

## Efek latihan kekuatan otot yang bersifat non mesin pada karyawan pra usia lanjut = Effect of non machine muscle strength exercises on untrained young older employees

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### Abstrak

Latihan kekuatan otot non mesin merupakan latihan yang dapat meningkatkan kemampuan fungsional dalam hal ini otot tungkai. Tujuan: Penelitian ini bertujuan mengetahui efek latihan kekuatan otot non mesin selama 10 minggu terhadap kekuatan otot tungkai, daya tahan otot tungkai, kecepatan berjalan dan keseimbangan berjalan sebagai variabel kemampuan fungsional otot. Penelitian ini juga untuk mengetahui apakah latihan kekuatan otot jenis kombinasi weight bearing dan elastic resistance memberikan peningkatan yang lebih besar dibandingkan dengan latihan jenis weight bearing yang dilanjutkan dengan elastic resistance. Metode: Subyek terdiri dari 36 orang karyawan pra usia lanjut (45-56 tahun) sehat tidak terlatih yang dibagi menjadi 2 kelompok. Kelompok A melakukan latihan jenis kombinasi weight bearing dan elastic resistance sedangkan kelompok B melakukan latihan jenis weight bearing saja dan kemudian dilanjutkan dengan latihan elastic resistance saja. Kedua kelompok tersebut melakukan latihan dengan frekuensi 2-3 x/minggu selama 1 jam dengan intensitas 1-3 set/gerakan dan tiap set terdiri dari 8-12 ulangan/repetisi. Hasil: Hasil menunjukkan kedua jenis latihan memberikan peningkatan terhadap kemampuan fungsional otot tungkai (Uji Anova  $p=0,00$ ), namun jenis kombinasi weight bearing dan elastic resistance memberikan peningkatan yang lebih besar (Uji t  $p=0,01-0,04$ ). Latihan kekuatan otot tungkai jenis kombinasi weight bearing dan elastic resistance memberikan peningkatan kekuatan otot (59,93%), daya tahan otot (58,42%), kecepatan berjalan (36,88%) dan keseimbangan berjalan (47,12%) sedangkan jenis weight bearing dilanjutkan elastic resistance memberikan peningkatan kekuatan otot (39,66%), daya tahan otot (31,69%), kecepatan berjalan (23,33%) dan keseimbangan berjalan (25,90%). Seluruh variabel kemampuan fungsional tersebut mempunyai korelasi yang kuat satu dengan lainnya (Uji korelasi Pearson  $p=0,000-0,001$ ). Selain itu melalui kuesioner didapatkan bahwa subyek merasa nyaman dengan latihan jenis kombinasi dan menambah minat mereka terhadap latihan jasmani. Kesimpulan: Dari hasil penelitian dapat disimpulkan bahwa latihan kekuatan otot jenis kombinasi weight bearing dan elastic resistance memberikan peningkatan yang lebih besar terhadap variabel kemampuan fungsional otot pada kelompok karyawan pra usia sehat tidak terlatih.

*Non machine muscle strength exercises can be used to increase functional ability, especially the lower limb muscle. Purpose: The purpose of this research was to evaluate the effects of 10 weeks of non machine muscle strength exercises on muscle functional ability. The variables for functional ability will be muscle strength, muscle endurance, speed of walk and balance of walk. And to determine if simultaneously combined weight bearing and elastic resistance exercises will be better than weight bearing followed by elastic resistance exercises on increasing muscle strength. Methods: The subjects were 36 healthy untrained employees aged between 45-56 years. They were divided randomly into 2 groups, groups A and B. Group A was trained with a simultaneous combination of weight bearing and elastic resistance exercises while group B was first trained with weight bearing exercises and then with elastic resistance exercises. Both groups exercised 2-3 times a week for 1 hour with an intensity of 1-3 sets/motion and 8-12 repetitions/set. Results:*

Results showed both types of exercises increased muscle functional ability (ANOVA test  $p=0.00$ ), but the simultaneous combination of weight bearing and elastic resistance exercises was better (t test  $p=0.01-0.04$ ). The simultaneous combination of weight bearing and elastic resistance exercises increased muscle strength (59.93%), muscle endurance (58.42%), speed of walk (36.88%), and balance of walk (47.12%), while the succeeding weight bearing and elastic resistance exercises increased muscle strength (39.66%), muscle endurance (31.69%), speed of walk (23.33%), and balance of walk (25.90%). All muscle functional ability variables were strongly correlated to one other (Pearson correlation test  $p=0.000-0.001$ ). From the questionnaires given, it was found that the subjects enjoyed the simultaneous combination exercises which increased their motive for physical exercise. Conclusion: It was concluded that muscle strength exercises which simultaneously combined weight bearing with elastic resistance exercises were better in increasing muscle functional ability in healthy untrained young older employees.