Analysis of sports injuries in the implementation of the new 2023 regulations for the sport of Pencak Silat in the 17-35 age category

Muhammad Miqdam Afis[1*,A-F]

[1] Department of Sport Coaching Education, Faculty of Sports Science, Universitas Negeri Malang, Jl. Semarang No 5, Malang City, East Java Province, 65145, Indonesia

***Corresponding author:** Muhammad Miqdam Afis; Department of Sport Coaching Education, Faculty of Sports Science, Universitas Negeri Malang, Indonesia; email: muhammad.miqdam.2106316@students.um.ac.id

Received: 2025-09-20
Accepted: 2025-11-07
Published: 2025-12-09

A – Research concept and design
B – Collection and/or assembly of data
C – Data analysis and interpretation
D – Writing the article
E – Critical revision of the article
F – Final approval of article

ABSTRACT

Background: The changes to the 2022/2023 Pencak Silat competition rules established by PESILAT are aimed at international standardization, but these changes have the potential to affect patterns and injury risks for athletes in competition categories involving intense physical contact.

Objectives: This study aims to describe the types, frequency, and body parts injured, as well as athletes' perceptions of the impact of the implementation of the new 2023 regulations on injuries among 17-35-year-old competitive Pencak Silat athletes in Malang Regency.

Methods: The study used a quantitative descriptive design with a cross-sectional approach. The sample consisted of 30 competitive Pencak Silat athletes (aged 17–35 years) selected using purposive sampling. Data were collected in March 2025 using a questionnaire distributed online via Google Forms. Data analysis was performed descriptively using frequencies and percentages, as well as simple comparative analysis based on gender.

Results: Of the 30 respondents, the most commonly reported injuries were sprains (22.0%) and bruises (19.5%). The body parts most frequently injured were the lower extremities (feet and ankles, 20.7%), followed by the hands (14.1%). The most dominant factors causing injury were lack of warm-up (27.5%) and collision/physical contact (26.4%). A total of 64% of athletes (n = 19) stated that the implementation of the new 2023 regulations had a significant effect on the occurrence of injuries. Severe injuries such as fractures, ACL, and MCL were only found in male athletes with a low percentage, while minor injuries (bruises and sprains) were more commonly reported in female athletes.

Conclusions: Soft tissue injuries, particularly sprains and bruises, are the most common types of injuries experienced by competitive Pencak Silat athletes, with injuries predominantly occurring in the lower extremities.

Keywords: competition categories, injury analysis, new regulations, Pencak silat.

How to cite this article: Afis, M. M. (2025). Analysis of sports injuries in the implementation of the new 2023 regulations for the sport of Pencak Silat in the 17-35 age category. *Sport, Exercise, and Injury*, *1*(1), 80-89. https://doi.org/10.56003/sei.v1i2.641

INTRODUCTION

Pencak silat is a contact-based martial art that has high cultural value as well as complex physical and technical demands (Candra, 2021). In the context of competitive sports, especially the fighting category, pencak silat involves intense physical interaction through attacks and defenses that allow direct collisions between athletes. These characteristics place pencak silat on par with other contact sports, such as taekwondo, judo, and karate, which are epidemiologically reported to have a relatively high risk of injury, especially to the lower extremities and soft tissues (Lystad, Gregory, & Wilson, 2014; Bromley et al., 2018). Epidemiological studies of injuries in contact sports show that sprains, bruises, ligament injuries, and fractures are the most common injury patterns resulting from a combination of collisions, repetitive explosive movements, and fatigue during competition (Hammami et al., 2018; Lystad et al., 2021). Recent research on martial arts also highlights the role of specific physical conditions in injury risk, as reported by Dewi et al. (2025), who identified eccentric hamstring strength deficits in sub-elite female taekwondo athletes.

In competitive pencak silat, the risk of injury is further influenced by competition rules governing permitted techniques, scoring systems, match duration, and the use of protective gear. The pencak silat competition rules previously referred to in the 2012 regulations have been updated through the 2022/2023 PESILAT Competition Rules, which aim to improve the objectivity of scoring, international technical standardization, and competition transparency, among others through the rationalization of weight categories, the confirmation of attack and defense technique classifications, and the use of video replay technology in referee decision-making (PESILAT, 2022). In various contact sports, such regulatory changes have been reported to affect athletes' injury patterns, either through changes in contact intensity, frequency of certain techniques, or the behavior of athletes and officials during competition (Brooks, McGuine, & Hetzel, 2015; Parsons & Baugh, 2018).

Although a number of international studies have examined the relationship between regulatory changes and injury incidents in contact sports such as rugby, taekwondo, and soccer, empirical evidence regarding the impact of new regulations on injury patterns in pencak silat is still very limited, especially at the regional level and in the training of competitive-age athletes. To date, there have been few studies that systematically document the types of injuries, frequency, affected body parts, and athletes' perceptions of the impact of the new PESILAT 2022/2023 regulations after their implementation in the context of actual competitions. This limitation indicates a research gap in pencak silat literature, particularly regarding injury surveillance following regulatory changes, which is crucial as a basis for evidence-based injury prevention (Ekegren et al., 2014).

Based on this gap, this study aims to describe the patterns of sports injuries among 17–35-year-old pencak silat athletes in Malang Regency after the implementation of the 2022/2023 PESILAT competition regulations, including the types and frequency of injuries, the body parts most frequently injured, and the athletes' perceptions of the new regulations' impact on injury risk. The main contribution of this study is as a baseline survey that can be used as a basis for developing injury prevention strategies, improving training programs, and evaluating the implementation of pencak silat competition regulations at the coaching and regional competition levels.

METHODS

Study Design and Participants

This study used a quantitative descriptive approach with a cross-sectional design, which aimed to describe the pattern of sports injuries in competitive pencak silat athletes during a specific observation period. The study was conducted in Malang Regency, with data collection carried out in March 2025.

The study population consisted of competitive pencak silat athletes who actively trained and competed in Malang Regency. The study sample consisted of 30 athletes selected using purposive sampling. This technique was used because the study required respondents with specific characteristics relevant to the study objectives, namely athletes who had been exposed to the implementation of the 2022/2023 PESILAT pencak silat competition regulations.

Inclusion criteria include: (1) pencak silat athletes aged 17–35 years old, (2) residing and actively training in Malang Regency, and (3) having experienced an injury during training or competition after the implementation of the new regulations in 2023. Exclusion criteria include athletes who are unwilling to give their consent to participate or who do not complete the questionnaire.

The sample size (n = 30) was determined based on the availability of athletes who met the inclusion criteria during the data collection period and was intended as a preliminary survey to describe injury patterns in a regional context, not for broader population inference.

Operational Definition of Injury

In this study, sports injury is defined as any physical complaint, pain, or tissue damage experienced by athletes as a result of training or competition in the fighting category of pencak silat after the implementation of the new 2023 regulations, whether requiring medical treatment or self-reported by the athlete (self-reported injury). This definition covers minor to severe injuries and is not limited by time-loss criteria, allowing for the documentation of a broader spectrum of injuries.

Ethical approval statement

This research has been approved by the Ethics Committee of the Universitas Negeri Malang with Number 06.11.10/UN32.14.2.8/LT/2025.

Research Instruments

Injury data were collected using a structured questionnaire developed by researchers based on a literature review of sports injury surveillance and adapted to the characteristics of competitive pencak silat. The questionnaire covered several main sections, namely: (1) respondent characteristics, (2) type and frequency of injury, (3) body parts injured, (4) factors causing injury, (5) first aid received, and (6) athletes' perceptions of the impact of the new 2023 competition rules on the risk of injury.

Before use, the questionnaire underwent content review by sports coaching lecturers to ensure the clarity and appropriateness of the questions. Data collection was conducted online using Google Forms, allowing respondents to fill it out independently, efficiently, and anonymously.

The questionnaire link was distributed to athletes who met the inclusion criteria through their coaches or pencak silat club administrators. Before completing the questionnaire, respondents were given an explanation of the research objectives and

a statement of informed consent. All data was collected anonymously and used solely for research purposes.

Data Analysis

The collected data were analyzed using descriptive statistics, including frequency and percentage, to describe the types of injuries, injury locations, contributing factors, and athletes' perceptions of the impact of the new regulations. The analysis was performed using Microsoft Excel. Comparisons between male and female athletes were presented descriptively without inferential hypothesis testing, given the limited sample size.

RESULTS

According to the data obtained in Table 1, with a total of 30 participants, 18 of whom were female and 22 male, with an average age of 17, 21, and 22, the most common type of injury experienced by athletes was sprain, with a percentage of 22%. This injury usually occurs due to sudden movements or improper landing during competition. Bruises are in second place with a percentage of 19.5%, followed by cuts/abrasions, which reach 17.5%. These three types of injuries are the most common injuries experienced by athletes aged 17-35 years during competition.

Of the 30 athletes who participated, all respondents reported experiencing at least one injury after the implementation of the 2023 competition rules. Overall, there were 97 reported injuries, indicating that some athletes experienced more than one type of injury. The most frequently reported type of injury was sprains (21 incidents), representing 22.0% of the total number of injuries (n = 97), followed by bruises (19 incidents; 19.6%). Other injuries were reported less frequently and are presented in detail in Table 2.

The most frequently reported cause of injury was lack of warm-up before training or competition, with 19 reports (27.5%), followed by collisions or physical contact with opponents, with 18 reports (26.4%) (Table 3). These findings indicate that physical readiness and the nature of contact during competition play an important role in injuries to pencak silat athletes.

Based on the location of the affected body part, injuries most often occurred in the lower extremities, particularly the feet and ankles, with 22 cases (22%) of the total injuries. Injuries to the upper extremities, particularly the hands and wrists, were reported in 14 cases (14%). The complete distribution of injury locations is shown in Table 5.

Table 1. Pencak Silat Athletes Aged 10-35 Years Old in the Competition Category, Malang Regency

Question	Answer	n	Percentage (%)
Age of athletes in the fighting category of pencak silat	17 year	6	20
	18 year	2	6.6
	19 year	3	10
	20 year	4	13.4
	21 year	6	20
	22 year	6	20
	23 tahun	2	6.6
	24 tahun	1	3.4
Total		30	100

(n = total all respondents)

Table 2. Types of Injuries Reported by Pencak Silat Athletes

Question	Answer	n	Percentage (%)
During your time practicing pencak silat, what injuries have you experienced?	Wounds/abrasions	17	17.5
	Muscle cramps	12	12.4
	Muscle strain	11	11.3
	Sprain	21	22
	Dislocation	11	11.3
	Fracture	3	3
	Head injury	0	0
	Bruises	19	19.5
	ACL (Anterior Cruciate Ligament)	2	2
	MCL (Medial Collateral Ligament)	1	1
Total		97	100

(n = total number of injuries among all respondents)

Table 3. Factors Causing Sports Injuries

Question	Answer	n	Percentage (%)
What was the main cause of your injury?	Incorrect technique	14	20.3
	Intensity of training	2	2.8
	Lack of warm-up	19	27.5
	Collisions/physical contact	18	26.4
	Old injuries	13	18.8
	Insufficient weight training	1	1.4
	Insufficient cooling down and nutrition	1	1.4
	Insufficient muscle recovery	1	1.4
Total		69	100

(n = total number of injuries among all respondents)

Table 4. The Impact of the New 2023 Regulations on Injuries

Question	Answer	n	Percentage (%)
Do the new 2023 rules affect the injury rate in matches?	Yes, it greatly affects me.	19	64
	It does not greatly affect me.	11	36
	It does not affect me at all.	0	0
Total		69	100

(n = total number of injuries among all respondents)

Table 5. The Impact of the New 2023 Regulations on Injuries

Question	Answer	n	Percentage (%)
While practicing pencak silat, which parts of your body are most prone to injury?	Head	0	0
	Neck	1	1
	Shoulders	7	7
	Elbows	3	3
	Arms	15	15
	Fingers	14	14
	Hips	3	3
	Thighs	4	4
	Knees	13	13
	Feet	22	22
	Ankles	14	14
	Toes	10	10
Total		106	100

(n = total number of injuries among all respondents)

Table 6. First Aid for Injuries

Question	Answer	n	Percentage (%)
What is the first aid when you experience an injury?	Rest	3	10
	Apply ice to the injured area	17	56.7
	Compression	7	23.3
	Elevation	2	6.7
	Pain relief medication	1	3.3
Total		30	100

(n = total all respondents)

Most athletes reported receiving ice on the injured area as first aid (56.7% of respondents) (Table 6). Initial treatment of injuries was most often performed by the medical team (66.7%), followed by coaches (30.0%) (Table 7).

Table 7. The Party Providing First Aid for Injuries

Question	Answer	n	Percentage (%)
Who provides first aid for injuries?	Coach	9	30
	Medical Team	20	66.7
	Committee	0	0
	Yourself	1	3.3
Total		30	100

(n = total all respondents)

The distribution of injury types by gender is presented descriptively in Table 8. Minor injuries such as bruises and sprains were reported by both male and female athletes. Severe injuries (e.g., fractures and knee ligament injuries) were reported only in male athletes; however, given the limited sample size, no inferential analysis was performed to test for differences in risk between genders.

Table 8. Analysis of Injury Types in Female Pencak Silat Athletes in Malang Regency

Types of injuries	Male (n)	Female (n)
Bruise	12	7
Sprain	13	7
Muscle cramp	7	5
Muscle strain	6	5
Wound/abrasion	13	4
Dislocation	8	2
Joint displacement	0	1
Ligament tear	0	1
ACL (Anterior Cruciate Ligament)	2	0
MCL (Medial Collateral Ligament)	1	0

DISCUSSION

This study aims to provide a descriptive overview of injury patterns among 17–35-year-old competitive pencak silat athletes in Malang Regency following the implementation of the 2022/2023 competition regulations. The main findings show that the most frequently reported injuries were sprains and bruises, with injuries predominantly occurring in the lower extremities, particularly the feet and ankles. The factors most commonly associated with injuries were lack of warm-up, collisions or physical contact, and technical errors, while most athletes also stated that the new competition rules were perceived to have an impact on the risk of injury.

The findings in this study are in line with the results of a study by Suryaningrum & Shapie (2025), which reported changes in injury patterns among competitive

pencak silat athletes after the implementation of new regulations. The study shows that although the overall frequency of injuries decreased under the new regulations, injuries still occurred, with bruises being the most common injury and a relative increase in dislocation injuries, indicating that the regulatory changes have not completely eliminated the risk of injury in pencak silat.

The predominance of soft tissue injuries such as sprains and bruises is consistent with the findings of international epidemiological studies on contact sports and martial arts. A systematic review by Lystad et al. (2021) and Hammami et al. (2018) reported that soft tissue injuries are the most common type of injury in martial arts due to the explosive nature of the movements, rapid changes in direction, and direct contact between athletes. The injury patterns in the lower extremities found in this study are also consistent with reports in taekwondo, karate, and judo, where the feet and ankles are the most vulnerable areas of the body to injury during competition (Zazryn et al., 2009; Bromley et al., 2018).

The factors reported by athletes in this study as causes of injury—particularly lack of warm-up and physical contact—are also consistent with the international literature. Previous studies have shown that inadequate warm-up can increase the risk of muscle and ligament injuries due to low neuromuscular readiness and tissue elasticity (Bahr & Krosshaug, 2005). Meanwhile, physical contact is an inherent consequence of competitive sports and has been identified as a major factor in injuries in various contact sports (Bahr & Krosshaug, 2005). However, these findings cannot be interpreted as a cause-and-effect relationship, given the descriptive and cross-sectional nature of the study design.

In addition to physical contact and fighting techniques, specific physical conditions also contribute to the risk of injury in martial arts. This is supported by Dewi et al. (2025), who found that sub-elite female taekwondo athletes had eccentric hamstring strength below normative values, even though they had no active lower extremity injuries. These findings indicate that muscle strength deficits can be latent and potentially increase the risk of injury if not addressed through preventive training programs.

Most athletes in this study stated that the new 2022/2023 competition rules were perceived to have an impact on the risk of injury. This perception needs to be understood carefully. International literature shows that rule changes in contact sports can indeed affect injury patterns through changes in match intensity, permitted techniques, and athlete behavior (Raftery, Tucker, & Falvey, 2021). However, because this study did not compare injury incidents before and after the rule changes and did not use a longitudinal design, these findings can only be interpreted as the athletes' perceptions, not empirical evidence that the new rules directly caused an increase in injuries.

The distribution of injuries based on gender in this study is also presented descriptively. Minor injuries such as bruises and sprains were reported by both male and female athletes, while serious injuries (e.g., fractures, ACL, and MCL) were only reported in male athletes. These findings are consistent with several international reports showing that male athletes tend to experience more severe traumatic injuries in contact sports, possibly related to the intensity of contact and playing style (Bromley et al., 2018). Although previous literature has suggested that hormonal fluctuations in female athletes may influence ligament injury risk (Herzberg et al., 2017), the generalization of this theory cannot be drawn from the data in this study due to the small sample size and the absence of inferential analysis.

Limitations in the treatment of acute injuries found in this study can also be attributed to athletes' knowledge. A study by Ar Rahman (2025) reported that although most student-athletes had moderate to high levels of knowledge about the PRICE method, their understanding of the compression component was the lowest. These findings indicate a gap between general knowledge and the technical application of first aid for injuries in the field.

Several methodological limitations need to be considered when interpreting the results of this study. First, the use of purposive sampling and a relatively small sample size limits the generalization of the findings to the wider population of pencak silat athletes. Second, injury data were obtained through self-reported questionnaires, which could potentially lead to recall bias and reporting bias. Third, the questionnaire used has not undergone formal reliability testing, so the accuracy of the measurements may be affected by the respondents' understanding of the questions. In addition, this study did not control for confounding factors such as competition experience, athlete position, training volume, physical condition, and previous injury history.

Limitations of the study

Nevertheless, the findings of this study have practical implications for coaches, athletes, and medical teams. Based on the injury patterns found, injury prevention programs should emphasize structured and pencak silat-specific warm-ups, improved competition techniques, and strengthening and stabilization of the lower extremities. In addition, education related to the treatment of acute injuries, such as the application of the rest, ice, compression, and elevation (RICE) principle, needs to be continuously strengthened. The dissemination of new competition rules also needs to be carried out systematically so that athletes and coaches can adapt optimally to the technical demands of the competition.

Further research should use longitudinal or prospective injury surveillance designs, involve larger and more representative samples, and use validated injury instruments. This approach is necessary to more robustly evaluate the relationship between changes in competition rules, athlete characteristics, and injury risk in competitive pencak silat.

CONCLUSIONS

In a sample of pencak silat athletes in the competition category in Malang Regency (n = 30), soft tissue injuries such as sprains and bruises were the most commonly reported types of injury, with a predominance of injuries to the lower and upper extremities. Most athletes also reported that the new 2023 competition rules were perceived to have an impact on competition strategies and injury risks, although these findings are descriptive and do not indicate a cause-and-effect relationship.

Practically, these results emphasize the importance of structured warm-ups, improving the quality of competition techniques, and the readiness of coaches and medical teams to handle acute injuries during training and competitions. Given the cross-sectional study design, limited sample size, and use of self-reported data, future research is recommended to use a prospective design with a validated injury surveillance system and a larger sample to evaluate the impact of rule changes on injury patterns more accurately.

ACKNOWLEDGMENTS

The researcher would like to thank all the participants who helped complete this research project.

DATA AVAILABILITY

The data that support the findings of this study are available on request from the corresponding author, MMA. The data are not publicly available due to their containing information that could compromise the privacy of research participants.

FUNDING

This research does not receive external funding.

CONFLICT OF INTEREST

The author officially certifies that there are no conflicts of interest with any party with respect to this research.

REFERENCES

Ar Rahman, H. N. (2025). Knowledge level of sports injury first aid using PRICE method among student-athletes in Indonesia: A case study. *Sport, Exercise, and Injury, 1*(1), 50-59. https://doi.org/10.56003/sei.v1i1.555

Bahr, R., & Krosshaug, T. (2005). Understanding injury mechanisms: a key component of preventing injuries in sport. *British Journal of Sports Medicine, 39*(6), 324-329. https://doi.org/10.1136/bjsm.2005.018341

Bromley, S. J., Drew, M. K., Talpey, S., McIntosh, A. S., & Finch, C. F. (2018). A systematic review of prospective epidemiological research into injury and illness in Olympic combat sport. *British Journal of Sports Medicine, 52*(1), 8-16. https://doi.org/10.1136/bjsports-2016-097313

Brooks, A., McGuine, T., & Hetzel, S. (2015). Effect of New Rule Limiting Full Contact Practice on Incidence of Sport Related Concussion in High School Football Players. *South African Journal of Sports Medicine*, 27. https://doi.org/10.1177/0363546519860120

Candra, J. (2021). *Pencak Silat*. Deepublish.

Dewi, C. S., Pudjijuniarto, P., Firmansyah, A., & Irawan, R. J. (2025). Eccentric hamstring strength profile and limb asymmetry in sub-elite female taekwondo athletes: Implications for injury prevention. *Sport, Exercise, and Injury, 1*(1), 70-79. https://doi.org/10.56003/sei.v1i1.574

Ekegren, C. L., Donaldson, A., Gabbe, B. J., & Finch, C. F. (2014). Implementing injury surveillance systems alongside injury prevention programs: evaluation of an online surveillance system in a community setting. *Injury Epidemiology, 1*(1), 19. https://doi.org/10.1186/s40621-014-0019-y

Hammami, N., Hattabi, S., Salhi, A., Rezgui, T., Oueslati, M., & Bouassida, A. (2018). Combat sport injuries profile: A review. *Science & Sports, 33*(2), 73-79. https://doi.org/10.1016/j.scispo.2017.04.014

Herzberg, S. D., Motu'apuaka, M. L., Lambert, W., Fu, R., Brady, J., & Guise, J. M. (2017). The effect of menstrual cycle and contraceptives on ACL injuries and laxity: a systematic review and meta-analysis. *Orthopaedic Journal of Sports Medicine, 5*(7), 2325967117718781. https://doi.org/10.1177/2325967117718781

Lystad, R. P., Alevras, A., Rudy, I., Soligard, T., & Engebretsen, L. (2021). Injury incidence, severity and profile in Olympic combat sports: a comparative analysis of 7712 athlete exposures from three consecutive Olympic Games. *British Journal of Sports Medicine, 55*(19), 1077-1083. https://doi.org/10.1136/bjsports-2020-102958

Lystad, R. P., Gregory, K., & Wilson, J. (2014). The epidemiology of injuries in mixed martial arts: a systematic review and meta-analysis. *Orthopaedic Journal of Sports Medicine, 2*(1), 2325967113518492. https://doi.org/10.1177/2325967113518492

Parsons, J. T., & Baugh, C. (2018). The evolving landscape of policies, rules, and law in sport-related concussion. *Handbook of Clinical Neurology, 158*, 257-267. https://doi.org/10.1016/B978-0-444-63954-7.00025-2

PESILAT. (2023). *Peraturan Pertandingan Pencak Silat 2023*. Deepublish.

Raftery, M., Tucker, R., & Falvey, É. C. (2021). Getting tough on concussion: how welfare-driven law change may improve player safety—a Rugby Union experience. *British Journal of Sports Medicine*, *55*(10), 527-529. https://doi.org/10.1136/bjsports-2019-101885

Suryaningrum, J. A., & Shapie, M. N. M. (2025). Injury trends in Pencak Silat: Impact of regulation changes on sparring athletes. *Sport, Exercise, and Injury, 1(1), 15-26.* https://doi.org/10.56003/sei.v1i1.511

Zazryn, T. R., McCrory, P. R., & Cameron, P. A. (2009). Injury rates and risk factors in competitive professional boxing. *Clinical Journal of Sport Medicine*, *19*(1), 20-25. https://doi.org/10.1097/JSM.0b013e31818f1582