



## Coaching Pattern Of Rock Climbing Sports In Grobogan Regency

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### ABSTRACT

This study aims to describe the pattern of rock climbing sports coaching in Grobogan Regency. The research method used was qualitative descriptive with triangulation techniques through observation, interviews, and documentation of FPTI administrators, coaches, and rock climbing athletes. The results of the study show that coaching is carried out in stages, starting from massaging through education at school and social media, nurturing athletes from an early age, and increasing achievement in a structured manner. The main obstacles to coaching include suboptimal organizational performance, limited human resources, inadequate facilities and infrastructure, and funding that still depends on KONI and third parties. The training program includes physical, technical, mental, and safety aspects as well as character building. The coaching pattern is in accordance with the theory, but improvements are needed in the aspects of management, facilities, and award regulations so that coaching can produce more outstanding athletes and optimize the potential of rock climbing sports in Grobogan Regency.

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- B. Acquisition of data;
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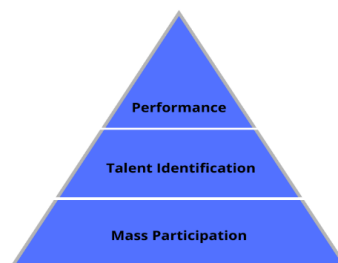
## INTRODUCTION

Sport is a form of physical activity that involves the mind, soul, and body in an integrated and systematic manner to obtain joy and restore physical and mental health (Dermawan D., 2022). Meanwhile, according to (Romadona et al., 2022) Exercise is a physical activity that aims to maintain health and strengthen the muscles of the body. Sports itself has a universal nature; even sports are called the universal language of the world. Through sports, regardless of origin, background, religious beliefs, or economic status, they will be able to be interconnected (Siregar et al., 2021). Good exercise is physical activity that is done regularly and continuously with an appropriate intensity (Saufi et al., 2024).

Sports also contribute to advancing the quality of the nation. Sports activities can be used as an effective means to explore and develop individual potential, so that they are able to achieve success in the field of sports (Rohani & Anam, 2022). An achievement, of course, cannot be separated from performance and a series of efforts, namely, from the process of training and management of coaching programs (Siregar et al., 2021).



The development and search for superior seeds in the field of sports is an important issue that requires special attention. The process of coaching and developing sports, which is part of improving the quality of Indonesian people, is directed to improve the physical, mental, and spiritual health of the community. In addition, the main goal is to form character, personality, discipline, and sportsmanship, as well as improve achievements that can foster a sense of pride in the nation. According to (Purwati, M.I, Mahardika, I, M, 2021) Sports coaching can be understood as a system consisting of several main components or pillars. These pillars include integrated financial, organisational and sports policy support. In addition, there are also aspects of massaging and nurturing athletes, developing achievements, and coaching for elite groups. Improvement of achievements, until reaching the top, is achieved through a systematic, planned, orderly, and continuous coaching process (Muhammad Zailul Rizky & Mokhamad Nur Bawono, 2024).



**Figure 1.**

Pyramid of sports coaching

Sports coaching has its own professionalization. A sports coach needs to understand the various aspects of coaching development that aim to improve the quality of athletes (Rosyda & Siantoro, 2021). Coaches play an important role in finding athletes' talents, as well as directing and nurturing them to achieve sustainable achievement.

The guidance and coaching of early age athletes in the context of planning to achieve peak achievement requires special attention and is fostered with a clear system. This process usually lasts for a long period of time, which is about 8 to 10 years, where the stages must be carried out gradually, consistently, and continuously. These stages include nurturing or identifying talents, specialization in a specific sport, and expected performance enhancement (Pangestu, 2021). This level and continuation are very important in achieving development and coaching (Alvian & Syafii, 2020).

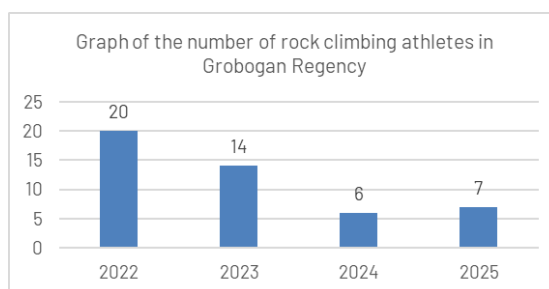
As a nation, coaching efforts in various aspects of life must be carried out seriously in order to make a real contribution to national development. Progress in the field of sports needs to be supported by improving the quality of human resources. Therefore, the coaching and development of sports that play an important role in national development must be carried out with a structured and clear system. One of them is in the sport of rock climbing.

Rock climbing is one of the sports that is popular these days. Rock climbing is an outdoor sport in which participants climb the walls of mountain cliffs with a higher level of difficulty and a greater risk of accidents compared to other sports (Arya T Candra & Vebri Gusdi Hidayat, 2023).

Along with the times, rock climbing is now more accessible. Although previously climbers had to go to the cliff location to be able to practice, nowadays it can be done in various places due to the existence of artificial walls designed to resemble cliffs. This allows more people to enjoy the challenges and excitement of rock climbing without having to go far. In carrying out climbing, complete equipment and special assistance are needed so as not to endanger safety. Rock climbing is an individual and team sport. The numbers or categories that are contested in rock climbing are speed, lead (long course difficulty), and boulder (short course difficulty).

The sport of rock climbing is increasingly widespread and very popular abroad and domestically, and was later formed by the Indonesian Rock Climbing Federation (FPTI), which is under the auspices of the National Sports Committee (KONI). Rock climbing is one of the sports that is often contested in various regional championships (Porprov and Kejurda) and national championships (PON and Kejurnas), and even at the international level (Sea Games, Olympics).

The management of the Indonesian Rock Climbing Federation (FPTI) of Grobogan Regency was formed in 2001. FPTI Grobogan has produced several great athletes and even scored the world champion. In 2018, an athlete from Grobogan Regency Aries Susanti Rahayu won a gold medal and broke the world record in the women's speed world record in the rock climbing World Cup event in Xiamen, China, with a time of 5.995 seconds. However, currently, rock climbing clubs in Grobogan Regency have experienced a decline in achievements and the number of athletes. Data on the number of athletes from year to year continues to decline, and training has stopped completely from 2023 to 2025. The following is data on the number of rock climbing athletes in Grobogan Regency.



**Graph 1.**

Number of rock climbing athletes in Grobogan Regency

The following is the data on the achievements of rock climbing athletes in Grobogan Regency.

**Table 1.**

Rock Climbing Achievement Data in Grobogan Regency

No.	Year	Achievement			Information
		Gold	Silver	Perunggu	
1.	2018		1		PORPROV XV
2.	2023			4	PORPROV XIV
3.	2024	1	2	1	KEJURPROV KU
4.	2025		1		KEJURPROV KU

Based on the results of the observations made, the researcher chose the sport of rock climbing because, after the XVI Central Java Porprov championship in 2023, the development of rock climbing sports achievements in Grobogan Regency was not carried out optimally, which resulted in athletes in Grobogan Regency finding it difficult to develop, which had an impact on decreasing the number of athletes. This decline is caused by many factors, including the organization that has not been formed optimally, competent human resources are still limited, the participation of the surrounding community has not been maximized, and the facilities and infrastructure are inadequate for the process of coaching rock climbing sports in Grobogan Regency.

The questions that will be asked in the study are: 1) How is the mass of rock climbing sports in Grobogan Regency? 2) How is the coaching of rock climbing sports in Grobogan Regency? 3) How is the development of rock climbing achievements in Grobogan Regency?

The objectives of this study are 1) to find out and describe the massaging or culture of rock climbing sports in Grobogan Regency. 2) To find out and describe the breeding of rock climbing sports athletes in Grobogan Regency. 3) To find out and describe the development of rock climbing achievements in Grobogan Regency.

## **METHODS**

The approach of this research is qualitative descriptive research, namely, data collected in the form of words, images, and not numbers. (Nurwanda, 2021) Descriptive research can be understood as a study that seeks to describe certain phenomena systematically and objectively. The purpose of this study is to collect the latest information. Thus, this study will present data that describes the program implementation process, as well as various obstacles faced in the context of fostering rock climbing sports achievements in Grobogan Regency. In this study, data analysis aims to describe and understand certain topics, so that it can provide a clear and accurate picture of the "Pattern of Rock Climbing Sports Development in Grobogan Regency".

This research was conducted at the Grobogan Regency rock climbing sports club located on Jl. Purwodadi-Grobogan, Jangkungharjo District, Brati District, Grobogan Regency, Central Java, which is a nursery for athletes and at the Krida Bhakti Stadium, located on Jl. MH. Thamrin, North Simpang, Purwodadi, Purwodadi District, Grobogan Regency, Central Java. The object of this research includes FPTI administrators, coaches, and rock climbing athletes in Grobogan Regency who can provide factual data sources based on circumstances.

In data validation, triangulation techniques are used. Triangulation involves combining various data sources, types of methods, theories, or even researchers to verify and reinforce results. As has been done, it includes observation, interview, and documentation methods (Mekarisce, 2020). The data analysis technique in this study is divided into several stages, namely data reduction, data presentation, and drawing conclusions or verification.

## RESULTS AND DISCUSSION

### Result

This study applies observation, interview, and documentation methods as supporting tools. The research focus includes athlete coaching, organizations, facilities, and training programs. Meanwhile, the subjects investigated in this study consisted of 1 administrator, 2 coaches, and 4 athletes. The results of the interviews and documentation obtained show that the coaching of climbing sports achievements in Grobogan Regency is in line with the theory formulated by Djoko Pekik Irianto.

To achieve the best results for athletes, it requires planned, focused, and sustainable development and supported by adequate facilities. It includes the process of bulking, seeding, and achieving peak performance. In this context, the pattern of national sports development based on the pyramid structure will be used as an approach to achieve optimal national sports achievements (Abdurrahman et al., 2024).

### Mass Participation

The first step in the implementation of achievement coaching is massaging. This process is carried out regularly and continuously. To produce quality athletes, preparation must begin early through problem-solving programs. For the strategy of massaging rock climbing sports, it is carried out with direct interaction in schools and through social media. This can be done by inviting children and teenagers to actively participate in rock climbing sports activities. In this way, we can observe their interest in the sport.

### Talent Identification

The guidance and coaching of early age athletes in the context of planning to achieve peak achievement requires special attention and is fostered with a clear system. The nursery carried out by the Grobogan rock climbing club is carried out from an early age to high school level, by looking at special criteria such as physical and spiritual health, and not being afraid of heights. Nurseries are carried out to continue regeneration and produce talented athletes. Therefore, the nursery process is the most effective method to build a solid foundation, so that it can proceed to the next step towards achieving higher achievements.

### Performance

To optimize your abilities in the world of sports, it is very important to receive coaching from an early age. This is done with a research-based, regular, gradual, and consistent approach over a period of eight to ten years (Abrar & Fitroni, 2021).

Achievement coaching at FPTI Grobogan is carried out through three stages of training, namely the multilateral stage, the specialization stage, and the peak achievement stage. At the multilateral level, the exercises given are basic rock climbing exercises to improve basic movement skills. Meanwhile, at the specialization stage, the exercises given are adjusted to the abilities of each athlete, such as those who have talents in lead, speed, and boulder classes, both individually and as a team. After passing the multilateral and specialization stages, it is expected that athletes can achieve maximum achievement according to the targets set by them and the coach.

## **Construction Stage**

Coaching is an effort made to improve or achieve better results. In the 2005 Law on the National Sports System Article 1 Paragraph 23 (2006:13), it is stated that sports coaching and development is a conscious effort that is carried out systematically to achieve sports goals. Coaching and development are carried out through the stages of sports introduction, monitoring, guidance, talent development and performance improvement.

The coaching process at the Grobogan rock climbing club is carried out gradually and continuously with the intention of honing the ability of athletes from an early age to achieve achievements at the regional and national levels. The Grobogan Regency rock climbing club develops athletes by starting recruitment from a young age, usually from children in elementary school to teenagers. Recruiting athletes is usually done at the beginning of the new school year, along with schools (junior high school/vocational school) and the surrounding community of nature lovers. The breeding process can also be done through general registration, where interested individuals can take part, and their talents will be observed by trainers.

Basic and advanced training coaching for new rock climbing athletes in Grobogan Regency receive physical, basic techniques, and mental sportsmanship training from an early age. The training process is carried out in stages, starting from the introduction of basic elements of rock climbing, such as movements, grips, and the use of tools, to more complex technical exercises according to the individual athlete's abilities. This training program also includes character and discipline development, an understanding of safety, and the development of strength and agility.

The coaching and development of the achievements of the Grobogan Regency rock climbing club is that, after the athletes display specific skills, they are grouped according to age and ability level. The coach designed the training program neatly: in the form of physical exercises, techniques, and preparation for the championship (lead, speed, boulder). Physical coaching carried out at the Grobogan Regency rock climbing club emphasizes more on muscle strength in the upper body area (arms, back, shoulders), strength in the legs, core muscles, endurance, balance, flexibility, and hand grip ability. This is because rock climbing is a sport that relies heavily on the physical ability to lift, hold, and push one's own weight on an upright wall, while maintaining stability and agility in every movement. Even though infrastructure, such as wall climbing, points, and volumes, is still far behind other cities and has not been upgraded until now.

The mental training coaching carried out at the Grobogan Regency rock climbing club is to motivate courage and confidence because it is related to height, provide full support to learn and accept failure as part of the process towards success, training and sparring outside the city to train mentally when competing and facing opponents. Based on the results of the statement, the Grobogan Regency rock climbing club is considered good and in line with the prevailing theory.

## **Athlete**

Athletes are individuals, both men and women, who specifically train their physical abilities and techniques to compete in different types of sports. According to (Abrori &

Primasoni, 2022) Athletes are individuals who are focused on achieving the highest possible achievements. Therefore, an athlete must have optimal potential in the sport he is involved in in order to achieve high achievements. In simple terms, an athlete or sportsman is someone who earnestly pursues and actively trains to achieve achievements in his chosen sport.

Good coaching can improve athletes' performance through careful planning, efficient use of resources, and the provision of the necessary support to overcome the various challenges that arise during the coaching process (Putri et al., 2025). An athlete's success can not only be measured by the physical achievements they have achieved, but it also includes mentality, traits, work ethic, as well as the ability to continuously learn and understand every step on the path to success. No athlete has ever experienced failure, because from failure they are motivated to train harder to achieve success.

To support the success of athletes, FPTI Grobogan Regency helps as much as possible in providing the necessary facilities, such as training tools and locations. In addition, FPTI Grobogan Regency also ensures the welfare of its athletes by providing full support in the cost of participating in the match and recommending outstanding athletes to KONI to receive awards or incentives for successful athletes.

### **Coach**

Coaches and athletes are a harmonious unit in the world of sports. A coach must be able to determine the right conditions and training portions for athletes. Therefore, a coach must really master their field, otherwise the risks faced can lead to the failure of the athlete in achieving their goals, including injuries or other health problems (Purbaningrum & Wulandari, 2021).

The Grobogan Regency rock climbing club has 3 coaches with good coaching skills and as shown by the existence of a coaching license. The role of the coach here is not just to coach but as a friend, parent, and teacher. The weakness of the Grobogan Regency coach is that he does not make a clear training program and does not make a measurable training periodization, so that athletes' abilities are difficult to develop, which affects athletes' achievements.

### **Facilities and Infrastructure**

To achieve maximum achievements, adequate facilities and infrastructure support are needed to meet the needs of athletes and achieve goals in the sports they are pursuing. Without the support of quality and sufficient facilities, the coaching process will not run according to expectations.

Table 1.2  
 Facilities and infrastructure of FPTI Grobogan

<b>Facilities and Infrastructure of FPTI Grobogan</b>	
<b>Facilities and Infrastructure</b>	<b>Sum</b>
Wall climbing speed	2
Wall climbing lead	1
Wall climbing boulder	1
Fitness equipment	7
Mattress	6
Harness	5

Climbing shoes	2
Tali carmentel	3
Carabiner	20
Webbing	5
Such prusik	5
Calk bag	4
Stuttgart	2
Descender	2
Askender	2
Pulley	2

Based on the results of the research conducted, the facilities at FPTI Grobogan are considered adequate and in good condition, but additional facilities are still needed to support the ongoing training program. Especially in Wall climbing, volume, points, and ropes have a useful life because Grobogan Regency lacks upgrades in this regard and is classified as far away from other cities, which affects the progress of training and achievements.

### Organisasi

According to (Muhammad & purnomo, 2021) an organization is a formal system of structured and coordinated fellowship, in which a group of people work together to achieve a specific goal.

**Table 1.3**  
Organizational Structure of FPTI Grobogan

Name	Position
Dr. Edi Mulyanto, M.Kes. M. Si. Med. Sp. S	Chairman
Ari Mulyanto, S. Pd., M.M	Daily Chief
Sri Setiyatmi Ekowati, S.E.	Secretary
Hayati, S. P	Treasurer

Achievement coaching in an organization is very important, where a mechanism is needed that can encourage athletes to become reliable in an effort to improve their achievements. Based on the results of the research obtained, the management of FPTI Grobogan has not run well; it only has an organizational structure, but the work program and division of tasks are not carried out properly. So that the coaching carried out is less than optimal and affects the development of FPTI in Grobogan Regency.

### Funding

Sports Funding in Government Regulation number 18 of 2007 is to provide financial resources or funds needed to organize sports. One of the important factors that supports the coaching process is the availability of adequate funds. This is because a rock climbing club naturally requires considerable costs to run its operations. From the results of the research, FPTI Grobogan's sources of funds are used for the coaching and development of athletes' achievements, namely KONI funds, CSR/third parties, and generous donations. Every time they participate in the championship, the athletes' costs are fully borne by the FPTI.

### Achievement

In general, achievements can be defined as the results achieved from various activities that have been carried out. According to Law No. 3 of 2005, as stated by



(Pertwi, 2021), "achievement is the result of maximum effort achieved by an athlete or group of athletes (team) in sports activities". Thus, achievement can be interpreted as the best achievement of the effort made by an athlete or team to get optimal results, both in training and in matches or competitions.

FPTI Grobogan has achieved many extraordinary achievements at the provincial, national, and international levels. Various championships have been celebrated both individually and as a team. Such as Aries Susanti Rahayu, who is known as Spiderwoman Indonesia and several other young athletes. The achievements obtained are also the result of hard and consistent training of the athletes.

### **Appreciation**

The awards given by FPTI Grobogan to outstanding athletes currently do not have special criteria. However, usually the successful athletes will receive awards from their respective schools and sometimes also from the local government. The awards received by athletes are generally in the form of cash from the giver. As well as recommending outstanding athletes to KONI to get awards or incentives for successful athletes.

## **CONCLUSION**

The pattern of coaching rock climbing in Grobogan Regency in 2025 is carried out in a planned and gradual manner, but it has experienced several problems that affect the progress of athletes' achievements. This coaching program includes massaging through education in schools and general enrollment, nurturing athletes from an early age, and improving achievements.

Coaching activities are carried out in stages ranging from recruitment to technical, physical, mental, and safety training. However, the implementation of the program and the division of tasks in the organization have not been optimal, which has had an impact on the decline in the number and achievement of rock climbing athletes in the last two years. Other factors that also affect are the limited infrastructure, human resources, and funding that still depend on KONI and third parties.

The coaching pattern in Grobogan Regency has followed the applicable theoretical stages and has a long-term coaching vision, but it needs to be improved in terms of management, facilities, and award regulations in order to be able to produce more outstanding athletes and optimize the potential of local rock climbing sports.

## **REFERENCES**

- Abdurrahman, E., Nasuka, N., Sulaiman, S., & ... (2024). Evaluasi Pembinaan Prestasi Olahraga Petanque Sumatera Utara. *Jurnal ...*, 11(1), 1-13. <https://ejournal.bbg.ac.id/penjaskesrek/article/view/2643%0Ahttps://ejournal.bbg.ac.id/penjaskesrek/article/download/2643/1600>
- Abrar, I. I., & Fitroni, H. (2021). Pembinaan Cabang Olahraga Bola Basket Pada Usia Dibawah 20 Tahun Di Jawa Timur. *Jurnal Kesehatan Olahraga* , 9(4), 145-154.

- Abrori, R. B., & Primasoni, N. (2022). Pengembangan Buku & Video Kepemimpinan dan Komunikasi Pelatih Sepakbola. *Jurnal Kepelatihan Olahraga*, 14(1), 37–48. <https://doi.org/10.17509/jko-upi.v14i1.43829>
- Alvian, M., & Syafii, I. (2020). Analisis Pembinaan Sekolah Sepakbola (Ssb) Usia Dini Widodo Kandang Tuban. *Jurnal Patriot*, 39–43. Article Text-67990-1-10-20210728.pdf
- Arya T Candra, & Vebri Gusdi Hidayat. (2023). Analisis Dampak Berteriak Terhadap Tingkat Kelelahan Dan Kecepatan Atlet Panjat Tebing. *SPRINTER: Jurnal Ilmu Olahraga*, 4(1), 27–34. <https://doi.org/10.46838/spr.v4i1.290>
- Dermawan D., R. A. N. (2022). *Journal of Physical Education ( JouPE ) MODEL LATIHAN DUMBBELL SIDE LUNGES DAN DUMBBELL*. 3(1), 1–4. <https://journal.uinsi.ac.id/index.php/bjsme/index>
- Mekarisce, A. A. (2020). Teknik Pemeriksaan Keabsahan Data pada Penelitian Kualitatif di Bidang Kesehatan Masyarakat. *JURNAL ILMIAH KESEHATAN MASYARAKAT : Media Komunikasi Komunitas Kesehatan Masyarakat*, 12(3), 145–151. <https://doi.org/10.52022/jikm.v12i3.102>
- Muhammad, P. N., & Purnomo, Mohammad. (2021). Dinamika Organisasi Kepengurusan Koni Kabupaten Probolinggo. *Jurnal Prestasi Olahraga*, 4(6), 95–106. <https://ejournal.unesa.ac.id/index.php/jurnal-prestasi-olahraga/article/view/40673%0Ahttps://ejournal.unesa.ac.id>
- Muhammad Zailul Rizky, & Mokhamad Nur Bawono. (2024). Evaluasi Tim Renang Kota Mojokerto Dalam Mengikuti Kejuaraan Daerah Renang Jawa Timur Tahun 2023. *Journal of Creative Student Research*, 2(4), 61–85. <https://doi.org/10.55606/jcsr-politama.v2i4.3987>
- Nurwanda, G. (2021). Pola Pembinaan Prestasi Olahraga Beladiri Wushu Koni Kabupaten Semarang Di Masa Pandemi Covid 19. *Journal of Physical Activity and Sports (JPAS)*, 2(3), 357–368. <https://doi.org/10.53869/jpas.v2i3.97>
- Pangestu, D. P. (2021). Manajemen Pembinaan Prestasi Olahraga Petanque Provinsi Jawa Timur. *Jurnal Prestasi Olahraga*, 21–28. <https://ejournal.unesa.ac.id/index.php/jurnal-prestasi-olahraga/article/view/39177>
- Pertiwi, I. (2021). Pembinaan Cabang Olahraga Pencak Silat PPLPD (Pembinaan Pendidikan dan Latihan Pelajar Daerah) Di Kabupaten Musi Banyuasin. *Corner: Jurnal Pendidikan Jasmani Dan Olahraga*, 2(1), 9–23. <https://doi.org/10.36379/corner.v2i1.191>
- Purbaningrum, A., & Wulandari, F. Y. (2021). Peran Pelatih Dalam Membentuk Karakter Atlet Atletik TPC-t Kota Kediri untuk Menunjang Prestasi. *E-Journal Universitas Negeri Surabaya*, 151–157. <https://ejournal.unesa.ac.id/index.php/jurnal-prestasi-olahraga/article/view/42182>
- Purwati, M.I; Mahardika, I,M, U. (2021). Evaluasi program pembinaan hockey di Kabupaten Bangkalan. *Jurnal Prestasi Olahraga*, 4(1), 1–11.
- Putri, A., Rasyid, R., Manajemen, P. S., & Padang, U. N. (2025). Manajemen Sumber Daya Olahraga Pada Cabang Olahraga Bela Diri : Literature Review. 7(1), 46–54.

- Rohani, S., & Anam, K. (2022). Manajemen Pembinaan Cabang Olahraga Pencak Silat Pada Pusat Pelatihan Atlet Pelajar (PPAP) Kabupaten Jepara Tahun 2021. *Jendela Olahraga*, 7(1), 90–99. <https://doi.org/10.26877/jo.v7i1.10427>
- Romadona, R. P., Widodo, A., Wahyudi, H., & Firmansyah, A. (2022). Analisis Faktor Penentu Kemenangan Atlet Cabang Olahraga Pencak Silat Kategori Tanding (Analisis Video Hasil Pertandingan Babak Final Kejuaraan Internasional Kelas Berbeda Usia Dewasa). *Indonesian Journal of Kinanthropology (IJOK)*, 2(1), 29–37. <https://doi.org/10.26740/ijok.v2n1.p29-37>
- Rosyda, Z. O., & Siantoro, G. (2021). Analisis manajemen pembinaan klub Tridharma tulungagung. *Manajemen, Pembinaan Olahraga*, 1–6.
- Saufi, F. M., Nurkadri, N., Sitopu, G. S., & Habeahan, G. F. (2024). Hubungan Olahraga Dan Kesehatan Mental. *Cerdas Sifa Pendidikan*, 13(1), 1–15. <https://doi.org/10.22437/csp.v13i1.33728>
- Siregar, F. S., Sembiring, M. M., Siregar, A., Medan, U. N., Utara, S., Olahraga, J., & Indonesia, K. (2021). *Jurnal Olahraga & Kesehatan Indonesia* available online at <https://jurnal.stokbinaguna.ac.id/index.php/jok> Analisis Perbedaan Kontribusi. 1, 102–108.