

The Failure of The Fall Technique Using Pull In The Pencak Silat Competition In The Adult Age Competition Category

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ABSTRACT

Pencak Silat is a martial art that integrates offensive, defensive, and strategic techniques to control opponents and achieve competitive advantage. One crucial technique in the competition category is the falling technique using a pull, which aims to destabilize and bring down the opponent to gain points. Despite its tactical importance, many athletes experience repeated failures in executing this technique effectively, suggesting the presence of complex technical and non-technical influencing factors. However, empirical studies that specifically analyze the causes of such failures under the latest competition regulations remain limited. This study aimed to: (1) analyze the factors contributing to the failure of pull-based falling techniques in Pencak Silat competitions, (2) identify common technical errors associated with these failures, and (3) examine the role of athletes' physical and situational conditions in influencing unsuccessful execution. A qualitative descriptive approach was employed, utilizing systematic visual observation and analysis of match recordings. The data consisted of 50 competition videos from international adult-category Pencak Silat championships held in Jakarta and Malang, all conducted under the 2023 competition regulations. The findings identified 12 distinct causes of failure in pull-based falling techniques. Among these, two failure types were most dominant: failed pulls due to the opponent's stable stance (T8), occurring 57 times, and failed pulls caused by dynamic opponent movement (T7), occurring 53 times. These results indicate that failure is primarily associated with improper force direction, inadequate balance control, and insufficient adaptation to opponent posture and movement. The findings provide practical insights for coaches and athletes, emphasizing the need for targeted technical refinement, improved physical conditioning, and tactical decision-making training. Implementing these improvements is expected to enhance the effectiveness of pull-based falling techniques and optimize scoring opportunities in accordance with the 2023 Pencak Silat competition regulations.

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A. Conception and design of the study;
B. Acquisition of data;
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INTRODUCTION

Pencak Silat is a traditional martial art rooted in Malay culture and represents an important element of Indonesia's intangible cultural heritage. Recognized as one of the

oldest martial arts systems in the world, Pencak Silat exhibits extensive diversity in movement patterns, techniques, and tactical approaches across different regions of Indonesia (Trilaksana & Pratama, 2018). Each region has developed distinctive technical characteristics that reflect local cultural identities, resulting in a wide spectrum of combat strategies and movement variations. Despite this diversity, fundamental techniques such as punches, kicks, parries, evasions, locks, and dropping techniques remain central to competitive performance.

One of the essential techniques frequently applied in competitive Pencak Silat is the falling or dropping technique executed through pulling actions. This technique aims to disrupt the opponent's balance by applying directional force and exploiting body weight and momentum, thereby enabling effective control and execution of a takedown (Susiana, 2023). In competition settings, pull-based drop techniques are strategically important because they can neutralize the opponent's attack, create scoring opportunities, and reduce the risk of counterattacks when executed correctly.

However, empirical observations in adult-category Pencak Silat competitions indicate that the application of pull-based drop techniques often fails, resulting in missed scoring opportunities, loss of balance by the attacker, or exposure to counterattacks. These failures are not merely technical errors but may be influenced by biomechanical inefficiencies, improper force distribution, timing inaccuracies, and suboptimal coordination between upper-body and lower-body movements. Despite the frequent use of pull-based drop techniques in competition, systematic research addressing the causes of failure particularly from a biomechanical and performance-analysis perspective remains limited. This gap presents a critical problem, as unsuccessful execution can significantly affect match outcomes and athlete safety.

Recent studies have increasingly explored technical and tactical aspects of Pencak Silat performance. Research by Gazali and Daharis (2022) emphasizes that pulling actions are not only instrumental in controlling opponents but also serve as mechanisms for manipulating balance and redirecting momentum during competitive exchanges. Similarly, Putra (2024) highlights that effective pull execution requires precise synchronization between grip strength, body positioning, and timing to maximize destabilization of the opponent.

Ubaidillah Riky (2024) conducted an observational study analyzing various pull-based drop techniques used in provincial, national, and international championships between July 2023 and March 2024. The study identified eleven distinct pull-based falling techniques and reported the emergence of new technical variations in elite competition. These findings demonstrate the dynamic evolution of Pencak Silat techniques and the increasing complexity of competitive strategies. However, the study primarily focused on classification and frequency analysis, without examining biomechanical efficiency or the reasons underlying unsuccessful execution.

Other studies in martial arts biomechanics suggest that effective takedown techniques rely heavily on optimal force transmission, center-of-mass manipulation, and stability control (Ali, 2023). In combat sports such as judo and wrestling, biomechanical analyses have shown

that improper force direction and imbalance between upper- and lower-body contributions significantly increase the likelihood of failed throws and takedowns. Although these findings offer valuable insights, their direct application to Pencak Silat remains limited due to the unique movement structures and rule systems of this martial art.

Overall, the existing literature has advanced understanding of technical variations, tactical functions, and general biomechanical principles related to pull-based techniques. Nevertheless, research specifically addressing the distribution of force and failure mechanisms in pull-based drop techniques within adult Pencak Silat competitions is still scarce.

Despite growing interest in the technical analysis of Pencak Silat, several critical gaps remain. First, most existing studies emphasize technique identification, classification, or tactical usage, while neglecting in-depth analysis of failed executions. Failure analysis is essential, as unsuccessful techniques can reveal underlying biomechanical and coordination issues that are not apparent in successful movements.

Second, there is a lack of empirical data examining how force distribution during pulling actions influences the success or failure of drop techniques in actual competition settings. Apriyanto and Wardoyo (2022) note that irregular or imbalanced force application can compromise technique effectiveness; however, their work does not provide quantitative or observational data specific to adult-category Pencak Silat matches.

Third, previous research has rarely focused on adult competition categories, where physical demands, resistance levels, and tactical complexity differ significantly from junior or developmental levels. Adult athletes often exhibit greater strength and speed, increasing the consequences of technical inefficiencies and making biomechanical precision even more critical.

Finally, there is limited integration of field observations, case studies, and statistical analysis to comprehensively explain why pull-based drop techniques fail during competition. Without such integrated analysis, coaches and athletes lack evidence-based guidance to refine training methods and reduce technical errors.

These gaps indicate a clear need for research that systematically investigates the causes of failure in pull-based drop techniques, with particular attention to force distribution, movement coordination, and contextual factors in adult Pencak Silat competitions.

Based on the identified problems and research gaps, the primary objective of this study is to analyze the factors contributing to the failure of pull-based drop techniques in adult-category Pencak Silat competitions. Specifically, this research aims to: (1) identify technical and biomechanical factors associated with unsuccessful execution of pull-based drop techniques; (2) examine how force distribution and balance control affect performance outcomes; and (3) provide evidence-based recommendations for improving training and competitive application of these techniques.

The novelty of this study lies in its focus on failure analysis rather than success-oriented evaluation, offering a new perspective in Pencak Silat performance research. Unlike previous studies that primarily classify techniques or describe tactical usage, this research integrates field observations, case studies, and statistical analysis to uncover underlying mechanisms of technical failure. By concentrating on adult competition

categories, the study also addresses a population that has received limited scholarly attention despite its relevance to elite performance.

Furthermore, this research contributes original insights by linking practical competition data with biomechanical considerations, thereby bridging the gap between theory and practice. The findings are expected to enrich scientific understanding of Pencak Silat techniques and provide practical implications for coaches, athletes, and practitioners seeking to enhance performance effectiveness and reduce failure rates in competitive matches.

METHODS

This study employed a qualitative descriptive research design with a visual analysis approach to examine failures in the execution of pull-based falling techniques during adult-category Pencak Silat matches. The qualitative approach was selected to allow in-depth interpretation of movement patterns, technical errors, and contextual factors that contribute to unsuccessful technique execution in real competition settings.

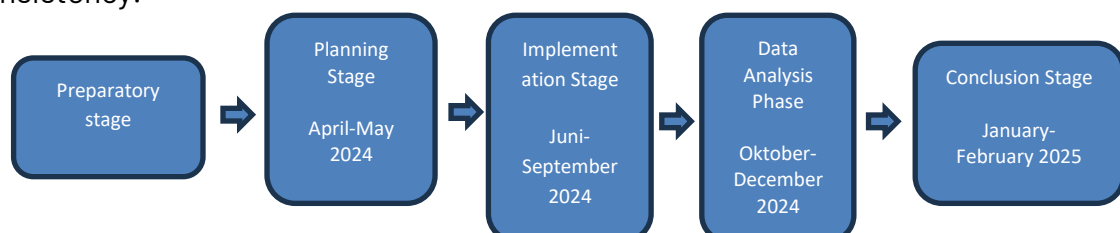
Data Sources

Rather than using the term population, this study utilized data sources in the form of competition video recordings, which is more appropriate for qualitative visual research. The data sources consisted of 50 match videos recorded under the 2023 Pencak Silat competition rules, obtained from official international events, namely the Asian University Games (AUG) and the International Indonesia Open Pencak Silat Championship 2024. All videos represented adult-category matches and contained complete bouts of up to three rounds.

Videos were selected using purposive sampling, with the following criteria: (1) the match applied the 2023 official competition regulations; (2) the video quality allowed clear observation of pull-based falling techniques; and (3) the match included at least one failed attempt of a pull-based fall technique.

Research Instrument

The primary research instrument was the researcher as an active observer, supported by a structured observation sheet developed specifically for this study. The observation sheet was designed to systematically record key indicators of failure in pull-based falling techniques, including body position, timing of the pull, direction of force, balance control, and coordination between upper and lower leg. Video playback software with pause and slow-motion functions was used to enhance observation accuracy and consistency.



Data Collection Procedure

Data collection was conducted through non-participant visual observation of match videos. Each selected video was reviewed repeatedly to ensure accurate identification of failed pull-based falling techniques. A failed technique was defined as an attempted pull-based fall that did not result in a successful takedown, caused loss of balance by the attacker, or exposed the athlete to a counterattack. All identified failure events were documented using the observation sheet.

Data Analysis

Data analysis followed a systematic qualitative analysis procedure consisting of three main stages. First, identification, where all instances of failed pull-based falling techniques were extracted from the videos. Second, categorization, where failures were grouped based on observable technical factors such as improper force direction, poor timing, inadequate balance control, or insufficient coordination. Third, interpretation, where patterns of failure were analyzed to explain how and why the techniques failed within the context of adult competitive matches.

To enhance the trustworthiness of the analysis, repeated observations were conducted, and findings were compared across multiple matches to identify consistent failure patterns. The analysis focused on producing findings that are replicable, transparent, and relevant for coaching and performance improvement.

RESULTS AND DISCUSSION

Result

Table 1

Data analysis results

Types of Techniques	Asean University Games	International Indonesia Open	Engineering Results
T1 Attraction Technique	7	11	18
T2 Attraction Technique	3	17	20
T3 Attraction Technique	3	6	9
T4 Attraction Technique	1	0	1
T5 Attraction Technique	0	1	1
T6 Pull Technique	1	7	8
T7 Attraction Technique	17	36	53
T8 Attraction Technique	22	35	57
T9 Pull Technique	3	2	5
T10 Pull Technique	2	10	12
T11 Pull Technique	3	1	4
T12 Pull Technique	2	2	4
Sum	64	128	192

In the researcher's analysis, there are techniques that appear in the ASEAN University games, and the international Indonesia Open, which is the cause of the failure of the fall technique using pull. Follow-up research is still needed in this technique so that the failure of the fall technique using pull can be identified in depth to experienced athletes, especially to beginner athletes.

Discussion

The findings of this study provide a comprehensive theoretical and empirical explanation of the factors contributing to the failure of pull-based falling techniques in adult-category Pencak Silat competitions following the implementation of the 2023 regulations. The regulatory changes mark a significant paradigm shift in competitive Pencak Silat, particularly regarding the permissibility of pulling actions during falling or counterattacking situations. Previously considered a violation, pull-based interventions are now recognized as legitimate and potentially advantageous tactical maneuvers (Widiawati & Rahayuni, 2023). This regulatory transition has altered the technical and tactical landscape of competition, demanding adaptive responses from athletes and coaches.

From a theoretical perspective, pulling techniques in combat sports function as biomechanical mechanisms for disrupting an opponent's center of mass and redistributing external forces to induce instability. Studies in judo, wrestling, and other grappling-oriented sports emphasize that successful takedowns depend not only on force magnitude but also on force direction, timing, and synchronization between upper- and lower-body actions (Adam et al., 2019; Franchini et al., 2020). The present findings align with this framework, demonstrating that failures in pull-based falling techniques frequently stem from suboptimal force application rather than insufficient strength alone.

A critical dialogue emerges when comparing these results with prior Pencak Silat research. Previous studies predominantly focused on identifying technique variations or describing tactical trends following rule changes (Rope et al., 2023; Ubaidillah Riky, 2024). While these studies acknowledge the increasing use of pull-based techniques, they rarely address why such techniques fail in real match conditions. This study extends existing knowledge by shifting analytical focus from what techniques are used to how and why those techniques fail, thereby enriching the theoretical discourse on performance inefficiency in combat sports.

The most prominent failure factor identified was technical error in pull execution, particularly related to insufficient or misdirected pulling force. Biomechanical literature consistently indicates that effective destabilization requires force vectors to be aligned with the opponent's direction of imbalance (Turner et al., 2018; Kons et al., 2021). When pulling actions are poorly directed, opponents can maintain postural stability and neutralize the attack. This supports findings from Hristovski et al. (2017), who argue that successful combat techniques emerge from precise perception-action coupling rather than isolated strength output.

Another recurring failure factor was inadequate balance control by the attacking athlete. Excessive focus on pulling the opponent without maintaining one's own base of support often resulted in self-instability, leading to failed execution or counterattacks. This phenomenon reflects principles of dynamic stability and self-organization in combat movements, where athletes must continuously regulate their center of mass relative to their base of support (Davids et al., 2015). Similar patterns have been reported in elite judo and taekwondo athletes, where loss of postural control significantly increases the likelihood of failed attacks (Campos et al., 2020).

Foot placement and lower-limb support also emerged as decisive factors. Improper foot positioning reduced the effectiveness of force transmission from the ground to the upper body, limiting the impact of the pull. This finding corroborates biomechanical models emphasizing the kinetic chain concept, which posits that force generation in combat sports originates from the lower extremities and is transferred through coordinated body segments (Lenetsky et al., 2020). Failure to optimize this kinetic chain disrupts movement efficiency and compromises technical outcomes.

Opponent-related factors further complicate pull-based execution. Athletes with superior posture, balance, and defensive awareness were more resistant to being pulled down. Defensive reading ability enables opponents to anticipate pulling actions and adjust stance or execute counter-techniques, consistent with perceptual-cognitive research in combat sports (Milazzo et al., 2016). This reinforces the notion that technique effectiveness is relational, depending not only on the attacker's skill but also on the opponent's adaptive responses.

From a coaching and tactical standpoint, these findings carry important implications. First, training programs should emphasize biomechanical precision, particularly force direction, balance maintenance, and lower-limb support during pull-based techniques. Coaches are encouraged to integrate video-based feedback and slow-motion analysis to help athletes recognize subtle technical errors, an approach shown to enhance motor learning and tactical awareness (Groom et al., 2018). Second, tactical training should incorporate decision-making under pressure, enabling athletes to assess when pulling is advantageous and when alternative strategies are more effective. Finally, the results suggest that pull-based techniques should not be trained in isolation but embedded within integrated tactical scenarios, reflecting real competition dynamics.

In summary, this study contributes theoretically by linking pull-based failure mechanisms to biomechanical and perceptual-cognitive frameworks, empirically by documenting recurring failure patterns under the 2023 regulations, and practically by offering evidence-based guidance for coaching and match strategy. These contributions position the study as a meaningful extension of existing Pencak Silat research and a valuable reference for performance-oriented training development.

CONCLUSION

This study concludes that failures in the execution of pull-based falling techniques in adult-category Pencak Silat competitions under the 2023 regulations are primarily influenced by technical inaccuracies, poor balance control, ineffective force direction, and inadequate lower-limb support, as well as opponent-related defensive adaptations. Rather than being caused by a single factor, failure emerges from the interaction between biomechanical inefficiency, timing errors, and situational decision-making during match play. These findings confirm that pull-based falling techniques, although legally permitted and tactically advantageous under the new regulations, require high levels of technical precision and contextual awareness to be executed successfully.

Research Limitations

Several limitations should be acknowledged. First, this study relied on video-based qualitative analysis, which limits the ability to directly measure biomechanical variables such as force magnitude, joint angles, and center-of-mass displacement. Second, the data were drawn exclusively from international-level adult competitions, which may restrict generalization to national or developmental athlete categories. Third, the absence of direct athlete or coach interviews limited deeper insight into cognitive intentions and tactical decision-making behind failed techniques. Future research integrating motion analysis technology, quantitative biomechanical measurements, and mixed-method approaches is therefore recommended.

Practical and Operational Recommendations

Based on the findings, several operational recommendations can be proposed:

1. Technical Training: Coaches should emphasize pull direction accuracy, body alignment, and coordinated upper-lower limb movement through drill-based training using slow-motion video feedback and error-focused correction.
2. Balance and Footwork Development: Training programs should incorporate dynamic balance drills and stance-transition exercises to improve postural stability during pulling actions.
3. Tactical Decision-Making: Athletes should be trained to apply pull-based techniques selectively, based on opponent posture and momentum, rather than as a default attacking option.
4. Integrated Match Simulation: Pull-based falling techniques should be practiced within realistic match scenarios, including opponent resistance and counterattack situations, to enhance adaptability.
5. Continuous Performance Evaluation: Coaches are encouraged to use periodic video analysis of competition performances to identify recurring failure patterns and adjust training plans accordingly.

In conclusion, this study contributes to performance-oriented Pencak Silat research by shifting focus from technique description to failure-based analysis, offering evidence-based guidance for improving coaching practices and match strategies. By addressing the identified limitations and applying the recommended training adjustments, athletes and coaches can optimize the effectiveness of pull-based falling techniques and enhance competitive performance under the 2023 Pencak Silat regulations.

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