

Model alat latihan kardiorespirasi berbasis pijak kaki kinesia:  
Efektivitas terhadap peningkatan kebugaran jasmani pekerja duduk =  
Kinesia foot rest-based cardiorespiratory exercise devices model:  
Effectiveness of increasing physical fitness of sitting workers

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Abstrak

**ABSTRAK**

Pekerja merupakan kelompok usia produktif yang berisiko terhadap penyakit tidak menular karena gaya hidup yang tidak sehat. Sebagian besar waktu bangun pekerja akan dihabiskan di tempat kerja dengan aktivitas sedenter berupa duduk. Waktu menjadi kendala utama bagi pekerja melakukan latihan fisik demi meningkatkan kebugaran jasmani, yang diketahui berbanding lurus dengan produktivitas. Salah satu fokus intervensi adalah peningkatan latihan fisik pekerja pada jam kerja. Beberapa upaya telah dilakukan sebelumnya, namun belum ada alat latihan kardiorespirasi yang ergonomis dan mampu laksana bagi pekerja. Tujuan penelitian adalah untuk mendapatkan model alat latihan kardiorespirasi yang secara efektif dapat meningkatkan kebugaran jasmani pekerja duduk. Penelitian terdiri dari tiga tahap, yaitu tahap pengembangan, tahap penentuan validitas, dan tahap pembuktian efektivitas model alat latihan. Kedua tahap awal menggunakan rancang penelitian potong lintang, sedangkan tahap akhir menggunakan rancang kuasi eksperimental. Pemilihan sampel dilakukan pada populasi pekerja duduk di Jabodetabek.

Peneliti mendapatkan 3 aspek yang memengaruhi pencapaian denyut nadi optimal, dengan model regresi yang menjelaskan 86,2% variasi pencapaian denyut nadi latihan optimal ( $R^2 = 0,862$ ). Selain itu, didapatkan protokol dan formula uji ukur daya tahan kardiorespirasi untuk memprediksi nilai  $VO_{2maks}$  dengan model alat latihan yang mempunyai tingkat akurasi dan presisi baik. Pada implementasi, didapatkan peningkatan nilai prediksi  $VO_{2maks}$  pada kelompok perlakuan di akhir minggu ke-12 dengan selisih rerata 1,21 (2,4) mL/kg/menit ( $p < 0,005$ ) dan tingkat pemenuhan sesi latihan sebesar 39,7% dari total sesi yang diharapkan. Sementara itu, terjadi penurunan nilai prediksi  $VO_{2maks}$  sebesar 2,8 (2,8) mL/kg/menit ( $p < 0,005$ ) pada kelompok kontrol.

Penggunaan model alat latihan kardiorespirasi berbasis pijak kaki Kinesia pada program latihan fisik berbasis tempat kerja dikatakan valid ( $r > 0,3$ ) dan reliabel ( $r\text{-alpha} > 0,6$ ) untuk meningkatkan daya tahan kardiorespirasi pekerja duduk.

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**ABSTRACT**

Workers are a productive age group who are at risk of non-communicable diseases because of an unhealthy lifestyle. Most of the workers waking time will

be spent in the workplace with a sedentary activity in the form of sitting. Time is a major obstacle for workers doing physical exercise in order to improve physical fitness, which is known to be directly proportional to productivity. One of the focuses of the intervention is to increase the physical exercise of workers during working hours. Several efforts have been made before, but there is no ergonomic cardiorespiratory training devices yet that able to do by workers.

The purpose of study was to obtain a model of cardiorespiratory exercise devices that effectively improve physical fitness of sitting workers. It consists of three stages, namely the development phase, the stage of determining the validity, and the stage of proving the effectiveness of the exercise model. The first two stages use a cross-sectional design, while the final stage uses a quasi-experimental design. The sample selection was carried out in the sitting working population in Jabodetabek.

The researcher obtained 3 aspects that influenced the achievement of optimal exercise heart rate, with a regression model that explained 86.2% variation in the achievement of optimal exercise heart rate ( $R^2 = 0.862$ ). In addition, the cardiorespiratory endurance test protocol and formulas was obtained to predict  $VO_{2max}$  values with a training tool model that had good accuracy and precision. In implementation, it was found an increase in the predictive value of  $VO_{2max}$  in the treatment group at the end of the 12th week with an average difference of 1.21 (2.4) mL/kg/minute ( $p < 0.005$ ) with a training session fulfillment rate of 39.7% of the total expected session. Meanwhile, in the control group there was a decrease in the predicted value of  $VO_{2max}$  of 2.8 (2.8) mL/kg/minute ( $p < 0.005$ ). It was concluded that the use of Kinesia foot rest-based cardiorespiratory exercise devices model in workplace-based physical training program is said to be valid ( $r > 0.3$ ) and reliable ( $r\text{-alpha} > 0.6$ ) to increase the cardiorespiratory endurance of sitting workers.