

**PENGARUH PROGRAM LATIHAN TERHADAP PENINGKATAN
KEKUATAN, *POWER*, DAYA TAHAN LENGAN, DAN
PERFORMA RENANG 50 METER GAYA BEBAS**

TESIS

Diajukan untuk memenuhi salah satu syarat memperoleh gelar *Magister*
Pendidikan Pada Program Studi Pendidikan Olahraga



Oleh :
Yediya Evenetus
1708021

**SEKOLAH PASCASARJANA
PROGRAM STUDI PENDIDIKAN OLAHRAGA
UNIVERSITAS PENDIDIKAN INDONESIA
2019**

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Oleh
Yediya Evenetus, S.Pd

Sebuah Tesis yang diajukan untuk memenuhi salah satu syarat memperoleh gelar
Magister Pendidikan (M.Pd.) pada Program Studi Pendidikan Olahraga

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LEMBAR PENGESAHAN TESIS

Yediya Evenetus

1708021

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Disetujui dan disahkan oleh :

Pembimbing I

Dr. R Boyke Mulyana M.Pd
NIP. 196210231989031001

Pembimbing II

Dr. H. Amung Ma'mun, M.Pd .
NIP. 196001191986031002

Mengetahui,

Ketua Program Studi Pendidikan Olahraga

Universitas Pendidikan Indonesia

Dr. H. Amung Ma'mun, M.Pd
NIP. 196001191986031002

ABSTRAK

Tujuan penelitian ini untuk mengkaji pengaruh program latihan terhadap peningkatan kekuatan lengan, *power* lengan, daya tahan lengan dan *performa* renang 50 meter gaya bebas. Metode yang digunakan dalam penelitian ini adalah *Quasi Eksperimental* dengan Desain *Non-Equivalent Control Group Design*. Sampel dalam penelitian ini adalah dua belas orang atlet renang aquarius bandung KU dua berusia 13-14 tahun. Penelitian ini dibagi menjadi dua kelompok yaitu enam orang kelompok yang menjalankan *treatmen* dengan program latihan *vasa trainer* ditambah program latihan renang dan enam orang kelompok yang menjalankan program latihan renang. Hasil penelitian menunjukkan bahwa program latihan *vasa trainer* ditambah program latihan renang memiliki hasil dan pengaruh yang signifikan terhadap peningkatan *power* lengan, daya tahan lengan dan *performa* renang 50 meter gaya bebas namun tidak terhadap kekuatan lengan.

Kata Kunci : *Vasa trainer*, Kekuatan lengan, *Power* lengan, Daya tahan lengan, *Performa* renang

ABSTRACT

The purpose of this study was to investigate the effect of training programs with vasa trainer tools on increasing arm strength, arm power, arm endurance and 50 meter freestyle swimming performance. The method used in this research was Quasi Experimental with Non-Equivalent Control Group Design. The sample in this study were twelve athletes from the KU aquarius swimming pools aged 13-14 years. The study was divided into two groups: six groups who carried out treatments with the vasa trainer training program plus a swimming training program and six groups who ran a swimming training program. The results showed that the vasa trainer training program plus the swimming training program had significant results and effects on increasing arm power, arm endurance and 50 meter freestyle swimming performance but not on arm strength.

Keywords: *Vasa trainer, Arm strength, Power arm, Arm resistance, Swimming performance*

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DAFTAR PUSTAKA

- Agus Mahendra. (2007). *Modul Teori Belajar Mengajar Motorik*. Bandung: FPOK UPI
- Ahmadi Nuril. (2007). *Panduan Olahraga Bola Voli*. Solo, Era Pustaka Utama.
- Aktug, Z. B. (2018). The Investigation of the Relationship between Children ' s 50m Freestyle Swimming Performances and Motor Performances, 4(1), 41–44. <https://doi.org/10.20448/journal.522.2018.41.41.44>
- Amaro, N., & Batalha, N. (2016). Effects of Dry-Land Strength and Conditioning Programs in Age Group Swimmers, (May 2018). <https://doi.org/10.1519/JSC.0000000000001709>
- Amaro, N. M., Morouço, P. G., Marques, M. C., Batalha, N., Neiva, H., & Marinho, D. A. (2018). A systematic review on dry-land strength. *Science & Sports*, (September). <https://doi.org/10.1016/j.scispo.2018.07.003>
- Aspenes, S., Kjendlie, P., Hoff, J., & Helgerud, J. (2009). Combined Strength and Endurance Training in Competitive Swimmers, (May 2014).
- Aspenes, S. T., & Karlsen, T. (2012). Exercise-Training Intervention Studies in Competitive Swimming, 42(6), 527–543.
- ASA Facilities Team. (2016). The application of dry land physical activity and weight training in the development of club swimmers. Retrieved May 6, 2019, from www.swimwest.org.uk
- Badruzaman (2007) *Modul Teori Renang I*. Bandung FPOK UPI
- Barbosa, T. M., Costa, M. J., & Marinho, D. A. (n.d.). Proposal of a deterministic model to explain swimming performance. 2013, (65), 1–54.
- Becker, L. A. (2000). Analysis of pretest and posttest scores with gain scores and repeated measures. In *FrontPage Workshop*. Retrieved from *Lecture Notes Online Web site: http://www.uccs.edu/lbecker/gainscore.html*.
- Bishop, C., Cree, J., Read, P., Chavda, S., & Edwards, M. (2013). Strength and Conditioning for Sprint Swimming, (October 2017). <https://doi.org/10.1519/SSC.0000000000000019>
- Bompa, Tudor (1994) *Theory and Methodology of Training*. Kendal/Hunt Publishing Company. Dubuque. Iowa
- Bompa, T.O. & Harf, G.G. 2009. *Periodization Training for Sports : Theory and Methodology of Training*. Fifth Edition. United State of America: Human Kinetics.
- Bozdogan, A., 1986. *Swimming Technical Analysis and Methodology*. Istanbul: Visual Arts Printing

Dinata Marta (2003) *Belajar Renang*. Bandung ; Cerdas jaya

Dominguez-castells, R., Izquierdo, M., & Arellano, R. (2012). An Updated Protocol to Assess Arm Swimming Power in Front Crawl An Updated Protocol to Assess Arm Swimming Power in Front Crawl, (May 2014). <https://doi.org/10.1055/s-0032-1323721>

Farokie, L. K., Hariyanto, E., & Hariyoko, H. (2016). Pengaruh Model Latihan Dry Land Sirkuit dan Latihan Renang Sprint Terhadap Kemampuan Kecepatan Renang Gaya Crawl 50 Meter. *Jurnal Pendidikan Jasmani*, 26(1).

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2013). *Bibliyografisi Bulunacak. Climate Change 2013 - The Physical Science Basis* (Vol. 53). <https://doi.org/10.1017/CBO9781107415324.004>

Garrido, N., Marinho, D. A., Reis, V. M., Tillaar, R. Van Den, & Costa, A. M. (2010). Does Combined Dry Land Strength and Aerobic Training Inhibit Performance of Young Competitive Swimmers ? Does combined dry land strength and aerobic training inhibit performance of young competitive swimmers ?, (May 2014).

Gatta, G., Leban, B., Paderi, M., Padulo, J., Magliaccio, G. M., Pau, M. (2014). The Development of Swimming Power. Muscles, Ligaments and Tendons Journal 2014; 4 (4): 438-445.

Gencer, Y. G. (2018). Effects of 8-Week Core Exercises on Free Style Swimming Performance of Female Swimmers Aged 9-12, 4(3), 182–185. <https://doi.org/10.20448/journal.522.2018.43.182.185>

Ginting, Andarias. 2014. Perbedaan Pengaruh Pelatihan Interval Anaerob Terhadap Peningkatan Kecepatan Renang 50 Meter Gaya Bebas. *Jurnal Iptek Olahraga*,

Girold, B., Aurin, D. I. M., & Ugue, B. E. D. (2007). Effects of Dry-Land vs Resisted and Assisted Sprint Exercises on Swimming, (October 2017). <https://doi.org/10.1519/00124278-200705000-00054>

Griffin, A. J., Unnithan, V. B., & Ridges, P. (1999). The Physiologlcal Efects sf Swimming, 22–31.

González-Badillo JJ, Sánchez-Medina L. Movement velocity as a measure of loading intensity in resistance training. *Int J Sports Med*. 2010;31(5):347-352. doi: 10.1055/s-0030-1248333

Haller, David. 2011. *Belajar Berenang*. Bandung: Pionir Jaya Bandung.

Harre, D. 2008. *Principle Of Sport Training Introduction To Theory And Methode Of Training*. Berlin: Sport Verlag

- Harsono. 1988. *Coaching dan Aspek-aspek Psikologis Dalam Coaching*. Jakarta: Ditjen Pendidikan Tinggi PPLTK.
- Harsono. 2016. *Latihan Kondisi fisik Untuk Atlet dan Kesehatan*. Bandung UPI
- Harsono. 2017. *Kepelatihan Olahraga Teori dan Metodologi*. PT Remaja Rosdakarya Offset Bandung.
- Hannula, D. and N. Thornton, 2001. *The Swim Coaching Bible*. America: Human Kinetics, 1:21
- Haycraft, J., & Robertson, S. J. (2014). The effect of concurrent aerobic training and maximal strength , power and swim-specific dry-land training protocols on swimming performance : a review, (November).
- Hendromartono, S. (1992). *Olahraga Pilihan Renang*. Jakarta: Depdikbud.
- Ismaryati. (2008). *Tes dan Pengukuran Olahraga*. Surakarta. LPP UNS dan UNS Pres.
- Kabasakalis, A., Tsalis, G., Zafrana, E., Loupos, D., & Mougios, V. (2014). Effects of endurance and high-intensity swimming exercise on the redox status of adolescent male and female swimmers. *Journal of Sports Sciences*, 0(0), 1–10. <https://doi.org/10.1080/02640414.2013.850595>
- Klika, R. J., & Thorland, W. G. (1994). Physiological Determinants of Sprint Swimming Performance in Children and Young Adults, 59–68.
- Konstantaki, M., Winter, E., & Swaine, I. (2008). Effects of Arms-Only Swimming Training on Performance , Movement Economy , and Aerobic Power, 294–304.
- Lang, M., & Light, R. (2010). Interpreting and Implementing the Long Term Athlete Development Model: English Swimming Coaches' Views on the (Swimming) LTAD in Practice. *International Journal of Sports Science & Coaching*, 5(3), 389–402. <https://doi.org/10.1260/1747-9541.5.3.389>
- Linmao, V. K. H. (1998). Neuromuscular fatigue and recovery in maximal compared to explosive strength loading. *European Journal of Applied Physiology*, 77, 176–181.
- Lazar, J. M., Khanna, N., Chesler, R., & Saliccioli, L. (2013). Swimming and the heart. *International Journal of Cardiology*, 168(1), 19–26. <https://doi.org/10.1016/j.ijcard.2013.03.063>
- Lubkowska Wioletta, Wiazewicz Aleksander, Eider Jerzy. The correlation between sports results in swimming and general and special muscle strength. *Journal of Education, Health and Sport*. 2017;7(12):222-236. eISSN 2391-8306.

- Macdougall, J. D., Elder, G. C. B., Sale, D. G., Moroz, J. R., & Sutton, J. R. (1980). *Applied Physiology*, 34, 25–34.
- Manual Book. (2015a). *Manual Book Part 1-3*. Trainer Instruction Manual.
- Manual Book. (2015b). *Manual Book Part 4-6*. Trainer Instruction Manual.
- Morouço, P., Keskinen, K. L., Vilas-boas, J. P., & Fernandes, R. J. (2011). Relationship Between Tethered Forces and the Four Swimming Techniques Performance, (May). <https://doi.org/10.1123/jab.27.2.161>
- Mc Clenaghan. Pate. Rotella, R. *Dasar dasar Ilmiah Kepelatihan*. Terjemahan Dwijowinoto, Kasiyo.1993. Semarang: IKIP Semarang
- Nugent, F. J., Comyns, T. M., & Warrington, G. D. (2017). Quality Versus Quantity Debate in Swimming: Perceptions and Training Practices of Expert Swimming Coaches. *Journal of Human Kinetics*, 57(1), 147–158. <https://doi.org/10.1515/hukin-2017-0056>
- Nurhasan. (2005). *Aktivitas Kebugaran*. Jakarta: Depdiknas.
- Odabaş, B., 2003. Effect of 12-week swimming basic education studies on physical and motorsal characteristics of boys and girls' boys 7-12. Kocaeli, Kocaeli University Institute of Health Sciences, Master Thesis.
- Ruiz-teba, A., & Arellano, R. (2016). Index of Cordination in Freestyle Swimming : its Importance, (June).
- Sadowski, J., Mastalerz, A., & Gromisz, W. (2012). Effectiveness of the Power Dry-Land Training Programmes in Youth Swimmers, 32(May), 77–86. <https://doi.org/10.2478/v10078-012-0025-5>
- Sawdon-bea, J., & Benson, J. (2015). The Effects of a 6-Week Dry Land Exercise Program for High School Swimmers, 2(1), 1–17. <https://doi.org/10.15640/jpesm.v2n1a1>
- Sajoto. M. (1995). *Pembinaan Kondisi Fisik dalam Olahraga*. Jakarta: Depdikbud
- Sale, D. G., Jacobs, I., Garner, S., & Education, P. (2018). Interaction between concurrent and endurance training strength.
- Santoso.G (2007) *Ilmu Faal Olahraga*. Bandung UPI
- Strzała M, Tyka A. Physical endurance, somatic indices and swimming technique parameters as determinants of front crawl swimming speed at short distances in young swimmers. *Med Sport*. 2009;13(2):99-107. doi:10.2478/v10036-009-0016-3.

- Sismadiyanto dan Subagyo. 2009. Peningkatan Hasil Belajar Renang Gaya Crawl Melalui Multi-Stroke Method & Flipper-Float Method. *Jurnal Ilmu Keolahragaan*.
- Sugiyono. (2016). *Statistika Untuk Penelitian*. Bandung: Alfabeta.
- Sugiyono. (2017). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.
- Suherman, A., & Rahayu, N. I. (2015). *Metode Penelitian Ilmu Keolahragaan*. Bandung.
- Suherman, A., & Rahayu, N. I. (2016). *Modul Statistika Untuk Ilmu Keolahragaan*. Bandung.
- Suharno HP. (1985). *Ilmu Coaching Umum*. Yogyakarta : IKIP Yogyakarta.
- Yapıcı, A., B. Maden and G. Fındıkoğlu, 2016. The effect of 6 weeks of land and resistance training on the lower limb isokinetic strength performance and swimming rating of 13-16 age group swimmers, and the effect of a 6-week land and resistance training on 13-16 years old swimmers groups to lower limb isokinetic strength values and swimming performance. *Journal of Human Sciences*, 13(3): 5269-5281.