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Content Analysis of the Match Performance of the Men's Ju-Jitsu Fighting System -77 kg Champion at the XXI National Sports Week (PON XXI) 2024

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Abstract

This study aimed to analyze the technical effectiveness and transition patterns employed by a gold medalist jiu-jitsu athlete in the Men's Fighting System −77 kg category at the 2024 National Sports Week (PON XXI) held in Aceh–North Sumatra. The central premise was that competitive performance depends not merely on the frequency of technical execution but also on execution effectiveness and the integration of technical actions across fighting phases. A quantitative descriptive approach was adopted using systematic observation of official match video recordings. The subject was Artz Brilliant, an athlete representing East Java who won the gold medal in this category. Four competition sequences were analyzed, comprising Round 1, Round 2, the initial Round 3, and the Round 3 replay. A total of 31 technical attempts were recorded across punches, kicks, throws, and submissions. The analysis identified 18 successful and 13 unsuccessful attempts, yielding an overall technical effectiveness of 58.06%. Kicks were the most frequently performed techniques, while throwing techniques demonstrated varying effectiveness across competition sequences. These findings support the central premise that higher technical frequency does not necessarily correspond to greater execution effectiveness. The comparison between the initial Round 3 and its replay revealed differences in technical performance, indicating that execution outcomes may vary across competitive situations, even against the same opponent. The observation framework also identified potential transitions between striking and grappling phases, although their precise frequencies and effectiveness require further verification through event-level analysis. Overall, the findings suggest that technical effectiveness and contextual performance variation are important dimensions of competitive jiu-jitsu performance. The study provides preliminary empirical evidence for developing evidence-based coaching strategies, systematic performance evaluation, and integrated technical–tactical training programs, while emphasizing the need for further research involving multiple athletes and validated observational procedures.

Keywords: Content Analysis, Technical Effectiveness, Transition Patterns, Video Analysis, Jiu-Jitsu

INTRODUCTION

Competitive combat sports require athletes to adjust technical execution and tactical decisions in response to rapidly changing interactions with an opponent. Ju-Jitsu Fighting System is particularly complex because competition integrates striking, throwing, and ground-based grappling within a connected three-phase contest, rather than emphasizing ground fighting alone. An analysis of 229 bouts from the World Ju-Jitsu Championships documented the value of examining technical–tactical activity across weight categories in this specific fighting format (Ambroży et al., 2023). Research on elite sport ju-jitsu has also related technical–tactical indicators to aerobic capacity and sport-specific fitness (Ambroży et al., 2021), while national-team research has examined physical characteristics and performance across different fighting phases (Ambroży et al., 2024). These findings suggest that competitive performance should be studied as an interaction between technical selection, execution success, and movement between phases, rather

than as a collection of isolated techniques. Related evidence concerning expertise-dependent postural control (Akbaş et al., 2022) and differences in competition histories across combat sports (Barley & Harms, 2021) further illustrates the multiple demands placed on athletes. Evidence from youth karate also indicates that balance performance may be associated with the interaction between training approaches and core muscle strength (Yudhistira et al., 2026). Although the study involved a different combat sport and age group, its findings provide additional context regarding the physical and postural demands of combat-sport performance.

From a conceptual perspective, previous studies have distinguished technical activity from execution effectiveness in competitive ju-jitsu (Ambroży et al., 2021, 2023). Understanding competitive performance also requires consideration of how technical actions are organized across fighting phases. Research on positional tactics in Brazilian Jiu-Jitsu highlights the relevance of preceding actions to subsequent technical opportunities (Spanias et al., 2022). These findings provide a basis for examining technical frequency, execution outcomes, and potential transitions within individual competition sequences.

Understanding how elite athletes execute these technical actions is essential for improving coaching strategies and athlete performance. Yet a high frequency of attacks does not, by itself, establish technical efficiency: performance must be interpreted in relation to successful execution, opposition, weight category, and the opportunities created by preceding actions. Time–motion research in Brazilian Jiu-Jitsu has documented differences in combat behaviour across weight divisions (Santos et al., 2023) and between winning and losing female athletes (dos Santos et al., 2024). Comparable event-based analyses in judo have identified the predominant techniques used during European championship bouts (Batista et al., 2024), while analyses of world-level wrestling and elite kickboxing have investigated performance indicators associated with competitive outcomes (Čular et al., 2026; Korobeynikov et al., 2025) . However, findings from these sports cannot be transferred directly to Ju-Jitsu Fighting System because their permitted techniques, phase structures, and scoring conditions differ. For Indonesia, the men's −77 kg final-stage performances at the XXI National Sports Week (PON XXI) 2024 provide an important but insufficiently documented competition-specific case. This case therefore warrants a sequence-specific assessment of technical attempts and their execution outcomes to provide a more detailed understanding of competitive performance beyond aggregate attack frequency.

Content analysis provides a systematic approach for examining recorded competition data by identifying, classifying, and interpreting observable technical actions during a match. Video-based notation allows investigators to distinguish attempts from successful actions and to examine how attacks are organized within observable competitive sequences. Ambroży et al. (2021) used tournament recordings to derive indices of attack activity, efficiency, and effectiveness in elite sport ju-jitsu, and Ambroży et al. (2023) extended competition analysis to a large Fighting System world-championship dataset. Earlier studies combined technical-tactical observations with physiological information in Brazilian Jiu-Jitsu (Andreato et al., 2013) and related notational match characteristics to physical fitness in judo and Brazilian Jiu-Jitsu (Coswig et al., 2018). The importance of interpreting actions in context is reinforced by research connecting positional dominance with submissions (Spanias et al., 2022), combat-style congruence with performance conditions (Kanthack et al., 2022), and repeated technical patterns with elite judo competition (Kons et al., 2025). Sport-specific assessments have additionally examined takedown-related performance (Wąsacz et al., 2024) and the discriminative properties of a Brazilian Jiu-Jitsu fitness

test (de Albuquerque de Maurício et al., 2024). Together, these approaches support structured observation as a practical complement to laboratory-based performance testing, particularly when the aim is to translate competition events into coach-relevant evidence**.** Research comparing simulated bouts with sport-specific training demands (Magno et al., 2022) further supports the value of grounding training design in actual match requirements. Nevertheless, frequency summaries cannot independently establish whether technical actions form consecutive transitions. Such interpretations require event-level coding and verification of temporal relationships between actions, particularly when evaluating performance across interconnected fighting phases (Ambroży et al., 2023; Spanias et al., 2022).

Although these studies have contributed substantially to understanding combat-sport performance, three gaps remain relevant to the present study. First, three research gaps remain relevant to the present investigation. First, an empirical and contextual gap exists in the sequence-specific documentation of the PON XXI 2024 men's Fighting System −77 kg champion. Previous studies have established technical–tactical performance indicators in elite sport ju-jitsu (Ambroży et al., 2021, 2023, 2024), but these investigations do not describe the distribution and execution outcomes of this athlete's techniques across the available competition sequences. Consequently, the characteristics of technical activity and effectiveness in this national championship case remain insufficiently documented. Second, a methodological gap concerns the distinction between technical attempts, successful executions, scoring events, and verified transitions. Research on positional tactics (Spanias et al., 2022) and temporal scoring patterns (Dopico-Calvo et al., 2024) demonstrates the importance of examining competitive actions in context. However, aggregated technique counts alone cannot confirm whether specific technical transitions occurred consecutively. Third, an analytical gap concerns the treatment of the initial Round 3 and its replay as separate observational units. Combining these sequences could conceal differences in technique selection, frequency, and execution effectiveness, even though the athlete faced the same opponent.

Accordingly, this study aimed to describe the match performance of the men's Fighting System −77 kg gold medalist at PON XXI Aceh–North Sumatra 2024 using retrospective video-based content analysis. It examines punches, kicks, throws, submissions, successful and unsuccessful attempts, and observable transitions between technical phases in four recorded competition sequences: Round 1, Round 2, the initial Round 3, and the Round 3 replay.

The novelty of this study lies in the sequence-specific integration of technical frequency and execution effectiveness to characterize competitive performance, including a separate analysis of the initial Round 3 and its replay. Previous studies have established the relevance of technical–tactical indicators in elite sport ju-jitsu (Ambroży et al., 2021, 2023), while the present study extends their application to a detailed examination of technical performance across four competition sequences involving an Indonesian national champion. This approach provides empirical insight into variations in attempted and successful techniques across competition situations and clarifies the distinction between documented technical outcomes and potential transitions requiring further verification. The study contributes a context-specific performance profile that can inform systematic video-based evaluation and the development of match-oriented technical–tactical training. Its scope is limited to a descriptive single-athlete analysis and does not establish causal determinants of competitive success, validate a new performance instrument, or support generalization across athletes and competitions.

METHODS

Research Design

This study employed an ex post facto research design using a content analysis approach to examine the technical actions performed by the gold medalist in the Men's Fighting System -77 kg category at the XXI National Sports Week (PON XXI) Aceh-North Sumatra 2024. The design was selected because competition events had already occurred and no research variable was manipulated. The investigation was framed as a retrospective descriptive single-athlete analysis, with individual actions as observation units and competition sequences as the units used for descriptive comparisons. This distinction prevents technical attempts from being mistaken for independent athletes or experimental observations.

Systematic technical-tactical assessment has been applied to sport ju-jitsu competitions (Ambroży et al., 2021, 2023) and to observational investigations of combat sports (Dopico-Calvo et al., 2024; Niewczas et al., 2024). The purpose was to describe the distribution, execution outcomes, and possible organization of techniques, not to establish causal factors leading to a championship result. Accordingly, the study did not include experimental assignment, an intervention, or statistical comparisons with other competitors.

Participants

The subject was Artz Brilliant, the East Java athlete who won the gold medal in the Men's Fighting System -77 kg category at PON XXI 2024. The available dataset covered Round 1 against Ronaldo Sagala, Round 2 against M. Masrokhan, the initial Round 3 against M. Irfan Fauzi, and the Round 3 replay against the same opponent. Selection was purposive and case-based: the focal athlete was chosen because his national championship performance corresponded to the research question. Four competition sequences, rather than four athletes or four independent matches, were included in the descriptive analysis.

No participant-level characteristics such as age, training history, anthropometry, or physiological testing outcomes were available in the source manuscript. They were therefore not estimated or inserted into the analysis. Research on the competitive and physical profiles of combat-sport athletes provides contextual rationale for examining such factors in future work (Barley & Harms, 2021; Cynarski et al., 2021; Wąsacz et al., 2022).

Instrument

The principal instrument was a structured observation sheet with predefined technical categories. A punch was defined as a legal hand strike, a kick as a legal leg strike, a throw as a legal throwing attempt, and a submission as a legal locking or choking attempt. Follow-up points and transition events were identified separately from the four main attempt categories. Success was defined operationally by the source coding record, rather than by a newly imposed scoring rule. A non-attempt was not scored as an unsuccessful action: where a technique did not occur in a sequence, its effectiveness was treated as not applicable. This preserved the distinction between a failed attempt and the absence of an attempt. More detailed observational frameworks and position-specific analyses have been developed in judo and Brazilian Jiu-Jitsu (Kons et al., 2025; Spanias et al., 2022). In addition, the duration of each technical action was recorded to provide a more comprehensive description of technical execution and to support the development of a match evaluation rubric using content anallysis observation sheet. Examples of formal reliability evaluation in combat-sport measurements underscore the value of reporting these procedures explicitly (Báez-San Martín et al., 2025; Faro et al., 2025; Wąsacz et al., 2024).

Procedure

Official match video recordings were used as secondary observational data. Each recording was reviewed using a structured observation sheet prepared for competition content analysis. Actions were identified and classified into punches, kicks, throws, submissions, follow-up points, and potential transitions between fighting phases. Successful and unsuccessful execution outcomes were recorded for technical actions. The analytic sequence consisted of organizing recordings by competition sequence, reviewing observable events, applying the technical coding categories, checking ambiguous classifications, calculating category and sequence summaries, and interpreting the descriptive profiles.

Data were collected through systematic observation of the recorded videos using a structured observation sheet developed specifically for content analysis. Each technical action was identified and coded according to predefined categories, including: Each technical action was identified and coded according to predefined categories, including: (1) punches; (2) kicks; (3) throws; (4) submissions; (5) follow-up points; (6) transition sequences between fighting phases; and (7) the outcome of each action, classified as successful or unsuccessful.

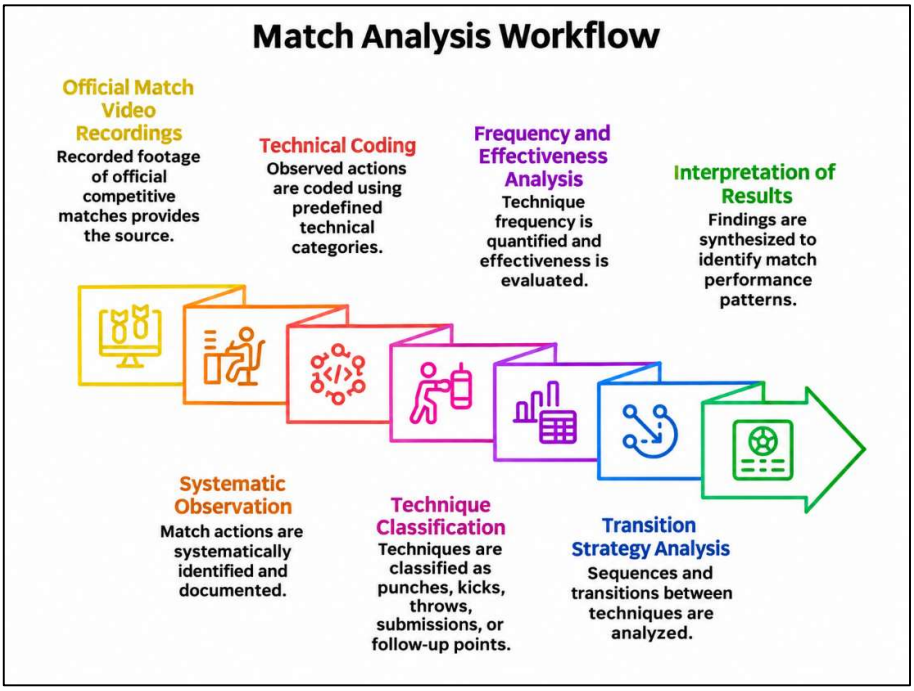


Figure 1. Research Flow of Content Analysis in Men's Fighting System Jiu-Jitsu Matches

The initial Round 3 and the replay were retained as separate records because the original contest was repeated following a disputed result. Combining them would conceal differences in the number and outcomes of technical attempts. Penalty-related scoring was also distinguished from successful technical execution to avoid inflating the technical success numerator. The separate recording of scoring events and penalties is consistent with event-based analysis in other combat sports (Dopico-Calvo et al., 2024; M. A. F. D. Santos et al., 2023).

To improve the credibility of the coding process, the recorded matches were reviewed using a structured observation procedure. The coding results were subsequently checked for consistency, and any unclear or ambiguous technical actions were reviewed and discussed until a final coding

decision was reached. This procedure was implemented to improve coding consistency and minimize potential observer bias throughout the content analysis process (Ambroży et al., 2023; Dopico-Calvo et al., 2024).

Table 1. Operational Definitions of Observed Variables

Variable	Operational Definition	Measurement	Scoring Criteria
Punch	Any legal hand strike executed during the match.	Frequency (n); match time (mm:ss); effectiveness (%).	1 = Successful; 0 = Unsuccessful; N/A = No attempt.
Kick	Any legal kicking technique executed during the match.	Frequency (n); match time (mm:ss); effectiveness (%).	1 = Successful; 0 = Unsuccessful; N/A = No attempt.
Throw	Any legal throwing attempt performed during the match.	Frequency (n); match time (mm:ss); effectiveness (%).	1 = Successful; 0 = Unsuccessful; N/A = No attempt.
Submission	Any legal locking or choking attempt during ground fighting.	Frequency (n); match time (mm:ss); effectiveness (%).	1 = Successful; 0 = Unsuccessful; N/A = No attempt.
Execution Time	Recorded match-clock position of each technical action.	Timestamp (mm:ss); duration (s) when verified.	Actual recorded time; no estimated values.
Follow-up Point	Additional points obtained following successful technical execution.	Frequency (n); points awarded.	Actual points recorded separately from technical attempts.
Penalty Point	Points awarded through recorded penalty events.	Frequency (n); points awarded.	Actual points recorded; excluded from technical effectiveness.
Transition	Observable progression between fighting phases, particularly striking, throwing, and grappling.	Frequency (n); transition pattern.	1 = Verified; 0 = Not observed; U = Unverified.
Technical Effectiveness	Percentage of successful executions relative to total technical attempts.	Effectiveness (%).	(Successful attempts / Total attempts) × 100%.

The coded data were analyzed descriptively using content analysis techniques. The frequency of each technical action, execution duration, transition pattern, and scoring effectiveness were calculated to describe the athlete's competitive performance. The formula calculates technical effectiveness as the percentage of successful technical executions relative to the total number of attempts. A higher percentage indicates a greater proportion of successful executions, while techniques with no recorded attempts are excluded from the calculation.

The effectiveness percentage represented the success rate of each technical action performed during competition and was interpreted together with execution duration and transition characteristics. This analytical procedure is consistent with previous studies evaluating combat sport techniques based on execution success rates (Ambroży et al., 2021, 2023; Niewczas et al., 2024).



Figure 2. Match Video Recordings from Rounds 1–3 in Ju-Jitsu Fighting System at PON XXI 2024.

Figure 2 shown screenshots from official match video recordings of the Men's Ju-Jitsu Fighting System −77 kg champion at PON XXI 2024, covering Rounds 1–3, including the Round 3 replay. The recordings were systematically analyzed to identify technical attempts, execution outcomes, technical effectiveness, and potential transitions between fighting phases.

Data Analysis

Recorded actions were summarized using descriptive statistics. Frequency was defined as the number of observed attempts in a technical category, and technical effectiveness was calculated as successful attempts divided by all attempts within that category, multiplied by 100. The relative share of each technique was calculated using all recorded technical attempts as the denominator; pooled effectiveness was calculated from combined counts, not from the unweighted average of sequence-level percentages. No inferential tests were performed because the purpose was athlete-specific description rather than population-level hypothesis testing. Penalties and follow-up scoring were described separately from technique-attempt effectiveness, where the source records allowed this distinction. Technical categories with no attempts were denoted as not applicable. The consistency of reported transition frequencies was examined against recorded technique counts; unreconciled transition totals were excluded from verified quantitative findings. (de Albuquerque de Maurício et al., 2024; de Almeida-Neto et al., 2026; Kędziorek et al., 2025; Peric et al., 2026; Zhang et al., 2025).

RESULTS

Technical Performance in Round 1

Round 1 observation of Artz Brilliant against Ronaldo Sagala included punches, kicks, throws, and submissions. Kicks were the most frequently performed technique, with eight attempts, followed by punches with three attempts, while throws and submissions were each recorded once. Overall, 13 technical attempts were recorded, consisting of seven successful and six unsuccessful executions, resulting in an overall effectiveness of 53.85%.

Table 2. Technical Performance of Artz Brilliant in Round 1

Technique	Attempts	Successful	Unsuccessful	Effectiveness (%)
Punch	3	2	1	66.67
Kick	8	4	4	50.00
Throw	1	1	0	100.00
Submission	1	0	1	0.00
Total	**13**	**7**	**6**	**53.85**

Table 2 shown the technical frequency and effectiveness of each action performed in Round 1. Kicks were the most frequently performed technique (eight attempts), with 50.00% effectiveness, followed by punches (66.67%). Throws achieved the highest effectiveness (100%), although based on only one attempt, while the single submission attempt was unsuccessful (0%). The different ordering of frequency and success proportions reinforces the need to distinguish attack activity from execution effectiveness in sport ju-jitsu performance analysis (Ambroży et al., 2021, 2023).

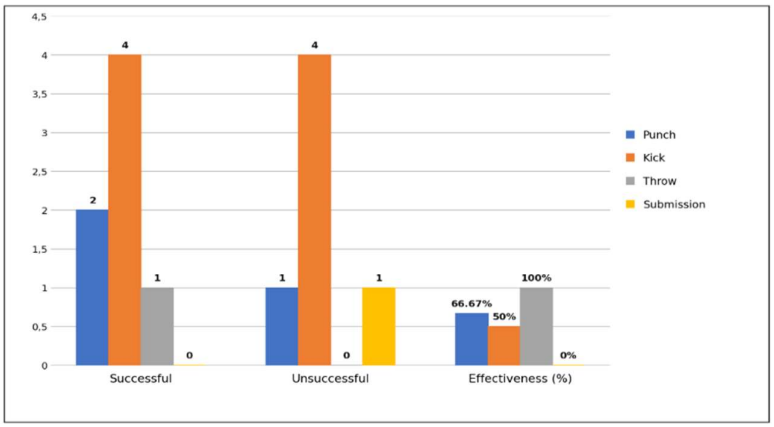


Figure 3. Technical Performance in Round 1

Technical Performance in Round 2

The technical performance analysis in Round 2 showed that Artz Brilliant performed punches, kicks, and throwing techniques during the match against M. Masrokhan from Central Java. No submission attempt was recorded during this sequence. A total of seven technical attempts were recorded, consisting of four successful and three unsuccessful executions, resulting in an overall effectiveness of 57.14%. Two penalty actions were also documented during the match.

Table 3. Technical Performance of Artz Brilliant in Round 2

Technique	Attempts	Successful	Unsuccessful	Effectiveness (%)
Punch	2	1	1	50.00
Kick	4	2	2	50.00
Throw	1	1	0	100.00
Submission	0	0	0	—
Total	**7**	**4**	**3**	**57.14**

The results showed that kicks were the most frequently performed technique, with four attempts, followed by punches with two attempts and one throw. The throwing technique recorded the highest effectiveness at 100%, although it was performed only once. Both punches and kicks demonstrated 50.00% effectiveness. Thus, the single successful throw provides evidence of success in this instance, not a reliable ranking of technique effectiveness across competition settings

(Ambroży et al., 2023). The transition coding reports Punch → Kick, Kick → Throw, and Throw → Submission once each; however, no submission attempt appears in Table 3.

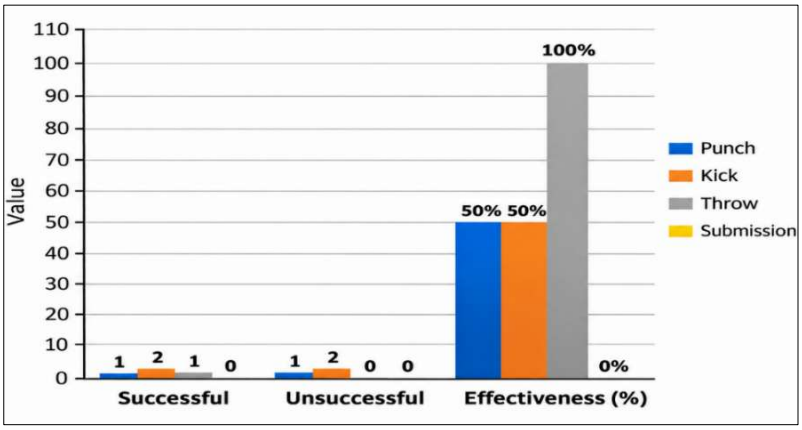


Figure 4. Technical Performance in Round 2

Technical Performance in Round 3: Initial Match

The technical performance analysis in the initial Round 3 showed that Artz Brilliant performed punch, kick, and throwing techniques against M. Irfan Fauzi from East Kalimantan. One punch, three kick attempts, and four throw attempts were recorded, while no submission attempt was observed. Overall, eight technical attempts were recorded, consisting of four successful and four unsuccessful executions, resulting in an overall effectiveness of 50.00%. One penalty action was also documented during the round.

Table 4. Technical Performance of Artz Brilliant in the Initial Round 3

Technique	Attempts	Successful	Unsuccessful	Effectiveness (%)
Punch	1	1	0	100.00
Kick	3	2	1	66.67
Throw	4	1	3	25.00
Submission	0	0	0	—
Total	**8**	**4**	**4**	**50.00**

The results showed that throwing was the most frequently attempted technique, with four attempts. However, its effectiveness was 25.00%, as only one of the four attempts was successful. Punching recorded the highest effectiveness at 100.00%, although it was performed only once, followed by kicking at 66.67%. The mismatch between throwing frequency and success emphasizes that technique selection and effective execution are distinct performance indicators; one successful punch is likewise too limited to infer stable superiority (Ambroży et al., 2021). Although the transition summary records Punch → Kick, Kick → Throw, and Throw → Submission once each, the absence of submission attempts means that the final sequence cannot be corroborated by Table 4 without event-level review (Spanias et al., 2022).

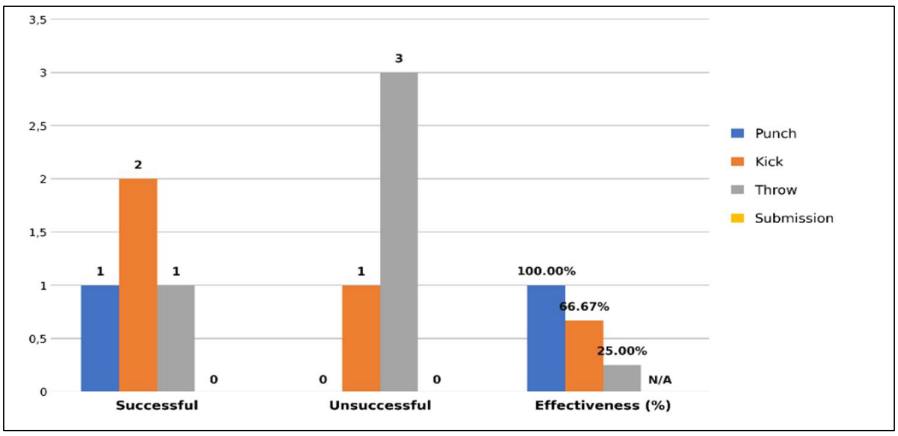


Figure 5. Technical Performance in Round 3 Initial Match

Technical Performance in Round 3 Replay

The replay of Round 3 was analyzed separately because the initial result was contested and the match was subsequently repeated. During the replay, Artz Brilliant performed two kick attempts and one throw attempt, while no punch or submission attempt was recorded. All three technical actions were successfully executed, resulting in an overall effectiveness of 100.00%.

Table 5. Technical Performance of Artz Brilliant in Round 3 Replay

Technique	Attempts	Successful	Unsuccessful	Effectiveness (%)
Punch	0	0	0	—
Kick	2	2	0	100.00
Throw	1	1	0	100.00
Submission	0	0	0	—
Total	**3**	**3**	**0**	**100.00**

The results indicate that all recorded technical attempts during the replay were successful. Kicks accounted for two of the three technical attempts, while one successful throw was recorded. No unsuccessful technical execution was observed during the replay. The result therefore showed higher technical effectiveness than the initial Round 3, in which four successful an four unsuccessful actions were recorded. Nevertheless, this complete success proportion is based on only three actions and describes a particular match sequence; it cannot establish a lasting improvement in technical ability or tactical decision-making (Ambroży et al., 2023).

The transition coding summary again reports Punch → Kick, Kick → Throw, and Throw → Submission, each recorded once during the replay. However, Table 5 records neither a punch nor a submission attempt. Accordingly, these reported chains cannot all be substantiated by the technique-frequency record and should not be presented as verified consecutive actions without returning to the match footage (Dopico-Calvo et al., 2024; Spanias et al., 2022).

Transition Patterns Across Competition Sequences

The analysis of transition patterns showed that three recurring technical sequences were observed throughout the competition: Punch → Kick, Kick → Throw, and Throw → Submission. Each transition pattern was recorded once in Round 1, Round 2, the initial Round 3, and the Round 3 replay. Thus, each pattern was recorded four times across the four analyzed competition sequences, resulting in 12 recorded transition sequences in total

Table 6. Transition Patterns Observed Across Competition Sequences

Competition Sequence	Punch → Kick	Kick → Throw	Throw → Submission
Round 1	1	1	1
Round 2	1	1	1
Round 3 – Initial	1	1	1
Round 3 – Replay	1	1	1
Total Recorded	**4**	**4**	**4**

Table 6 reports recurring Punch → Kick, Kick → Throw, and Throw → Submission categories across the four competition sequences. Conceptually, Kick → Throw connects striking to the throwing phase, while Throw → Submission would connect throwing to ground-based grappling. However, some sequences contain no recorded submission attempts, and the replay contains neither punches nor submissions. Thus, the transition counts cannot be fully reconciled with the technique totals; although the table is retained as reported, direct video-based verification is necessary before interpreting the entries as confirmed transition patterns (Dopico-Calvo et al., 2024; Spanias et al., 2022).

Overall Technical Performance

Across the four analyzed competition sequences, a total of 31 technical attempts were recorded, consisting of 18 successful and 13 unsuccessful executions, resulting in an overall technical effectiveness of 58.06%. Kicks represented the most frequently performed technical action, followed by punches and throws, while submissions were observed only in Round 1. Technical effectiveness varied across competition sequences, with the highest overall effectiveness recorded in the Round 3 replay (100.00%), followed by Round 2 (57.14%), Round 1 (53.85%), and the initial Round 3 (50.00%).

Table 7. Overall Technical Performance Across Competition Sequences

Competition Sequence	Attempts	Successful	Unsuccessful	Effectiveness (%)
Round 1	13	7	6	53.85
Round 2	7	4	3	57.14
Round 3 – Initial	8	4	4	50.00
Round 3 – Replay	3	3	0	100.00
Total	**31**	**18**	**13**	**58.06**

The results indicate that technical frequency and effectiveness did not consistently correspond across the analyzed sequences. For example, kicks were frequently performed but did not always produce the highest effectiveness, whereas throws recorded high effectiveness in several sequences despite a lower frequency of execution. This distinction corresponds to the separate technical–tactical indicators used in elite sport ju-jitsu performance analysis (Ambroży et al., 2021, 2023). The coding summary also reports Punch → Kick, Kick → Throw, and Throw → Submission across all four sequences, but the reported frequencies require confirmation against individual event records. Consequently, these observations support a descriptive profile of technique use and success, not a demonstrated causal explanation of championship performance.

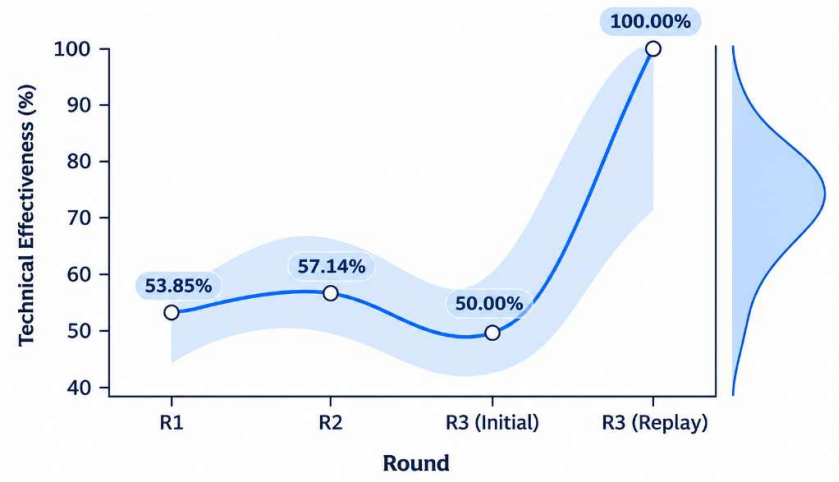


Figure 6. Overall Technical Performance.

DISCUSSION

The findings demonstrate that Artz Brilliant employed a combination of striking and grappling techniques throughout the observed competition sequences. Kicking techniques appeared consistently and were among the most frequently performed offensive actions, while throwing techniques demonstrated high effectiveness in several competition sequences. The central interpretive issue is the distinction between the decision to attempt a technique and its successful execution. A frequent action may be tactically useful as an entry, a means of testing distance, or a response to an opponent, even when it does not produce the highest success proportion. Conversely, a rarely attempted technique may appear exceptionally effective because it was used only when an opportunity arose. These intentions were not directly coded**.** The separation of attack activity from attack effectiveness is consistent with the technical–tactical indicators used in elite sport ju-jitsu research (Ambroży et al., 2021, 2023).

Related evidence from youth karate suggests that balance outcomes may be influenced by both the training approach and the athlete's core muscle strength, Yudhistira et al. (2026) reported a significant interaction between these factors ($p = .009$). This finding should be interpreted as contextual evidence only, because the cited study examined children practicing karate and used balance tests, whereas the present study describes match-specific technical actions in ju-jitsu.

The throwing profile is particularly informative because it varied across competition sequences. A successful isolated throw should be interpreted as evidence of an effective execution in that situation, not as proof that throwing is intrinsically superior to striking. Throwing requires an appropriate relationship among entry timing, body position, balance, and the opponent's resistance. The records cannot distinguish among these mechanisms. Interpreting these unmeasured factors as causal explanations would exceed the observational evidence**.** Research on sport-specific postural control further suggests that combat stance imposes distinctive motor-control demands, although that work does not directly explain the throws in this case (Akbaş et al., 2022).

Another important finding concerns the difference between the initial Round 3 and the Round 3 replay. The replay was analyzed as a separate competition sequence because the original result was contested**.** This comparison offers a useful within-athlete description but not a controlled test of learning or tactical adaptation. The opponent remained the same, yet the duration, available

opportunities, physiological state, and match circumstances were not standardized. A complete success proportion during a brief replay is consequently compatible with favorable situational opportunities as well as effective execution; it cannot demonstrate a lasting change in underlying proficiency.

Finally, the reported transition patterns require a separate evidential judgment. The original transition summary lists connections among punches, kicks, throws, and submissions across the sequences. However, the same manuscript records sequences without the punch or submission attempts needed to support some reported chains. Accordingly, the present discussion regards cross-phase integration as a defining tactical requirement of Fighting System, while withholding claims that the specific chains were repeatedly demonstrated by the supplied event records. This distinction preserves the study's descriptive contribution without converting unresolved coding into confirmed tactical behavior.

The closest empirical support comes from studies conducted within sport ju-jitsu itself. Ambroży et al. (2021) evaluated attack activity, efficiency, and effectiveness from tournament recordings while examining their relationships with aerobic capacity and special fitness. Their multidimensional approach supports treating frequency and execution outcomes as separate observations rather than interchangeable markers of competence. Ambroży et al. (2023) extended this approach to World Championship Fighting System contests, identifying variation in technical–tactical indicators across phases of combat and weight categories. The present single-athlete case cannot reproduce their population-level comparisons. Ambroży et al. (2024) also reported phase-dependent relationships between physical characteristics and competitive performance in national-team athletes. Those findings broaden the interpretation but do not justify attributing the current athlete's successful actions to fitness or body composition, neither of which was measured here.

Comparisons with other striking disciplines offer a useful tension rather than a straightforward contradiction. In professional kickboxing, da Silva Duarte et al. (2026) found that winners showed greater attack volume and efficacy than defeated athletes, whereas efficiency did not differ significantly between groups. Similarly, Čular et al. (2026) examined technical–tactical predictors of success using a multi-match model of elite K1 kickboxing. These designs indicate that attack volume can matter to competitive outcomes, while the present case demonstrates that the most-used technique need not have the highest within-category success percentage. Both observations can be valid because between-athlete associations with winning are different from within-athlete rankings of technique effectiveness. Niewczas et al. (2024) likewise evaluated offensive structures and technical indicators from recorded K1 sparring sessions. The rule differences between K1 and Ju-Jitsu Fighting System make direct ranking of punches, kicks, and throws inappropriate.

A comparable limitation applies to grappling research. Batista et al. (2024) identified prevalent groups of throwing techniques in European judo, reflecting a competitive structure organized differently from Fighting System. The technical priorities of judo cannot be transferred directly to Fighting System. Spanias et al. (2022), studying submission-only no-gi Brazilian Jiu-Jitsu, found that positional dominance was associated with certain upper-body submission outcomes, while lower-body submissions followed different positional patterns. This evidence supports examining what precedes a submission, but it does not verify the present study's reported Throw → Submission chains. It also underlines why a sequence must be reconstructed from temporally linked actions rather than inferred from a list of technique categories.

Time–motion studies provide additional evidence that match context can shape technical behavior. Santos et al., (2023) examined differences across female Brazilian Jiu-Jitsu weight divisions, whereas dos Santos et al. (2024) compared the movement patterns of winners and losers in international women's contests. Their analyses incorporate phases, duration, and positional behavior that are absent from the current aggregate tables. Thus, the present study cannot claim that the athlete's technical profile reflects the same time–motion mechanisms or discriminates winning from losing.

The separation of technical execution from penalty-derived scoring is also supported methodologically**.** Dopico-Calvo et al. (2024) analyzed scoring and penalty events according to their timing in elite judo, demonstrating that event types and their temporal locations provide distinct analytical information. Penalty-related points in the present case should therefore not be treated as successful punches, kicks, throws, or submissions. Taken together, the literature supports richer technical–tactical coding but shows that apparent discrepancies across sports often arise from rules, units of analysis, and outcomes measured, rather than incompatible empirical conclusions.

The findings also reinforce the three-phase structure of the Fighting System category, which integrates striking, throwing, and grappling techniques within a single competitive framework. A useful theoretical development is to organize performance into three analytically distinct, yet connected, dimensions: action selection, execution effectiveness, and temporal organization. The first describes what the athlete elects to attempt; the second describes the observed outcome; and the third addresses whether actions form meaningful sequences across phases. Frequency tables can support the first two dimensions, whereas credible claims about the third require timestamps, agreed transition definitions, and verification of the preceding and subsequent actions. This layered framework is compatible with the detailed observation of Fighting System contests used by Ambroży et al. (2023) and with event-based approaches to combat analysis (Dopico-Calvo et al., 2024).

Within this framework, the relationship between an athlete and an opponent is central. Technique execution is constrained by changing distance, posture, resistance, and available scoring opportunities; accordingly, observed success is not solely a property of the technique in isolation**.** Kanthack et al. (2022) found that combat-style congruency influenced aspects of performance and fatigability during simulated Brazilian Jiu-Jitsu bouts, suggesting that familiar or imposed tactical conditions can alter competitive demands. Akbaş et al. (2022) reported expertise-related differences in postural control under combat-specific stance conditions. These studies offer plausible motor-control and context-sensitive perspectives but do not directly identify the causes of the present athlete's performance variations.

An additional developmental implication concerns the integration of physical and perceptual preparation. Ambroży et al. (2021, 2024) found associations between specific physical characteristics and selected technical–tactical indicators in sport ju-jitsu, while Coswig et al. (2018) reported different physical-performance relationships across simulated grappling disciplines. Peric et al. (2026) investigated reaction time, accuracy, and movement variability with virtual-reality tasks in Brazilian Jiu-Jitsu athletes of different expertise levels, explicitly distinguishing these observable metrics from higher-order cognition. Such findings point toward a multidimensional future assessment system; they do not allow retrospective inference about this champion's anticipation, fatigue, or decision-making processes.

The study's developmental contribution is therefore better framed as a proposed observation architecture than as a validated theory of winning. A defensible architecture would link a coded technical attempt to its result, competition phase, opponent response, and timing, and would examine only verified transitions. Riquelme-Hernández et al. (2022) found that Brazilian Jiu-Jitsu performance research frequently focused on physiological and physical variables, highlighting the relevance of complementary competition-specific observation. Nevertheless, construct validity and observer agreement must be established before transition counts or composite performance scores can be used for scientific or selection decisions.

From a practical perspective, the findings suggest that coaches may consider incorporating transition-based training alongside training focused on individual striking and grappling techniques**.** The most immediate application is an individualized video-review process in which coaches record technique choice, opponent reaction, and outcome before deciding which technical weaknesses require intervention. Coaches should avoid treating a technique as superior simply because an isolated attempt succeeded. They should instead examine whether similar opportunities produce comparable outcomes across repeated practice sessions and competitions**.** This approach follows the use of observation to inform technical–tactical training adjustments described by Ambroży et al. (2023) and Niewczas et al. (2024).

Training may progress from controlled repetitions to constrained opponent-based drills and then to representative sparring. In the striking phase, coaches can vary distance, attacking entry, and defensive response; during throwing practice, they can vary balance disruption, grip or contact opportunities, and resistance; and during ground-based continuation, they can focus on the conditions under which a legal submission becomes available. A Punch → Kick → Throw → Submission progression may be explored as a hypothetical drill, but the present data do not establish that it was a recurrent successful sequence. Studies of positional tactics (Spanias et al., 2022) and context-dependent combat style (Kanthack et al., 2022) provide reasons to design adaptable rather than rigid tactical tasks.

Physical preparation should be integrated with these practical tasks instead of being treated as an unrelated training component. Ambroży et al. (2021, 2024) showed the relevance of fitness to several dimensions of sport ju-jitsu performance. Magno et al. (2022) demonstrated that a sport-specific Brazilian Jiu-Jitsu training model reproduced several responses to simulated match demands. Although that protocol cannot be transferred unchanged to Fighting System, it supports designing and evaluating training against the actual demands of the target discipline. (Giardullo, 2026) also reported benefits of an ecological–dynamical Brazilian Jiu-Jitsu training approach for selected physical and reactive outcomes. Its relevance here is conceptual: variability and opponent-driven tasks warrant investigation, but their effectiveness for Fighting System needs direct testing.

For performance monitoring, the original observation sheet should be refined before it is used as a standardized assessment instrument. Each event should carry a sequence identifier, elapsed match time, technical category, attempt outcome, relevant scoring or penalty information, and a clear definition of whether a transition occurred. Independent coders should evaluate agreement, disputed events should be revisited on video, and actions absent from a sequence should be labeled not applicable rather than unsuccessful. The reliability evaluations of the BJJFitness Test (de Albuquerque de Maurício et al., 2024) and a takedown-specific test (Wąsacz et al., 2024) illustrate the importance of establishing measurement properties before routine use.

CONCLUSION

This study demonstrated that the technical performance of the gold medalist in the Men's Ju-Jitsu Fighting System −77 kg category at PON XXI 2024 was characterized by variations in technique frequency and effectiveness across competition sequences. Kicking was the most frequently performed technique, while throwing effectiveness varied depending on the observed competition sequence. These findings indicate that higher technical frequency does not necessarily correspond to greater execution effectiveness, emphasizing the importance of evaluating both technical activity and successful execution.

The differences between the initial Round 3 and its replay further highlight the context-dependent nature of technical performance, even when involving the same athlete and opponent. The analysis also identified potential transitions between striking, throwing, and grappling phases**,** although their precise sequences and frequencies require further verification through event-level observations.

Overall, this study contributes preliminary empirical evidence supporting a multidimensional approach to technical–tactical performance evaluation in competitive Ju-Jitsu. The findings may inform the development of more systematic performance assessment and context-specific training strategies. However, the single-athlete design and limitations in transition coding restrict generalizability, highlighting the need for further research involving larger samples and validated observational instruments.

RECOMMENDATION

Based on the findings of this study, coaches are encouraged to develop training programs that emphasize technical effectiveness alongside the frequency of technique execution. Training should prioritize the situational application of punching, kicking, and throwing techniques through progressive exercises that integrate technical precision, tactical decision-making, and opponent-based scenarios**.** Particular attention should be given to improving throwing consistency under varying competitive conditions.

For performance evaluation, coaches and sports organizations should implement systematic video-based assessments to identify technical strengths, execution weaknesses, and variations in performance across competition sequences. Standardized observation instruments should distinguish successful attempts, unsuccessful attempts, penalty-related points, and transitions between fighting phases**.** Furthermore, reported transition patterns should be verified through detailed event-level observations before being incorporated into formal performance assessments.

Future research should involve larger samples, multiple athletes, different weight categories, and various competitive levels to improve the generalizability of findings. Subsequent investigations should incorporate validated observational instruments, temporal analysis, opponent characteristics, and inter-rater reliability assessments. Comparative and longitudinal studies are recommended to examine technical–tactical performance consistency, while experimental research should evaluate the effectiveness of integrated striking-to-grappling training programs. These efforts may strengthen evidence-based coaching practices and contribute to the systematic development of competitive Ju-Jitsu performance.

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