



Dominant Physical Condition Of Porprov Karate Athletes Forki Kapuas Kata Category

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Abstract

Physical condition is an important factor for athletes during training and competitions. This study aims to assess the physical condition of PORPROV (Provincial sports week) Kapuas athletes who compete in karate in kata category . The research uses a descriptive quantitative approach. Data was collected using physical fitness tests, including Multi-Stage Fitness Test (MFT), standing board jump, push-up test, and standing stork test. The population of this study is PORPROV (Provincial sports week) FORKI (Federasi olahraga karate-do Indonesia) Kapuas athletes kata category which is 11 people and uses the total sampling technique which means that this study uses athletes from the entire population totaling 11 people. The findings revealed that the majority of athletes' physical condition fell into the "Enough" category in the four tests given. Based on these results, it can be concluded that the physical condition of athletes kata category is generally enough. The study can serve as a valuable evaluation tool for coaches and athletes in developing targeted physical training programs that address the key fitness components required in karate.



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INTRODUCTION

Karate martial arts is a traditional martial art from Japan, which is the art of fighting without weapons or bare hands according to its own name, *kara* which means empty and *te* which can be translated into Indonesian as hand (Junior and Wijono 2019). Karate-do can be interpreted as a powerful *seni* technique that allows a person to perform martial arts with his bare hands or without weapons (Hidayat et al., In karate martial arts, a word is a series of movements or combinations of movements that athletes use when using certain strategies and tactics that incorporate the value of harmony (Jariono et al. 2020). Karate focuses only on punches, kicks, stances, and parrying karate really requires leg endurance and hand muscle strength that can produce stable movements from start to finish while performing word movements. Emphasizing that maintaining or improving physical condition requires a comprehensive approach that cannot be divided into separate parts. All components must be developed in an effort to improve physical condition (Kadir et al. 2022). The importance of physical condition for an athlete is the main weapon to compete in the middle of the *tatami*, not only is it mentally needed to perform in the middle of people, but the endurance of the leg muscles is often the main factor in mistakes when playing a word, ranging from a horse that is not sturdy to strong legs, Makes an athlete fall when landing from a jump, this is certainly a very painful scourge for Karateka athletes.

Achievement is the main goal for an athlete, of course there are many factors that can affect athletes' achievements in achieving achievements, the life of athletes is also of course different from humans who are not

athletes from diet to sleep patterns that are not careless. To achieve maximum achievements, programmed, directed, and sustainable coaching is needed and supported by adequate support (Hamdan 2020). The athlete's training method is certainly different depending on what the goal of achievement is to be achieved, if a regional athlete wants to continue to compete at the national level such as PON then he must become a champion at the provincial level such as PORPROV, of course this is not an easy thing to achieve, athletes must know their physical abilities first, not only technical training must be done but the physical abilities of athletes are mandatory things that must be known by coaches and athletes themselves So that it can be a benchmark in determining the method of exercise to be carried out. One of the causes of the problem is the limited reference of coaches to the physical training model (Gunawan 2022).

Physical condition is an important element to achieve a champion during a sports match or tournament (Suhendra et al., 2023). The essence of physical fitness training is to improve skills and improve movement skills to the highest level (Arifin et al. 2022). A person's chances of success increase along with their level of physical fitness or talent. On the other hand, it becomes more difficult to achieve victory if one's physical condition deteriorates.

If a player has a poor physical condition, then he will have difficulty performing sports activities and experience excessive fatigue (Amirudin and Abdillah 2020). Karate martial arts kata category require various physical attributes, such as strength, speed, explosiveness of the leg muscles, and cardiovascular endurance (Gultom et al., 2019). Based on a review of the previous research literature, all physical abilities in sports must have a dominant physical

condition that plays an important role when it comes to achieving achievement.

The importance of knowing the physical condition of athletes is so that the coach can choose the right training method. An athlete can show his best performance if he has excellent physical condition because it will not be difficult for them to follow the training plan that has been made and explained from the coach (Mustofa and Sahri 2022). To achieve optimal physical health, athletes must be highly motivated and disciplined in using sports techniques to achieve good physical condition (Hardiansyah et al., 2022).

The purpose of this study is to assess the physical health of FORKI Kapuas athletes participating in PORPROV. It is hoped that by understanding the outcomes of multiple tests, a clear picture of the physical weaknesses of athletes will be obtained. Additionally, coaches and athletes will receive recommendations on how to improve the quality of training for better performance, enabling them to create a more organized and efficient training schedule.

Based on the author's interviews with trainers at the dojo in the Kapuas regency area, usually only focus on techniques and movements kata while physical condition factors are not the main focus of training in the Kapuas region even though physical condition is also an important element to be able to compete in karate to the maximum so that this becomes an urgency for karate achievements in Kapuas which are only able to obtain achievements at the provincial level, so this study was conducted to find out the physical condition of FORKI Kapuas karate athletes in the kata category.

METHOD

Research techniques are scientific methods used to collect data for specific purposes. The four keywords that need to be considered in this case are: scientific approach, data, goals to be achieved, and how the results will be used (Sugiyono, 2020). This type of research uses a quantitative method with a descriptive approach. The method is used to determine the physical condition of athletes through research design in the form of the use of test and measurement instruments. This research was conducted on March 10, 2025 at the Kuala Kapuas 1011 Military Command.

Participants

Populations and samples are very important basic concepts in research, as they are the main cornerstone for producing valid, generalizable, or in-depth conclusions about the phenomenon being studied (Subhaktiyasa, 2024). The population in this study is PORPROV FORKI Kapuas athletes. In this study, it consisted of 8 women and 3 men who were still in high school age until the sample used consisted of 11 karate athletes in the FORKI Kapuas word category.

Sampling Procedure

The sampling technique used was total sampling, which used the entire population of 11 people from. Total sampling is a sampling technique in which every member of the population is included as a sample. This approach is typically used when the population size is relatively small, generally fewer than 30 individuals, making it feasible to involve all members in the study (Aiman et al., 2022).

Materials and Equipment

In research, of course, tools are needed in data collection with the aim of helping researchers to obtain data. Every researcher certainly uses instruments or tools for data collection, instruments are tools used to collect data (Firmansyah et al., 2025).

In this study, the author has prepared several tools to be used in data collection as follows: 1. Cone to limit the athlete's stop and run 2. Meter to measure distance on the standing board jump 3 test. The sound system is used to amplify the sound in the room so that the athlete can hear the directions coming from the specified music. 4. Stopwatch to calculate the time on the push up test and balance test.

The instrument used in the research on the dominant physical condition of PORPROV FORKI Kapuas athletes in the word category is a measurement test. To determine the efficiency of training, it is necessary to carry out periodic tests and measurements to monitor the physical condition of each athlete (Susilo & Wiriawan, 2021).

Prosedur

Prosedur dalam pengumpulan data adalah hal yang harus di tentukan sesuai dengan peralatan yang sudah di siapkan. Dalam beberapa tes prosedur yang di gunakan tentu berbeda karena tes fisik juga berbeda, ada 4 tes yang di lakukan yaitu:

1. MFT (Multi stage fitness)

This test is one way to measure a person's cardiovascular endurance (Dring et al., 2019)

- Athletes stand behind a cone arrangement.
- The athlete starts running to the cone line on the other side when hear the audio beep and stop

when both legs reach the cone line before the next beep.

- Athletes are running again when they hear the audio beep in the opposite direction.
- Speed will increase at each level, the time interval between beeps will be shorter.
- If athletes who fail to reach the line before the beep sounds will be given 2 times to return to the rhythm.
- The test ends if the athlete fails to reach the line on time in 2 consecutive times or is exhausted.

2. 60 second push-ups

A 60-second push-up is a form of fitness test or exercise in which a person performs as many push-ups as possible in 60 seconds or 1 minute. It is used as an indicator of the strength and endurance of the upper body muscles, specifically the pectoralis major), shoulders (deltoid), triceps, and core muscles (Ummah, 2019)

- Both hands are shoulder width apart and the arm are fully extended and for woman knee position at the bend
- The body position should be straight
- Lower your body until your elbows form 90 degrees
- Return to the starting position with arms fully extended
- Push up activities continue to be done for 60 seconds
- Complete as many push-ups as possible

3. Standing stork test

The standing stork test is a test to measure a person's balance (Sepdanius et al., 2019)

- Stand on both feet
- Hands placed on hips

- Lift one leg and place the finger on the foot on the knee of the other leg
- At the signal of the officer "ready, yes" raise heel and stand on toes resting on the floor
- The officer starts turning on the stopwatch
- Balance for as long as possible without letting your heels touch the floor or the other foot away from your knees
- Repeat the test for the other and reach do 3 reps

4. Standing board jump

A physical fitness test that gauges leg muscle explosive strength is the standing board jump (Adiatmika & Santika, 2016)

- Athletes stand behind the starting line, with their feet shoulder width apart
- The athlete bends his knees and leans forward while swinging both arms back then jumps forward as far as possible using both legs and lands with both feet together while maintaining balance
- The officer marks the athlete's landing on the heel or limb closest to the starting line
- Athletes were given the opportunity to test 3 reps

Desain atau Analisis Data

Quantitative research includes a systematic and structured approach, the use of standardized measurement instruments, data collection in the form of numbers (numerical data), and the application of statistical analysis to test hypotheses and validate research findings (Ardiansyah et al., 2023). Categorization is carried out to find out the level of achievement of each athlete based on the

results of the physical tests obtained. The initial data obtained from each test is raw data, so it needs to be converted into t-scores in order to be objectively compared. Once the data is converted into a t-score, the next step is to group the results into five scoring categories, namely: excellent, good, adequate, poor, and very poor. This categorization aims to describe the level of physical ability of each athlete in a clearer and measurable way.

Table 1. Assessment norms

Interval	category
$X \geq M + 1,5 \text{ SD}$	Very poor
$M + 0,5 \text{ SD} \leq X < M + 1,5 \text{ SD}$	Poor
$M - 0,5 \text{ SD} \leq x < M + 0,5 \text{ SD}$	Enough
$M - 1,5 \text{ SD} \leq x < M - 0,5 \text{ SD}$	Good
$X < M - 1,5 \text{ SD}$	Very good

(Mustofa & Sahri, 2022)

After the data is collected, an analysis is carried out in order to make inferences from the study. Quantitative descriptive analysis techniques using a percentage approach are used in this study's data analysis. In order to give a quantitatively clear image of each athlete's physical state, this technique is used to explain the distribution and proportion of athletes' physical test results in various specified categories.

$$P = \frac{F}{N} \times 100\%$$

RESULT

Table 2. Durability test results

Category	Interval	Frequency	Percentage
Very poor	$X < 35$	0	0%
Poor	$35 < x \leq 45$	5	45%
Enough	$45 < x \leq 55$	2	18%
Good	$55 < x \leq 65$	3	27%
Very good	$X > 65$	1	9%
Total		11	100%

Based on Table 2 of the results of the Modified Fitness Test (MFT), it can be seen that most of the athletes are in the poor category, which is as many as 5 people or 45% of the total sample.

Furthermore, as many as 3 people (27%) were in the good category, then 2 people (18%) were in the fair category, and only 1 person (9%) was classified as very good. This data shows that the majority of athletes still need to improve the fitness aspect as measured through the MFT test.

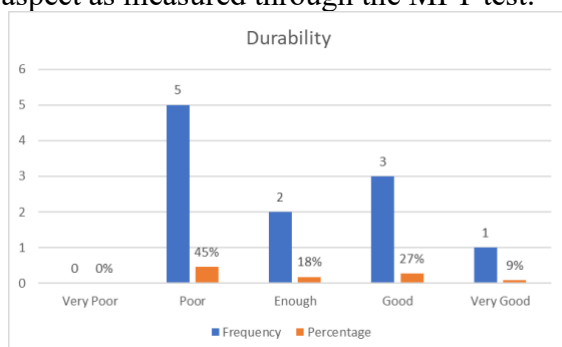
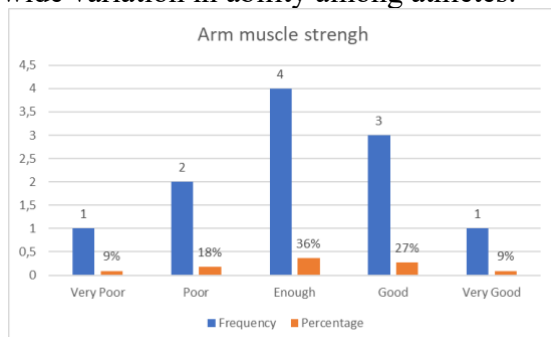


Figure 1. Durability percentage graph

Table 3. Arm muscle strength test results

Category	Interval	Frequency	Percentage
Very poor	$X < 35$	1	9%
Poor	$35 < x \leq 45$	2	18%
Enough	$45 < x \leq 55$	4	36%
Good	$55 < x \leq 65$	3	27%
Very good	$X > 65$	1	9%
Total		11	100%

Based on Table 3 of the push-up test results, it is known that the category of enough has the most frequency, which is 4 people or 36% of the total sample. Furthermore, there were 3 people (27%) who were in the good category, 2 people (18%) in the poor category, and 1 person (9%) each who was in the very good and poor category. These results show that most athletes have arm muscle strength in the moderate category, but there is still a wide variation in ability among athletes.



Picture 2. Graph of the percentage of arm muscle strength

Table 4. Balance test results

Category	Interval	Frequency	Percentage
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Very poor	$X < 35$	0	0%
Poor	$35 < x \leq 45$	4	36%
Enough	$45 < x \leq 55$	3	27%
Good	$55 < x \leq 65$	4	36%
Very good	$X > 65$	0	0%
Total		11	100%

Based on table 4 of the results of the standing crane test, it is known that the most frequency is found in the poor and good categories, as many as 5 people each with a percentage of 36%. Meanwhile, in the sufficient category, there are 3 people with a percentage of 27%.

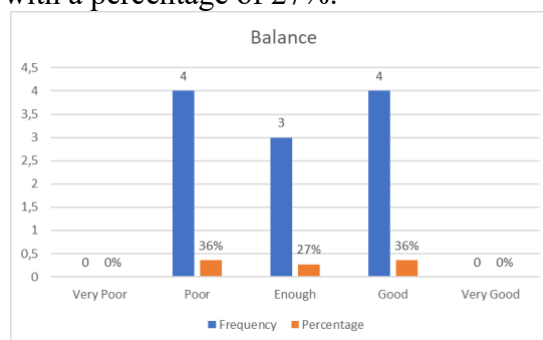


Figure 3. Balance percentage graph

Table 5. Leg muscle explosiveness test results

Category	Interval	Frequency	Percentage
Very poor	$X < 35$	1	9%
Poor	$35 < x \leq 45$	2	18%
Enough	$45 < x \leq 55$	6	55%
Good	$55 < x \leq 65$	1	9%
Very good	$X > 65$	1	9%
Total		11	100%

From the table of 5 standing board jump results, it can be seen that the highest frequency is in the sufficient category, which is 6 people with a percentage of 55%. Furthermore, the underserved category consists of 2 people with a percentage of 18%. In addition, there is 1 person in the very good category with a percentage of 9% and 1 person in the less than one category with a percentage of 9%.

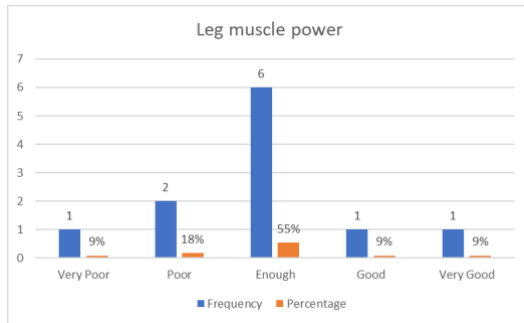


Figure 4. Graph of the explosive power of the leg muscles

DISCUSSION

Since karate martial arts is a martial sport, athletes' physical and mental health as well as their training methods, techniques, tactics, and strategies must be carefully considered. According to (Suhendra et al., 2023). One of the key elements in attaining sporting success is physical fitness, which is consistent with mental, strategic, and technical skills. Each sport has different physical needs, so the level of importance of physical conditions in supporting achievement also varies according to the type of sport. The success of the training program is significantly influenced by the participants' physical condition (Gati and Suyoko 2025). The karate kata category is a series of several basic karate movements and is sorted based on specific patterns of techniques in kata movements, namely punches, kicks, deflections, and horses. Physical condition greatly affects the performance of karate athletes, both in kata classes and committees because it will affect karateka movements ranging from punches, kicks to slams (Yunaisih and Amrullah 2024) Physical condition is very necessary, especially in sports that have the goal of achieving achievements (Triansyah et al., 2021). Karate techniques must be supported by good physical condition to produce beautiful word movements. Punching in good karate is when the

athlete has good hand muscle strength abilities. The maximum strength of the arm muscles is used as a strategy to generate stroke speed, which is obtained through the development of training techniques specific to the arm muscles (Lamusu and Lamusu 2023). As for players who have poor physical condition, they will have difficulty doing sports activities and experience excessive fatigue (Amirudin and Abdillah 2020). Physical condition itself is an important component that cannot be ignored and cannot be eliminated by every athlete to achieve his or her highest achievements (Susilo and Wiriawan 2021). Based on the results of the research that has been obtained, the researcher can explain and elaborate as follows:

1. Durability

The results obtained in the MFT (Multistage fitness test) test are known that the level of endurance of Kapuas karate athletes is 5 people in less than 11 athletes, 2 athletes in sufficient condition, 3 athletes in good condition and there is only 1 athlete whose physical condition is in the very good category. Of course, this must be an important focus in order to increase the endurance of athletes to avoid fatigue when competing. People who have a good immune system will not easily feel tired or exhausted (Kurnia & Anggraini, 2020).

2. Arm muscle strength

Based on the results of the push up test, it can be found that there is 1 athlete in less condition, 2 people in less condition, 4 athletes in sufficient condition, 3 people in good condition, and only 1 in very good condition, the strength of the arm muscles affects in doing punches so that the weaker the strength of an athlete's arm muscles, the more difficult it is for the athlete to perform punch movements. The

effectiveness of arm muscle strength makes a great and significant contribution to the success of the punch (Asmuddin, 2024).

3. Balance

Based on the results of balance using the standing stork test, it can be known that there are 4 athletes in poor condition, 3 in adequate condition, and 4 other athletes are included in the good category, both karate athletes balance is an important aspect because considering that in kata movements that have a high level of difficulty there are several movements that require the athlete to stand with only 1 leg. This makes balance important for an athlete Kata. Balance is one of the important elements in developing basic skills and skills in sports (Syamsul Taufik et al., 2022).

4. Explosive power of the leg muscles

Based on the results of the research obtained from the standing board jump test on Kapuas athletes, there were 1 athlete in very poor condition, 2 athletes in the bad category, 6 athletes were in sufficient condition, in the good category 1 athlete, and very good there was 1 athlete. The explosiveness of the leg muscles is important for karate athletes because in some movements the word requires the athlete to do kicks so this should be an important focus in practicing karate. The explosiveness of the leg muscles plays an important role in increasing the speed of Mae Geri in a karateka (Akli & Mandan, 2024).

The physical state of PORPROV FORKI Kapuas athletes in the kata category is known to be adequate based on the results of the conducted research. Naturally, this can serve as evaluation material for coaches and athletes to select a more suitable training approach and concentrate more on physical training than previously. Athletes practicing

martial arts must possess strong physical attributes since these qualities influence their technique, tactics, and mindset will be formed (Hardiansyah et al., 2022). To improve the degree of physical freshness and functioning ability of the body apparatus, physical circumstances require careful, methodical planning and serious attention. (Arifin et al., 2022).

This research was carried out with very careful preparation and as best as possible, but of course it is not spared from the shortcomings and limitations that exist. The researcher's awareness of the shortcomings of this research is that the research time is carried out at 20.00 WIB so that it is possible that the energy of the athletes is not optimal in conducting tests because it has been used in other activities.

CONCLUSION

The physical condition situation of porprov athletes in the kata category in Kapuas Para Kohai/Karateka Regency is still in the enough category, according to the findings of research and discussions compiled for this study. To get better results, the instructor and the athlete themselves should pay attention to the improvement of their physical condition through the selection of the most appropriate exercise regimen. It is intended that by choosing the right physical training approach, the player's future proficiency training can improve even further.

REFERENCE

- Adiatmika, I. P. G., & Santika, I. G. N. A. (2016). Bahan Ajar Tes Dan Pengukuran Olahraga. In *Udayana University Press* (P. 80).
- Aiman, U., M.Pd., K. A. S. H. M. A. Ciq. M. J., Suryadin Hasda, M. P. Z. F., M.Kes. Masita, M. P. I. N. T. S. K., & M.Pd. Meilida Eka Sari, M. P. M.

- K. N. A. (2022). Metodologi Penelitian Kuantitatif. In *Yayasan Penerbit Muhammad Zaini*.
- Akli, U., & Mandan, A. (2024). Hubungan Daya Ledak Otot Tungkai Dengan Kecepatan Mae Geri Pada Karateka Dojo Tirex Kota Pekanbaru. *Journal Education And ...*, 2, 239–250. <https://Journal.Wiyatapublisher.Or.Id/Index.Php/E-Gov/Article/View/95>
- Amirudin, A., & Abdillah, S. (2020). *Analysis Of Physical Conditions Of Aerobic Endurance Or Vo2max*. 407(Sbicsse 2019), 117–119. <https://doi.org/10.2991/assehr.k.200219.033>
- Ardiansyah, Risnita, & Jailani, M. S. (2023). Teknik Pengumpulan Data Dan Instrumen Penelitian Ilmiah Pendidikan Pada Pendekatan Kualitatif Dan Kuantitatif. *Jurnal Ihsan : Jurnal Pendidikan Islam*, 1(2), 1–9. <https://doi.org/10.61104/Ihsan.V1i2.57>
- Arifin, R., Kahri, M., Rahman, M. H., & Faisal, M. (2022). Program Latihan Peningkatan Kondisi Fisik Pemain Sepakbola Junior Kabupaten Tanah Laut. *Jurnal Pendidikan Olahraga*, 11(2), 288–292. <https://doi.org/10.31571/jpo.v11i2.4578>
- Asmuddin. (2024). *Efektivitas Kekuatan Otot Lengan Terhadap Pukulan Lurus Pencak Silat Pada Siswa Sma Negeri 2 Kendari*. 5(1), 20–30.
- Dring, K. J., Cooper, S. B., Morris, J. G., Sunderland, C., Foulds, G. A., Pockley, A. G., & Nevill, M. E. (2019). Multi-Stage Fitness Test Performance, Vo2 Peak And Adiposity: Effect On Risk Factors For Cardio-Metabolic Disease In Adolescents. *Frontiers In Physiology*, 10(May), 1–13. <https://doi.org/10.3389/fphys.2019.00629>
- Firmansyah, S., Sobarna, A., & Ishak, M. (2025). *Kinestetik : Jurnal Ilmiah Pendidikan Jasmani Evaluation Of The West Java Karate Team Training Program At Pon Xxi Aceh And North Sumatera In 2024*. 9(1), 128–139.
- Gati, S., & Suyoko, A. (2025). *Evaluasi Tingkat Kondisi Fisik Atlet Karate Pada Dojo Jiwa Prestasi*. 8.
- Gultom, T. E., Sugiyanto, S., & Defliyanto, D. (2019). Profil Kondisi Fisik Atlet Karate Junior Putra Perguruan Inkanas Kota Bengkulu Tahun 2019. *Kinestetik*, 3(2), 208–215. <https://doi.org/10.33369/jk.v3i2.8922>
- Gunawan, H. S. R. (2022). Pengembangan Model Latihan Fisik Olahraga Karate Berbasis Profil Biomotorik Atlet. *Tadulako Journal Sport Sciences And Physical Education*, 0383, 28–33.
- Hamdan. (2020). *Studi Analisis Prestasi Atlet Karate Pplp Dispora Provinsi Sulawesi Selatan*. 2507(February), 1–9.
- Hardiansyah, H., Vai, A., & Sulastio, A. (2022). Profil Kondisi Fisik Atlet Karate Di Pusat Pelatihan Dan Pendidikan (Pplp) Riau Saat Mewabah Covid-19. *Journal Respecs*, 4(2), 56–63. <https://doi.org/10.31949/respecs.v4i2.2551>
- Hidayat, T., Mahardhika, N. A., Kalimantan Timur, M., Muhammadiyah, U., & Timur, K. (2023). Peran Orang Tua Dalam Mendukung Prestasi Olahraga Atlet Karate Lebah Bukit Wira Samarinda. *Journal Olahraga Rekat (Rekreasi Masyarakat)*, 2(1), 58–65.
- Jariono, G., Subekti, N., Indarto, P., Hendarto, S., Nugroho, H., & Fachrezzy, F. (2020). Analisis Kondisi Fisik Menggunakan Software Kinovea Pada Atlet

- Taekwondo Dojang Mahameru Surakarta. *Transformasi: Jurnal Pengabdian Masyarakat*, 16(2), 133–144.
<https://doi.org/10.20414/Transformasi.V16i2.2635>
- Juniar, M. A., & Wijono. (2019). Profil Kondisi Fisik Atlet Karate Persiapan Porprov Kabupaten Tuban Tahun 2019. *Jurnal Prestasi Olahraga*, 2(1), 1–12.
<https://ejournal.unesa.ac.id/index.php/jurnal-prestasi-olahraga/article/view/28720>
- Kadir, S., Dulanim, H., B. Usman, A., Duhe, E. D. P., & Hidayat, S. (2022). Evaluasi Komponen Kondisi Fisik Atlet Karate. *Jambura Journal Of Sports Coaching*, 4(1), 29–38.
<https://doi.org/10.37311/Jjsc.V4i1.13445>
- Kurnia, M., & Anggraini, H. (2020). Pengaruh Latihan Jogging Terhadap Daya Tahan Kardiorespirasi Pada Atlet Taekwondo Survivar 5 Club Palembang. *Jurnal Halaman Olahraga Nusantara*, 3(I), 9–20.
- Lamusu, A., & Lamusu, Z. (2023). Kekuatan Otot Lengan Dengan Kecepatan Pukulan Gyaku Tsuki Chudan Karate Mahasiswa. *Jambura Journal Of Sports Coaching*, 5(1), 72–79.
<https://doi.org/10.37311/Jjsc.V5i1.17893>
- Mustofa, A. I., & Sahri, S. (2022). Analisis Kondisi Fisik Atlet Karate. *Sriwijaya Journal Of Sport*, 2(1), 38–44.
<https://doi.org/10.55379/Sjs.V2i1.515>
- Sepdanius, E., Rifki, M., & Komaini, A. (2019). Tes Dan Pengukuran Olahraga. *Sustainability (Switzerland)*, 11(1), 1–14.
[http://scioteca.caf.com/bitstream/handle/123456789/1091/Red2017-Eng-](http://scioteca.caf.com/bitstream/handle/123456789/1091/Red2017-Eng-8ene.Pdf?Sequence=12&Isallowed=Y%0ahttp://dx.doi.org/10.1016/J.Regsciurbeco.2008.06.005%0ahttps://www.researchgate.net/publication/305320484_Sistem_Pembetulan_Terpusat_Strategi_Melestari)
- 8ene.Pdf?Sequence=12&Isallowed=Y%0ahttp://dx.doi.org/10.1016/J.Regsciurbeco.2008.06.005%0ahttps://www.researchgate.net/publication/305320484_Sistem_Pembetulan_Terpusat_Strategi_Melestari
- Subhaktiyasa, P. G. (2024). *Menentukan Populasi Dan Sampel: Pendekatan Metodologi Penelitian Kuantitatif Dan Kualitatif*. 9, 2721–2731.
- Sugiyono. (2020). *Metodologi Penelitian Kuantitatif, Kualitatif Dan R & D*.
- Suhendra, Y., Amirudin, A., & Mulhim. (2023). Tingkat Kondisi Fisik Peserta Ekstrakurikuler Futsal Putra Di Man 4 Banjar. *Stabilitas: Jurnal Pendidikan Jasmani Dan Olahraga*, 4(3), 212–219.
<https://doi.org/10.20527/Mpj.V4i3.2306>
- Susilo, & Wiriawan, O. (2021). Analisis Hasil Tes Kondisi Fisik Atlet Karate Tahun 2017 Dan 2018 Koni Sidoarjo. *Jurnal Prestasi Olahraga*, 4(5), 142–148.
- Syamsul Taufik, M., Hazami, F., Widiastuti, W., & Hermawan, I. (2022). Model Latihan Balance Berbasis Swiss Ball Terhadap Karateka U-21. *Jurnal Ilmu Keolahragaan*, 5(1), 43.
<https://doi.org/10.26418/Jilo.V5i1.52457>
- Triansyah, A., Khumaini, A., & Simanjuntak, V. (2021). Hubungan Kondisi Fisik Terhadap Pretasi Atlet Beladiri Pra-Pon Xx Kalimantan Barat. *Snhrp*.
<https://snhrp.unipasby.ac.id/prosiding/index.php/snhrp/article/view/223%0ahttps://snhrp.unipasby.ac.id/prosiding/index.php/snhrp/article/download/223/186>
- Ummah, M. S. (2019). Tes Dan Pengukuran Untuk Evaluasi Dalam Pendidikan Jasmani Dan Olahraga. In *Sustainability (Switzerland)* (Vol. 11, Issue 1).

[Http://Scioteca.Caf.Com/Bitstream/Handle/123456789/1091/Red2017-Eng-8ene.Pdf?Sequence=12&Isallowed=Y%0ahttp://Dx.Doi.Org/10.1016/J.Regsciurbeco.2008.06.005%0ahttps://Www.Researchgate.Net/Publication/305320484_Sistem_Pembetulan_Terpusat_Strategi_Melestari](http://Scioteca.Caf.Com/Bitstream/Handle/123456789/1091/Red2017-Eng-8ene.Pdf?Sequence=12&Isallowed=Y%0ahttp://Dx.Doi.Org/10.1016/J.Regsciurbeco.2008.06.005%0ahttps://Www.Researchgate.Net/Publication/305320484_Sistem_Pembetulan_Terpusat_Strategi_Melestari)
Yunaisih, R., & Amrullah, A. (2024). *Analisis Kondisi Fisik Atlet Beladiri Karate Kelas Kata Di Dojo Semeru Karate Kids Kota Semarang Analysis Of The Physical Condition Of Kata Class Karate Athletes At Dojo Semeru Kids Semarang Ilmu Keolahragaan* , Fakultas Ilmu Keolahragaan , Universitas Neg. 3(2), 69–76.