of exercise intensity above AT and below AT on lung function in men with low activity level.*

**Method.** *This study was a randomized control trial on 24 men with low physical activity, who were divided into above AT group (n=12) and below AT group (n=12). The AT was determined based on CPET. Both groups were performed aerobic treadmill training with the intensity range of 10-20% above AT (above AT group) and 20-10% below AT (below AT group). The intervention was given in 3x/week, for 4 weeks. The lung function which measured by FVC and FEV1 were examined before and after intervention in both groups.*

**Results.** *There was a significant difference in the mean FVC pre and post intervention in above AT group (p=0.003) and below AT group (p=0.012). A significant increase in mean FEV1 pre and post intervention was only shown in above AT group compared to below AT group (p = 0.046 vs p = 0.215). There was a significant difference in delta FVC between above AT and below AT group (p = 0.043). The delta FEV1 was not significantly different between above AT and below AT group (p=0.175).*

**Conclusion.** *The above AT training provides a better increase in lung function than below AT in men with low activity level.*

**Key word:** *low physical activity, anaerobic threshold, aerobik treadmill training, FVC, FEV1*