

PENGARUH OLAHRAGA DI RUANG TERBUKA DAN RUANG TERBUKA
HIJAU TERHADAP INFLAMASI PARU PADA TIKUS GALUR WISTAR
JANTAN

TESIS

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oleh

Cecep Muhammad Alawi

NIM 1803303

PROGRAM STUDI PENDIDIKAN OLAHRAGA

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SURAT PERNYATAAN

Dengan ini saya menyatakan bahwa tesis dengan judul “Pengaruh Olahraga di Ruang Terbuka dan Ruang Terbuka Hijau Terhadap Inflamasi Paru Pada Tikus Galur Wistar Jantan” ini beserta seluruh isinya adalah benar-benar karya saya sendiri. Saya tidak melakukan penjiplakan atau pengutipan dengan cara-cara yang tidak sesuai dengan etika ilmu yang berlaku dalam masyarakat keilmuan. Atas pernyataan ini, saya siap menanggung risiko/sanksi apabila di kemudian hari ditemukan adanya pelanggaran etika keilmuan atau ada klaim dari pihak lain terhadap keaslian karya saya ini.

Demikianlah surat pernyataan ini saya buat dengan sebenar-benarnya.

Bandung, 18 Desember 2021

Cecep Muhammad Alawi

LEMBAR PENGESAHAN

CECEP MUHAMMAD ALAWI

**PENGARUH OLAHRAGA DI RUANG TERBUKA DAN RUANG TERBUKA HIJAU
TERHADAP INFLAMASI PARU PADA TIKUS GALUR WISTAN JANTAN**

disetujui dan disahkan oleh:

Pembimbing I



dr. Hamidie Ronald D. M. Pd., Ph.D.
NIP. 19701102 200012 1 001

Pembimbing II



Agus Rusdiana, S. Pd., M.A., Ph.D.
NIP. 19760812 2001121 001

Mengetahui,
Ketua Program Studi Pendidikan Olahraga Sekolah Pascasarjana



Prof. Dr. H. Amung Ma'mun, M.Pd.
NIP. 19600119 198603 1 002

ABSTRAK

Melakukan olahraga secara teratur terbukti menghasilkan banyak manfaat kesehatan. Namun, ketika olahraga dilakukan di ruang terbuka dengan paparan polusi yang tinggi, maka efek buruk polusi udara dapat menghalangi manfaat kesehatan dari berolahraga. Tujuan penelitian ini adalah untuk menganalisis pengaruh olahraga di ruang terbuka dengan paparan polusi dan olahraga di ruang terbuka hijau terhadap inflamasi paru. Metode *true eksperiment* dan desain *The Randomized Posttest-Only Control Group Design* digunakan dalam penelitian ini. 24 ekor tikus putih galur wistar jantan dewasa dengan berat 200-250 gram berusia 8-9 minggu dibagi secara acak menjadi empat kelompok, NE (*Non Exercise*) sebagai kontrol, NE+Pol (*Non Exercise + polusi Particulate Matter 2.5 >75 ppm dan Carbon Monoxide Meter <100 ppm*), Ex (*Exercise 5 kali/minggu selama 4 minggu*), Ex+Pol (*Exercise + polusi*). Penanda inflamasi Interleukin-6 (IL-6) dan *Tumor Necrosis Factor-alpha* (TNF- α) dianalisis menggunakan *Western Blotting*. Untuk mengetahui perbedaan yang signifikan antar kelompok, analisis ANOVA satu jalur dan uji *Post Hoc* digunakan. Hasil penelitian menunjukkan bahwa kelompok eksperimen olahraga dengan paparan polusi memiliki kadar IL-6 dan TNF- α yang signifikan lebih tinggi dibandingkan kelompok kontrol. Tidak ada perbedaan yang signifikan kadar IL-6 dan TNF- α antara kelompok eksperimen olahraga di ruang terbuka hijau dengan kelompok kontrol. Dapat disimpulkan bahwa terdapat pengaruh olahraga di ruang terbuka dengan paparan polusi terhadap inflamasi paru. Dan hasil lain menunjukkan bahwa tidak terdapat pengaruh olahraga di ruang terbuka hijau terhadap inflamasi paru.

Kata kunci: Olahraga, ruang terbuka, ruang terbuka hijau, polusi udara, inflamasi, IL-6, TNF- α

ABSTRACT

Exercising regularly has been shown to produce many health benefits. However, when exercise is carried out in open spaces with high exposure to pollution, the adverse effect of air pollution can outweigh the health benefits of exercising. The purpose of this study was to analyze the effect of exercise in open spaces with exposure to pollution and exercise in green open spaces on lung inflammation. True eksperiment and The Randomized Posttest-Only Control Group Design was used in this study. 24 adult male wistar white rats weighing 200-250 grams aged 8-9 weeks were randomly divided into four group, NE (Non Exercise) as control, NE+Pol (Non Exercise + exposure pollution Particulate Matter 2.5 <75 ppm and Carbon Monoxide Meter <100 ppm), Ex (Exercise 5 times/week for 4 weeks), and Ex+Pol (Exercise + exposure pollution). The inflammatory marker Interleukin-6 (IL-6) and Tumor Necrosis Factor-alpha (TNF- α) was analyzed using Western Blotting. To find out the significant differences between groups, one-way ANOVA and Post Hoc test were used. The results showed that the exercise + exposure to pollution had significantly higher levels of IL-6 and TNF- α than the control group. There was no significant difference in levels of IL-6 and TNF- α between the exercise in green open space and the control group). It can be concluded that there is an effect of exercise in an open space with exposure to pollution on lung inflammation. And other results show there is no effect of exercise in green open spaces on lung inflammation.

Keywords: *Exercise, open spaces, green open spaces, air pollution, inflammation, IL-6, TNF- α*

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