

ABSTRAK

PENGARUH LATIHAN ISOMETRIK DENGAN *HANDGRIP* MODIFIKASI (*ReHand-Stroke*) TERHADAP TEKANAN DARAH DAN KEKUATAN OTOT PASIEN PASCA STROKE DI PUSKESMAS

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Latar Belakang: Hemiparese dan instabilitas tekanan darah pada pasien pascastroke menghambat pemulihan. Inovasi alat *ReHand-Stroke* dikembangkan untuk memberikan indikator agar latihan isometrik *handgrip* lebih terukur sesuai dosis.

Tujuan: Mengembangkan alat *ReHand-Stroke* dan menganalisis pengaruhnya terhadap tekanan darah serta kekuatan otot pasien pascastroke.

Metode: Penelitian Tahap I menggunakan *Research and Development* (R&D) dengan pengembangan *prototype* modifikasi pegas (2-10 kg) serta sensor lampu dan bunyi. Tahap II menggunakan desain *Quasi-Experimental (Pretest-Posttest Control Group)* pada 60 partisipan yang dibagi menjadi kelompok intervensi ($n=30$) dan kontrol ($n=30$). Kelompok intervensi berlatih dengan *ReHand-Stroke* dan kelompok kontrol menggunakan bola karet standar selama 6 minggu (5 menit/sesi, 6x seminggu). Data dianalisis menggunakan uji *Wilcoxon* dan *Mann-Whitney*.

Hasil: *ReHand-Stroke* dinyatakan valid dengan nilai S-CVI 0,93. Analisis data pada masing-masing kelompok menunjukkan perbedaan signifikan antara nilai pre-test dan post-test pada variabel kekuatan otot serta tekanan darah ($p < 0,05$). Selanjutnya, hasil perbandingan antar kelompok menunjukkan perbedaan signifikan antara kelompok intervensi dan kelompok kontrol pada pengukuran akhir ($p = 0,001$). Kelompok intervensi menunjukkan perubahan lebih besar dengan selisih median peningkatan kekuatan otot sebesar 7 kg, serta penurunan tekanan darah sistolik 20,5 mmHg dan diastolik 12 mmHg.

Kesimpulan: Latihan isometrik menggunakan *ReHand-Stroke* selama 6 minggu efektif menurunkan tekanan darah dan meningkatkan kekuatan otot. Alat ini layak digunakan sebagai media rehabilitasi mandiri di layanan kesehatan primer dengan pemantauan tanda-tanda vital secara ketat.

Kata Kunci: Isometrik *Handgrip*, Kekuatan Otot, Pasca Stroke, *ReHand-Stroke*, Tekanan Darah.

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ABSTRACT

THE EFFECT OF ISOMETRIC EXERCISE WITH MODIFIED (ReHand-Stroke) ON BLOOD PRESSURE AND MUSCLE STRENGTH OF POST-STROKE PATIENTS AT PUBLIC HEALTH CENTERS

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Background: Hemiparesis and blood pressure instability in post-stroke patients hinder recovery. The ReHand-Stroke innovation was developed to provide indicators so that isometric handgrip exercises are more measurable according to the dosage.

Objective: To develop the ReHand-Stroke device and analyze its effect on blood pressure and muscle strength in post-stroke patients.

Methods: Phase I utilized Research and Development (R&D) to develop a prototype with spring modifications (2-10 kg) and light and sound sensors. Phase II employed a Quasi-Experimental design (Pretest-Posttest Control Group) with 60 participants divided into intervention (n=30) and control groups (n=30). The intervention group practiced with ReHand-Stroke, while the control group used standard rubber balls for 6 weeks (5 minutes/session, 6x per week). Data were analyzed using Wilcoxon and Mann-Whitney tests.

Results: ReHand-Stroke was declared valid with an S-CVI value of 0.93. Data analysis in each group showed significant differences between pre-test and post-test values in muscle strength and blood pressure ($p < 0.05$). Furthermore, the inter-group comparison showed a significant difference between the intervention and control groups at the final measurement ($p = 0.001$). The intervention group showed greater changes with a median difference in muscle strength increase of 7 kg, and a decrease in systolic blood pressure of 20.5 mmHg and diastolic of 12 mmHg.

Conclusion: ReHand-Stroke was effective in increasing muscle strength and reducing blood pressure in post-stroke patients at week 6. This device is feasible for use as a self-rehabilitation medium in primary healthcare services with strict monitoring of vital signs.

Keywords: *Blood Pressure, Isometric Handgrip, Muscle Strength, Post-Stroke, ReHand-Stroke.*

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