

Analysis of Attack Speed in Fencing Athletes

Tona, Erwan; Razali, Razali; Putra, Sukardi; Rizal, Syamsul; Hasanuddin, Iskandar

Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

Empfohlene Zitierung / Suggested Citation:

Tona, E., Razali, R., Putra, S., Rizal, S., & Hasanuddin, I. (2023). Analysis of Attack Speed in Fencing Athletes. *Path of Science*, 9(9), 6001-6005. <https://doi.org/10.22178/pos.96-10>

Nutzungsbedingungen:

Dieser Text wird unter einer CC BY Lizenz (Namensnennung) zur Verfügung gestellt. Nähere Auskünfte zu den CC-Lizenzen finden Sie hier:

<https://creativecommons.org/licenses/by/4.0/deed.de>

Terms of use:

This document is made available under a CC BY Licence (Attribution). For more information see:

<https://creativecommons.org/licenses/by/4.0>

Analysis of Attack Speed in Fencing Athletes

Erwan Tona¹, Razali¹, Sukardi Putra¹, Syamsul Rizal¹, Iskandar Hasanuddin¹

¹ Syiah Kuala University

Jln. Teuku Nyak Arief, Darussalam, Banda Aceh, Aceh, 23111, Indonesia

DOI: 10.22178/pos.96-10

LCC Subject Category:
GV1100-1150.9

Received 26.08.2023
Accepted 27.09.2023
Published online 30.09.2023

Corresponding Author:
Razali
razali.ismail@usk.ac.id

© 2023 The Authors. This article
is licensed under a Creative Commons
Attribution 4.0 License 

Abstract. Fencing is one of the leading sports in Indonesia, which is expected to become a top sport to win medals at every sporting event. In fact, up to now, Indonesian fencing athletes still face crucial problems in achieving this target. The condition of the training program being ineffective means that the athlete's ability level is challenging to develop and is stagnant, especially in attacking movement techniques. Attacks are the technique most often used by athletes and are crucial in getting points in every fencing match. The reality on the field is that fencing athletes often carry out attacks that do not produce points due to their low attack speed. This condition will make it easier for the opponent to predict attacks so that attacks can be easily avoided or evaded. So, practical training in fencing attacks is needed to improve the attack speed. This research aims to determine the condition of the Fencing attack speed level through attack movement techniques using static movements in Fencing athletes. This research uses a quantitative approach and a descriptive method. The population in this study were fencing athletes assisted by the Indonesian National Sports Committee, Aceh Province. The sample in this study consisted of 8 people. The instrument technique used to collect data in this research was an attack test instrument called the Kuhadja Fencing Test. Based on the results of the study that has been carried out, it can be concluded that the average attack speed through static movement is 4.37 m/s.

Keywords: speed; attack; static movement.

INTRODUCTION

Fencing is one of the leading sports in Indonesia. Fencing is also one of the sports that often achieves well in every multi-sport event. The factors that influence the decline in performance in the sport of fencing in Aceh today are the conditions of the techniques and tactics of movement in playing. Fencing is still inconsistent. Fencing techniques must develop and improve so that playing quality becomes superior. Developing fencing technical abilities refers to mastering basic procedures. Therefore, learning basic techniques is a serious concern in developing and enhancing the quality of the game [1]. If we look more specifically, the athlete's ability to carry out attack techniques is still ineffective and efficient. Attacks are significant fencing movements [2]. Therefore, it is essential to improve these movement abilities so that they are superior to other athletes.

This condition occurs because there is still a lack of attention from coaches to provide training

programs for athletes that focus on increasing effectiveness and efficiency in carrying out fencing attack techniques to get points/scores more easily and quickly. Athletes should receive a training program that focuses on perfecting their attack movement techniques and how they can become learning material in case studies and solving problems that often occur during competition [3]. The very high dynamism of fencing movements and the different characteristics of each opponent's abilities in competing make it difficult for these attacking movements to score. So, examining in more detail how this attack technique becomes more effective and efficient is essential.

Fencing attacks are a movement technique that athletes often rely on to gain points from their opponents. In fencing, the lunge is one of the critical movements every player must master [4]. Victory will occur if the athlete can collect points up to the limit of the rules set and limited by time in each match. So, the more skilled the fencing athlete is in carrying out attacks, the easier it will

be to get a score from the opponent, and of course, victory in each match will be easier to achieve.

The problem on the field is that the Aceh Fencing athletes' attacks often fail to hit their opponents, so they don't get points. This condition is caused because the spell is still easily recognised by the opponent, and in the end, the opponent easily avoids or evades the episode. As a result of this condition, athletes continuously fail to get points. The dynamic movements in the match require players to carry out attacks quickly so that the opponent cannot predict where the player's attack will go. The increasingly frequent failure of attacks carried out by these athletes means that the condition of the body's stamina continues to decrease. Continuously decreasing energy is certainly not good and will disrupt the stability of movement techniques and damage your concentration of thinking so that your chances of winning will be smaller. So, good attack speed is needed so the opponent cannot dodge and repel the attack. This movement requires strength and speed so that it is possible to bring the front foot one step or two steps forward to reach an influential final attack position [5].

The results of previous research still do not have an optimal impact on seeing and dealing with fencing attack conditions to make them more effective and efficient because the method still uses static movements. Meanwhile, playing fencing, of course, really requires dynamic movements and high mobility. To see the excellent attack conditions of fencing athletes, an active approach is needed to follow the current requirements when athletes play fencing [6].

Utilising fast attacking movement techniques is an essential point in fencing matches. In principle, in fencing, an athlete's victory and success in competing can only be achieved by collecting points from each attack on the competing opponent. A good attack without being supported by good speed will undoubtedly make it easy for the opponent to predict the episode's direction and easily dodge and parry the attack. "The effectiveness of fencing attacks is determined by how a player stabs the target area precisely and accurately to get valid points [7]. So, fencing attacks supported by good attack speed will be instrumental in improving the ability of fencing attack techniques. To score against their opponents, Fencers must thrust their weapons quickly to-

wards them, requiring a marked leg lift extension to execute a powerful forward strike [8].

The ability to have good attack techniques with good speed will help athletes win competitions at every level. Of course, this is a concern in improving the performance of fencers. Attack speed with static movement is essential in determining a fencer's performance.

METHOD

Type of quantitative approach with descriptive research methods. According to [9], quantitative research methods can be interpreted as research methods that are based on the philosophy of positivism, used to research specific populations or samples, collect data using research instruments, and quantitative or statistical data analysis to test the hypothesis that has been established. This research is limited to presenting measurement results for analysing attack speed in fencing athletes using degen and floret weapons using static movements. The samples in this research were all Fencing athletes assisted by the Indonesian National Sports Committee in Aceh Province in 2023, totalling eight athletes.

The instrument in this research uses the Kuhadja Fencing Test [10], which aims to measure the results of attacks. The procedure for carrying out the test in this research uses fencing attacks with static movements assisted by an accelerometer sensor. The data obtained from the sensor will later be processed using an integral formula to get fencing attack speed test results. The data collection technique used in this research was to test the speed of fencing attacks with static movement.

RESULTS AND DISCUSSION

The research results are in the form of quantitative data. According to [11], quantitative data is a research movement based on positivistic (concrete data). Research data is in the form of numbers that will be measured using statistics as a calculation test tool related to the problem being researched to produce a conclusion. Measurements were carried out using attack speed test items with static movement.

Furthermore, the following table displays raw data on fencing attack speed with static movements obtained from fencing athletes assisted by

the Indonesian National Sports Committee, Aceh province, with the fastest results from each athlete.

Table 1 – Analysis of static attack speed data for fencing athletes assisted by the Indonesian National Sports Committee, Aceh Province

No	Sample	On Attack To	Fastest Static Attack Speed Data (For 15 Seconds) using Accelerometer Sensor, m/s
1	SNM (PA)	6	5,08
2	APY (PI)	4	2,29
3	OT (PA)	6	3,66
4	TMA (PA)	4	3,90
5	AFP (PI)	9	4,45
6	ET (PA)	10	4,76
7	ZAM(PA)	8	5,01
8	YAP(PA)	4	3,27
Top Speed			5,08
Lowest Speed			2,29
Average Speed			4,05

Based on the diagram above, it can be concluded that the highest attack speed with static movement is 5.08 m/s, while the lowest attack speed with static movement is 2.29 m/s. So, the average attack speed of fencing with dynamic movement can be supposed to be 4.37 m/s.

Compared with other research, the Jakarta Fencing Club student-athletes attack speed test's average result was 7.41 m/s [6]. So, from the results of this research, it can be concluded that the attack speed of fencing athletes assisted by the Indonesian National Sports Committee, Aceh Province, in 2023 with static movements is still lower than in the research.

So, when compared with other research, the attack speed of fencing athletes assisted by the Indonesian National Sports Committee in Aceh Province is still weak. This condition is unnatural because, in the process, fencing athletes continuously carry out training at a centralised and decentralised level. Fencing athletes also receive adequate facilities and a complete training program from their coaches. Aceh Fencing athletes continue to carry out good training programs from year to year, so if you look at the results of

this research, the training programs implemented are still ineffective and not on target.

Weak fencing attack speed will trigger failure to hit the opponent's target because the opponent can easily predict movements, dodge, avoid and even evade the attack. So, if you pay attention, increasing attack speed is also supported by good mastery of basic attack techniques. Developing technical skills in fencing refers to mastering basic procedures. Therefore, learning basic methods is a serious concern in developing and improving the quality of the game [12].

Speed is a determining factor that indicates the quality of attacks or defences executed by competitors using different moves accompanied by sudden changes or applying other activities while fighting, which requires quick response skills. Players must make the right decisions at the right time, using deception and evasion to attack the opponent effectively. Therefore, the required speed of the motor response differs from one attack to another, depending on the technical and tactical requirements of each Fencer and according to the changes that occur during the attack [13].

Improving attack abilities requires the body's readiness to accept the training load to carry out perfect attack movement techniques. It is also a factor that determines whether the athlete's attack speed is good. If the attack gets faster, it is difficult for the opponent to predict its direction and even difficult for the opponent to dodge and parry the attack. The impact of this attack will make it easier and faster to get points/scores, and it is hoped that athletes can succeed in winning every match they face. To score against their opponents, Fencers must thrust their weapons quickly towards them, requiring a marked leg lift extension to execute a powerful forward strike [14].

Other factors, such as the readiness of the muscles being trained for physical fitness components and consistent concentration, are critical to pay attention to support attack movement activities so that the speed of Fencing attacks increases better. Based on this, it can be seen that apart from being required to have good physical and technical abilities, a fencer must also have good mental and concentration to attack quickly and stab the opponent precisely [15].

CONCLUSIONS

Based on the results of research on the analysis of Fencing attack speed with static movements in Fencing athletes assisted by the Indonesian National Sports Committee, Aceh Province, in 2023, it can be concluded that the results of attack speed with static movements were obtained on average at a rate of 4.37 m/s.

The results of this study can be compared with other research, showing that the attack speed results of Jakarta Fencing Club student-athletes showed that the average attack speed test results

obtained were 7.41 m/s [16]. Meanwhile, the average effect of the attack speed test using static movement for Fencing athletes assisted by the Indonesian National Sports Committee, Aceh Province, 2023, was 4.37 m/s. So, from the results of this research comparison, it can be concluded that the attack speed of Fencing athletes assisted by the Indonesian National Sports Committee of Aceh Province in 2023 with static movements is still lower than that of Jakarta Fencing Club student-athletes.

REFERENCES

1. Michaelsen, A. N., & Cleland, C. L. (2019). Kinematic determinants of scoring success in the fencing flick: Logistic and linear multiple regression analysis. *PLOS ONE*, *14*(9), e0222075. doi: [10.1371/journal.pone.0222075](https://doi.org/10.1371/journal.pone.0222075)
2. Pomportes, L., Brisswalter, J., Hays, A., & Davranche, K. (2016). Effect of Carbohydrate Intake on Maximal Power Output and Cognitive Performances. *Sports*, *4*(4), 49. doi: [10.3390/sports4040049](https://doi.org/10.3390/sports4040049)
3. Johne, M. (2021). The impact of fencing training symmetrisation on simple reaction time. *Biomedical Human Kinetics*, *13*(1), 231–236. doi: [10.2478/bhk-2021-0028](https://doi.org/10.2478/bhk-2021-0028)
4. Akbaş, A., Marszałek, W., Brachman, A., & Juras, G. (2023). Influence of Target Width and Distance on Postural Adjustments in a Fencing Lunge. *Journal of Human Kinetics*, *87*(April), 35–45. doi: [10.5114/jhk/161572](https://doi.org/10.5114/jhk/161572)
5. Kosova, S., Beyhan, R., & Koca Kosova, M. (2022). The effect of 8-week plyometric training on jump height, agility, speed and asymmetry. *Pedagogy of Physical Culture and Sports*, *26*(1), 13–18. doi: [10.15561/26649837.2022.0102](https://doi.org/10.15561/26649837.2022.0102)
6. Manopo, B., Susilo, S., & Barata, I. (2018). *Hubungan Daya Ledak Otot Tungkai Dengan Kecepatan Serangan Lunge* [Relationship between leg muscle explosive power and lunge attack speed]. Retrieved from <https://journal.unj.ac.id/unj/index.php/prosidingfik/article/download/10725/6749> (in Indonesian).
7. AlHaddad, N. H., AlTaie, D. N., & Al-Yasiri, M. J. (2022). Efficiency of a predictive model for assessing the performance of the simple direct attack in terms of physical and motor abilities of junior fencers. *SPORT TK-Revista EuroAmericana de Ciencias Del Deporte*, *13*. doi: [10.6018/sportk.537151](https://doi.org/10.6018/sportk.537151)
8. Bottoms, L., Tarragó, R., Muñiz, D., Chaverri, D., Iruetia, A., Castizo-Olier, J., Carrasco, M., Rodríguez, F. A., & Iglesias, X. (2023). Physiological demands and motion analysis of elite foil fencing. *PLOS ONE*, *18*(2), e0281600. doi: [10.1371/journal.pone.0281600](https://doi.org/10.1371/journal.pone.0281600)
9. Chen, T. L.-W., Wong, D. W.-C., Wang, Y., Ren, S., Yan, F., & Zhang, M. (2017). Biomechanics of fencing sport: A scoping review. *PLOS ONE*, *12*(2), e0171578. doi: [10.1371/journal.pone.0171578](https://doi.org/10.1371/journal.pone.0171578)
10. Sinclair, J., & Bottoms, L. (2013). Methods of Determining Hip Joint Centre: Their Influence on the 3-D Kinematics of the Hip and Knee During the Fencing Lunge. *Human Movement*, *14*(3). doi: [10.2478/humo-2013-0028](https://doi.org/10.2478/humo-2013-0028)
11. Tsolakakis, C., Kostaki, E., & Vagenas, G. (2010). Anthropometric, Flexibility, Strength-Power, And Sport-Specific Correlates In Elite Fencing. *Perceptual and Motor Skills*, *110*(3C), 1015–1028. doi: [10.2466/pms.110.3c.1015-1028](https://doi.org/10.2466/pms.110.3c.1015-1028)

12. Kamaruddin, I. (2020). Practice Learning Model by Using Moving Target Media for Offensive Attack of Fencing Martial Art Assessed at Motor Ability. *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, 5(5), 658. doi: [10.17977/jptpp.v5i5.13443](https://doi.org/10.17977/jptpp.v5i5.13443)
13. Tengfei, H., Tianxu, L., Shenfei, L., Jing, W., Xiaojun, Z., Ruibing, L., Jijun, L., Zhenlong, W., & Zhaohui, C. (2022). Effects of bedding replacement frequency in winter on growth environment and condition of calves. *Transactions of the Chinese Society of Agricultural Engineering*, 38(14), 219–226. doi: [10.11975/j.issn.1002-6819.2022.14.025](https://doi.org/10.11975/j.issn.1002-6819.2022.14.025)
14. Shynkaruk, O., Ulan, A., Bondar, A., Iakovenko, O., Strohanov, S., Pavlenko, I., Goncharenko, I., & Krasnianskiy, K. (2020). Left-Handed and Right-Handed Fencers in the International Sports Arena: Specifics of Their Competitive Activity and Features of Identification. *Teoriâ Ta Metodika Fizičnogo Vihovannâ*, 20(2), 59–67. doi: [10.17309/tmfv.2020.2.01](https://doi.org/10.17309/tmfv.2020.2.01)
15. Almujiabah, H., Elamary, A., & Alwetaishi, M. (2022). Seeking Ways for Dealing with the Impacts of Sandstorms on the Railway Network in Saudi Arabia. *Sustainability*, 14(15), 9436. doi: [10.3390/su14159436](https://doi.org/10.3390/su14159436)
16. Yao, Q. (2022). The reaction speed of different types of training on fencing athletes. *Revista Brasileira de Medicina Do Esporte*, 28(2), 141–143. doi: [10.1590/1517-8692202228022021_0453](https://doi.org/10.1590/1517-8692202228022021_0453)