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THE EFFECT OF HURDLE HOPS AND KNEE TUCK JUMP EXERCISES IN TERMS OF LEG MUSCLE POWER ON FREESTYLE SWIMMING SPEED

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Abstract
This study aims to determine the effect of the Hurdle Hops and Knee Tuck Jump Training in terms of Leg Muscle Power on the Speed of Freestyle Swimming at a Distance of 50 Meters for Children Aged 12-13 Years at the PRIM Swimming Club in 2022. The research method used is an experimental method with one group pretest dan posttest design. The sampling technique used was purposive sampling at selayang swimming pool on PRIM Swimming Club Medan. The number of athlete samples used was 8 people. This research was carried out of exercise 3 (three) times a week (18 meets). Hypothesis analysis using uji-t with pre-test data and post-test data for freestyle swimming improvement, where the results obtained from the analysis of tcount of 10 are then compared with the ttable value with dk = n-1 (8-1 = 7) at a significant level α = 0.05 is 1,895, thus t-count < ttable (0,99 < 1.8946). This means that Ho is rejected and Ha is accepted, so it can be concluded that there is not a significant effect of the Hurdle Hops and Knee Tuck Jump Training in terms of Leg Muscle Power on the Speed of Freestyle Swimming at a Distance of 50 Meters for Children Aged 12-13 Years at PRIM Swimming Club in 2022 .

Keywords: *Impact; Hurdle Hops; Knee Tuck Jump and Crawl Swimming*

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INTRODUCTION

(Tresnawati, 2010) swimming is one of the sports carried out in water, swimming itself has various forms or more often referred to as style. In general, there are 4 kinds of styles that are often heard in swimming, namely crawl style (free), breaststroke (frog), backstroke, and dolphin style (butterfly). Swimming consists of four styles contested, namely: butterfly, backstroke, breaststroke, and freestyle (Okilanda et al., 2021). Of the 4 types of styles contested, there are several numbers contested, namely: freestyle 50 m, 100 m, 200 m, 400 m, 800 m

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(women), 1500 m (men), butterfly 100 m, 200 m, backstroke 100 m, 200 m, breaststroke 100 m, 200 m, individual reimbursement, 200 m, 400 m, relay relay 4 x 100 m, freestyle relay 4 x 100 m, 4 x 200 m, 10 km marathon.

The process of coaching swimming sports has developed quite well with the increasing number of swimming clubs that stand and conduct coaching, especially in the Medan city area, related to this, researchers made observations to one of the clubs in the city of Medan, namely PRIM Swimming Club in the swimming pool Jl. DR Mansyur No. 71 D Padang Bulan Selayang I Zip Code 20154. After obtaining permission to make observations from the club management as a result of observations made by researchers in June 2022, researchers found that all types of swimming styles were trained in the club according to the style given by the coach to his athletes, this also applies to the training process of swimming numbers, all swimming numbers contested are also trained at PRIM Swimming club according to the numbers given by coaches to their athletes, Another finding that the researchers found in the observations was that during the process of freestyle swimming training with a 50-meter number the researcher found a gap between the results obtained by athletes and the target finish time expected by the coach (Nopianto et al., 2020), the results of the researchers' findings became the basis for researchers to conduct further research related to the gap, with regard to matters Therefore, the researcher wants to conduct an interview with the trainer regarding the findings of the gap.

The results of an interview with the coach, Mr. Tengku Muhammad Rizqi, which the researcher conducted on June 16, 2022, the conclusion of the coach's statement regarding the findings of the researcher's observations on freestyle swimming in the 50-meter freestyle number, the conclusion of the coach's statement that for the 50-meter freestyle number, when several times participating in the competition on that number, athletes scouted in PRIM Swimming club have never won a champion for this number, Even in the training process, athletes who train on that number still look slow and do not have maximum results.

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The results of the interview with the coach strengthened the researchers' findings related to the observations that researchers found in 50-meter freestyle swimming at PRIM Swimming Club, to obtain better improvements to the problem, the researchers took preliminary data related to the ability of PRIM Swimming Club athletes in 50-meter freestyle swimming, the results of the initial data collection that researchers did on June 23, researchers processed the results of the speed of time that Obtained by the athletes by comparing the time obtained with the Qualification Entry Times Indonesia Open Aquatic Championships 2019 in the AG 3 section, still the data has been attached to the annex I section with the overall conclusion that PRIM Swimming Club athletes are still in the less category.

(Bafirman, 2018) The achievement of swimming sports achievements is not easy to achieve, because many factors determine the performance of swimmers, such as anatomical factors (arm length, height, leg length); physiological factors (ability to breathe oxygen, agility, balance, coordination, strength, power, flexibility); biomechanical factors (speed of movement, and frequency of strokes); psychological factors (personality, attribution, achievement motivation, aggression, arausal, anxiety, stress, activation, leadership, communication, commitment, imagery, concentration, self-concept, and self-confidence).

The achievement of good physical condition cannot be separated from systematic training methods, increasing the performance and skill of an athlete is a training process that is carried out repeatedly by increasing the training load and intensity of training periodically (Arisman, 2018). To increase the speed ability of a swimmer, one of the provision of exercises is done with an increase in better physical condition.

Freestyle swimming 50 meters is the race number with the fastest time in all swimming events contested in swimming sports with the best time in the Qualification Entry Times Indonesia Open Aquatic Championships 2019 senior group man 00:26.35, women 00:30.43, AG 1 man 00:26.98, women 00:30.43, AG

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2 man 00:28.32, women 00:31.15, AG 3 man 00:30.62, Women 00:32.71. AG 4 man 00:34.33, women 00:35.36. Based on the time defect, it can be concluded that freestyle swimming number 50 meters is a swimming that requires explosive power (combined strength and speed) and freestyle movement speed as far as 50 meters.

From the results of observations, interviews and initial data collection became the basis for researchers to make more in-depth observations related to these findings, the results of observations and analysis of researchers the gap between the desired time results and those obtained was influenced by the power factor of the leg muscles when doing swing movements in the legs. According to Jensen in (Bafirman, 2008) (Pratama et al., 2024) "muscle power is a combination of strength and speed, namely the ability to apply force in a short time. Muscles must apply force in a very short time to provide the best momentum.

(Chu, 1992) hurdle hops training is latiahn carried out on high goals or obstacles made approximately 80% of the average length of the sample limbs (72 X 80% = 58) with a distance between goals of 1 meter determined from the sample's ability to perform a series of maximum jumps.

Knee-tuck Jump is an exercise performed on a flat, spring-loaded surface like grass. Mattress or cassette. This exercise is performed in a series of rapid explosive jumps. The muscles developed are hip and thigh flexsors, gastronemius, gluteals, quadriceps and hamstrings. Both forms of exercise are forms of exercise that can increase leg muscle power, this is because both forms are done with very fast movements and both forms are forms of exercise with special movements in the legs.

METHOD

The research method used in this study is an experimental method. This method is used on the basis of consideration that the nature of experimental research is to try something to find out the effect or effect of a treatment or treatment (Okilanda et al., 2018). The variability contained in this study consists

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of two independent variables, namely Hurdle Hops and Knee Tuck Jump Exercises (Putra et al., 2020). The dependent variables in this study are leg muscle power and freestyle swimming speed over a distance of 50 meters.

This research is planned to be carried out in the swimming pool Jl. DR Mansyur No. 71 D Padang Bulan Selayang I Zip Code 20154. The study time is planned for September to October 2022. Treatment was carried out 18 times, with a frequency of 3 times a week, namely Tuesday, Thursday, and Saturday.

The population in this study was Prim Swimming pool club athletes as many as 10 people and in this study, researchers used samples by purposive sampling, namely samples that aim to be carried out by taking subjects not based on strata, random or regional but based on certain goals. The design used in this study is "the one group pretest posttest design" or the absence of a control group with experimental methods. The research design table is as follows:

Table 1. One Group Pretest-Postest Design

Pre-Test	Treatment	Post-Test
Freestyle swimming speed distance 50 meters T1	Latihan Hurdle Hops Dan Knee Tuck Jump	Freestyle swimming speed distance 50 meters T1

(Sugiyono, 2012)

The test instruments used for initial measurements (pretest) and final measurements (posttest) use the 50 meter freestyle swimming test, the procedure for carrying out the 50 meter swimming speed test, which is as follows: Freestyle 50 meter swimming speed test. (Wirjasantosa, 1984) The test used is a swimming race test starting from start to finish with units of time using seconds.

In this study, it is necessary to conduct prerequisite tests before conducting hypothesis tests. Testing measurement data related to research results aims to help the analysis to be better. In this study, it is necessary to conduct prerequisite tests before conducting hypothesis tests. Testing measurement data related to research results aims to help the analysis to be better. The data is processed using statistical procedures to see whether the hypothesis that has been made in this study is accepted or rejected.

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RESULTS AND DISCUSSION

By conducting research instruments and conducting measurement tests carried out in the field, data were obtained from the variables of Hurdle Hops, Knee Tuck Jump and 50 Meter Freestyle Swimming Speed Results which have been processed through statistical formulas showing the description of pre-test and post-test data as follows.

After doing the pretest and posttest and finding data in the form of the graph above, it can be concluded that there is an increase in the posttest of 50-meter freestyle swimming, the increase occurs because they have done hurdle Hops and Knee Tuck Jump exercises.

Pre-Test data dissemination The results of the 50-meter freestyle swimming speed for children aged 12-13 years at PRIM Swimming Club in 2022 are Rafkha Diandara Qhalyshi with the best time 00.36.32 seconds, Kuku with the best time 00.45.67 seconds, Khaisan with the best time 00.37.28 seconds, Rafif Azam Tauni with the best time 00.46.23 seconds, Muhammad Zayyd with the best time 00.49.79 seconds, Zaid Muammar Siregar with the best time 00.56.31 seconds, Dzakirah Yasmi Faiha with the best time 00.46.51 seconds and Fardi Adinata with the best time 00.47.76 seconds.

Post-Test data dissemination The results of the 50-meter freestyle swimming speed for children aged 12-13 years at PRIM Swimming Club in 2022 are Rafkha Diandara Qhalyshi with the best time of 00.35.97 seconds, Kuku with the best time of 00.45.17 seconds, Khaisan with the best time of 00.37.06 seconds, Rafif Azam Tauni with the best time of 00.45.87 seconds, Muhammad Zayyd with the best time 00.49.27 seconds, Zaid Muammar Siregar with the best time 00.55.93 seconds, Dzakirah Yasmin Faiha with the best time 00.46.25 seconds and Fardi Adinata with the best time 00.47.39 seconds.

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Table 2. Percentage Increase in Pre-Test and Post-Test Data Results of 50-meter Freestyle Swimming Speed for Children Aged 12-13 Years at PRIM Swimming Club Tahun 2022

Mean Pre-Test	Mean Post-Test	Persentasi
45.73	45.38	2%

From the calculation of data for the hypothesis of hurdle hops and knee tuck jump exercises in terms of leg muscle power on the speed of freestyle swimming in 50 meters distance for children aged 12-13 years at PRIM Swimming Club in 2022, it shows that there is a significant influence between the results of Pre-Test data and Post-Test data of freestyle swimming results. This illustrates that Hurdle Hops and Knee Tuck Jump exercises are less influential on the results of Freestyle Swimming. This is because external factors are about the busyness of athletes also in the world of education, the athletes used by researchers here are all students / students in public junior high schools, where the division of time between training and learning is not optimal, so athletes are less optimal in getting training programs from researchers.

In swimming there are four styles in it, namely, breaststroke, freestyle, butterfly style and backstroke. Freestyle swimming is the fastest swimming compared to other swimming styles but in this swimming style also requires a lot of power. Swimming includes water sports activities that require physical skills and mastery of techniques that must be mastered.

The physical conditions involved in swimming are speed, strength, coordination, ground power and power are very important for improving swimming ability. Not only skills that must be mastered by athletes but must be in line with their physical condition as well. Good swimming skills and good physical condition can improve good results also on athletes' swimming performance. One element of physical condition that plays a role in freestyle swimming is leg muscle power, the role of leg power in freestyle swimming is the drive produced by the legs that can accelerate the achievement of swimming mileage.

There are several forms of exercise used to increase leg muscle power,

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namely Hurdle Hops and Knee Tuck Jump exercises (Maretno & Arisman, 2020).In doing Hurdle Hops and Knee Tuck Jump exercises to produce maximum leg muscle power, an athlete must exercise with an exercise program that is systematically compiled by the coach. Do these exercises seriously and must be monitored by the trainer. In the hurdle hops and knee tuck jump training exercises, in terms of leg muscle power to swimming speed, the 50-meter freestyle for children aged 12-13 years at PRIM Swimming Club in 2022 requires 18 meetings to be trained.

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compared to other swimming styles but in this swimming style also requires a lot of power. Swimming includes water sports activities that require physical skills and mastery of techniques that must be mastered.

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Discussion

Data normality testing using the lilifors test, from pre-test data The results of the 50-meter freestyle swimming speed for children aged 12-13 years at the PRIM Swimming Club in 2022 obtained Lo = 0.246 and L_{table} 0.285 with n = 8 and a real level of $\alpha = 0.05$. Since Lcalculate < L_{table} (0.1542 < 0.285) it can be concluded that the sample comes from a normal population. From the post-test data, the results of the 50-meter freestyle swimming speed for children aged 12-13 years at the PRIM Swimming Club in 2022 obtained Lo = 0.152 and Ltable 0.285 with n = 8 and a real level of $\alpha = 0.05$. Since L_{counts} < Ltebel (0.1518 < 0.285) it

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can be concluded that the sample comes from a normal population.

Table 3. Data Normality Test

Variable	Standard mean and deviation	L_o	L_{table}	Alpha	Information
Data Pre-Test	$\overline{X_i}$ = 45.73 S = 6.47	0.246	0,285	0,05	Normal
Data Post-Test	$\overline{X_i}$ = 45.38 S = 6.43	0.152	0,285	0,05	Normal

Homogeneity Test

Test homogeneity between pre-test and post data The results of the 50-meter freestyle swimming speed for children aged 12-13 years at PRIM Swimming Club in 2022 obtained F_{count} = 1.1014 that n1 = 8, v 1 = 8 - 1 = 7 while n_2 = 8, v2 = 8 - 1 = 7 so that F = 3.79 at the real level α = 0.05, then F calculate < Ftable (1.1014 < 3.79). So it can be concluded that the spread from the pre-test and post data The results of the 50-meter freestyle swimming speed for children aged 12-13 years at the PRIM Swimming Club in 2022 are homogeneous.

Based on the results of calculations carried out on hypothesis testing using the t-test, a tcount of 10 was obtained Furthermore, the value is compared with the value of t table with dk = n - 1 (8 - 1 = 7) at a significant level α = 0.05 is 1.8946, thus t-count > t-table (0.99 > 1.8946). This means that Ho is accepted and Ha is rejected, so it can be concluded that there is no significant effect from hurdle hops and knee tuck jump exercises in terms of leg muscle power on the speed of freestyle swimming in 50 meters for children aged 12-13 years at PRIM Swimming Club in 2022.

CONCLUSION

Based on the results of hypothesis testing and discussion of research results, researchers concluded that there was a significant influence on hurdle hops and

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knee tuck jump exercises in terms of leg muscle power on the speed of freestyle swimming in 50 meters for children aged 12-13 years at PRIM Swimming Club in 2022. From the results of this study is expected to provide benefits, including:

For researchers to examine more deeply what things can affect swimming speed specifically in freestyle. For athletes, as a reference to be more enthusiastic in improving their abilities in swimming. For coaches, to test the ability of athletes use test kits that correspond to the desired object. In an effort to improve the ability of athletes, coaches must pay attention to the forms of exercise that are in accordance with the ultimate goal of training.

REFERENCES

Arikunto, S. 2010. Prosedur Penelitian Suatu Pendekatan Praktik. Jakarta: PT Rineka Cipta.

Arisman, A. (2018). Pengaruh Latihan Skj 2012 Terhadap Kebugaran Jasmani Siswa Smp Negeri 35 Palembang. *Wahana Didaktika : Jurnal Ilmu Kependidikan*, *16*(2), 173. https://doi.org/10.31851/wahanadidaktika.v16i2.2047

Ainus Sholikhan Febrihan. 2019. Kontribusi Kelincahan Dan Kekuatan Otot Lengan Terhadap Keterampilan Indian Dribble Pada Siswa Ekstrakurikuler Hockey Di Sma Negeri 1 Menganti. Jurnal Kesehatan Olahraga Vol 07 No 02. https://jurnalmahasiswa.unesa.ac.id/index.php/7/article/view/29219/26761

Bagas Gilang Ramadhan, Basyaruddin Daulay, Nurkadri Pengembangan Alat Bantu Latihan Dribble pada Permainan Bola Basket. JSPEED, Volume5 Nomor 01 Mei 2022. https://journal.unsika.ac.id/index.php/speed/article/view/6515/3286

Demson Hamonangan Saragih, Imran Akhmad. 2021. Perbedaan Pengaruh Latihan Decline Push Up Dengan Latihan Medicine Ball Throw Terhadap Peningkatan Power Otot Lengan Pada Atlet Muaythai Kabupaten Simalungun. Journal Physical Health Recreation Volume 1 Nomor 2 ; June 2021 e-ISSN : 2747- 013X. http://digilib.unimed.ac.id/47317/1/Fulltext.pdf

Ihsan, N., Okilanda, A., Donie, D., Putra, D. D., Wanto, S., & Arisman, A. (2022). Practical Group Defense Exercise Design in Football Game for 13-Year-Old Students. *Teorìâ Ta Metodika Fìzičnogo Vihovannâ*, *22*(2), 194–201. https://doi.org/10.17309/tmfv.2022.2.07

Maretno, M., & Arisman, A. (2020). Ladder Drill dalam Meningkatkan Kelincahan Atlet Bola Voli. *Jurnal Muara Olahraga*, *3*(1), 1–20.

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Nopianto, W., El Cintami Lanos, M., & Arisman, A. (2020). The Effect of Mixed Inpact Aerobic Gymnam on The Improvement of Physical Fitness for High School. *JIPES*, *6*(2), 55–61.

Naluri Denay & Yogi Setiawan. 2022. Kontribusi Kekuatan Otot Lengan Dan Kekuatan Otot Tungkai Terhadap Kecepatan Renang Gaya Bebas 50 Meter. jurnal Performa Olahraga. Volume 16 Nomor 2. http://performa.ppj.unp.ac.id/index.php/kepel/article/view/300/180

Okilanda, A., Arisman, A., Lestari, H., Lanos, M. E. C., Fajar, M., Putri, S. A. R., & Sugarwanto, S. (2018). Sosialisasi Petanque Sebagai Olahraga Masa Kini. *Jurnal Bagimu Negeri*, *2*(1), 69–76. https://doi.org/10.26638/jbn.638.8651

Okilanda, A., Dlis, F., Humaid, H., Putra, D. D., Arisman, A., & Muslimin, M. (2021). Defense Warm-Up Exercise Material for 13-Age Athlete Using Video Technology in Covid-19 Era. *International Journal of Human Movement and Sports Sciences*, *9*(4), 629–634. https://doi.org/10.13189/saj.2021.090404

Pratama, R. R., Arisman, A., Marta, I. A., Okilanda, A., & Putra, D. D. (2022). Zig-Zag Run in Improving Basketball Dribbling Skills. *Halaman Olahraga Nusantara (HON)*, *5*(II), 405–413. https://doi.org/http://dx.doi.org/10.31851/hon.v5i2.7719

Pratama, R. R., Fikri, A., Lubis, J., Samsudin, Widiastuti, Arisman, & Muslimin. (2024). The Effectiveness of Small Side Games in Increasing the Vo2Max Ability of Football Athletes. *International Journal of Human Movement and Sports Sciences*, *12*(1), 1–8. https://doi.org/10.13189/saj.2024.120101

Putra, D. D., Okilanda, A., Arisman, A., Lanos, M. E. C., Putri, S. A. R., Fajar, M., Lestari, H., & Wanto, S. (2020). Kupas Tuntas Penelitian Pengembangan Model Borg & Gall. *Wahana Dedikasi : Jurnal PkM Ilmu Kependidikan*, *3*(1), 46. https://doi.org/10.31851/dedikasi.v3i1.5340

Tresnawati, T. 2010. Teknik Dasar Berenang. jakarta: horizon

Vijai Eduardo Nainggolan & Imran Akhmad. 2021. Pengaruh Latihan Goenrich Basic Backhand Terhadap Kemampuan Groundstroke Backhand Tennis Lapangan. Jurnal Prestasi Vol. 5 No. 1, Juni 2021: 10-16 p-ISSN : 2549-9394 e-ISSN : 2579-7093 https://jurnal.unimed.ac.id/2012/index.php/jpsi/index