# Winning techniques and time characteristics in UFC lower weight class MMA

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**Abstract:** By using methods of literature review and video analysis, this study conducted a statistical analysis of 91 small-weight-class mixed martial arts (MMA) matches from UFC Fight Night 2014–2015 and UFC 168–194 in 2015, examining factors including victory methods, temporal characteristics, and technical features. The results indicate that: (1) decision victories were the primary winning method for small-weight-class MMA athletes, followed by KO and submission; (2) the first round was the critical round of the match; (3) stand-up confrontation time dominated total fight time, with ground time secondary; (4) straight punches, hooks, and leg kicks were the main striking techniques; (5) double-leg takedowns had the highest success rate among takedown techniques; and (6) ground-and-pound, rear-naked chokes, and upper-limb joint locks were the primary techniques for KO and submission victories.

**Keywords:** mixed martial arts (MMA), UFC, technical characteristics

## 1. Introduction

The Ultimate Fighting Championship (UFC) is currently the world's premier and largest professional mixed martial arts (MMA) event, with global popularity. Its rules allow athletes to employ techniques from any combat style, enabling full expression of individual technical styles while showcasing the artistic appeal of combat sports. With domestic media broadcasting of MMA events, the sport is gradually gaining acceptance among Chinese audiences. Consequently, domestic MMA practitioners should enhance their skills to promote the essence of Chinese martial arts. However, Chinese fighters have achieved modest results in the UFC. Since Zhang Tie Quan first entered the UFC in 2010, only five Chinese athletes had appeared in the octagon as of February 2015, competing in 11 bouts with a record of 4 wins and 7 losses—including one TKO victory and four TKO defeats. Notably, all 11 UFC appearances were on preliminary cards.[1] Currently, technical research on MMA remains relatively scarce domestically. This study analyzes the competitive techniques of elite small-weight-class UFC athletes to provide references for training and competition in China's MMA development.

## 2. Research subjects and methods

### 2.1. Research subjects

This study examined 91 bouts across three small weight classes—Flyweight, Bantamweight, and Featherweight—from main cards of UFC Fight Night 34 (2014) through UFC Fight Night 80 (2015), as well as UFC 168 through UFC 194 (2015). (UFC 176 was canceled; actual sample: 91 bouts.) The sample comprised: Flyweight (21 three-round bouts, 3 five-round title fights); Bantamweight (18 three-round bouts, 3 five-round title fights); and Featherweight (37 three-round bouts, 9 five-round title fights).

### 2.2. Research methods

*2.2.1. Literature review*

Relevant materials on UFC competition formats, rules, and mixed martial arts were consulted.

*2.2.2. Video analysis*

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Ninety-one small-weight-class UFC bouts from 2014–2015 were downloaded from an MMA website (www.vs.cm/) and stored for analysis. Techniques were statistically analyzed through slow-motion playback, including: victory outcomes, rounds, stand-up techniques (punches, kicks, combinations), takedowns, ground techniques, and temporal characteristics of matches.

*2.2.3. Interview method*

Consultative interviews were conducted with domestic MMA athletes and coaches; experts and scholars in combat sports were also interviewed regarding MMA-related issues.

*2.2.4. Mathematical statistics*

Excel 2013 was used for statistical analysis of technical parameters and match data.

## 3. Results and analysis

### 3.1. Analysis of athletes' height, reach, and age characteristics

As weight class increased among small-weight-class MMA athletes, height and reach increased accordingly. Significant differences in height and reach were found between Featherweight and Flyweight ($P<0.05$), while no significant differences existed between Flyweight and Bantamweight, or between Bantamweight and Featherweight ($P>0.05$) (see Table 1). Additionally, mean height and reach values across all three weight classes were slightly greater than the athletes' actual measurements. No significant age differences were observed among the three weight classes ($P>0.05$).

Table 1 Height, Reach, and Age of UFC Small-Weight-Class Athletes

| Flyweight (n=48) | | | Bantamweight (n=42) | | | Featherweight (n=92) | | |
|---|---|---|---|---|---|---|---|---|
| Age | Reach (cm) | Height (cm) | Age | Reach (cm) | Height (cm) | Age | Reach (cm) | Height (cm) |
| 28.5±3.5 | 167.1±3.23 | 163.9±2.88 | 29.1±2.63 | 173.8±5.36 | 169.9±2.66 | 28.5±2.99 | 178.1±4.99 | 174.9±4.57 |

### 3.2. Analysis of match temporal characteristics

*3.2.1. Bout completion analysis*

Of 91 UFC small-weight-class bouts, 46 failed to reach the full scheduled distance. By division: Flyweight (23 total bouts, 7 incomplete, 30.4%); Bantamweight (22 total bouts, 14 in complete, 63.6%); and Featherweight (46 total bouts, 26 incomplete, 56.5%). Despite all being lower weight classes, full-distance completion decreased as weight increased. Among three-round bouts, Bantamweight had the highest incomplete rate (63.6%), followed by Featherweight (56.5%) and Flyweight (30.4%). Although 66.6% of Bantamweight title fights (five-round) ended early, the small sample size renders this observation tentative pending further research (see Table 2).

Table 2 Match Completion Overview

| Division | Flyweight | Bantamweight | Featherweight | Total |
|---|---|---|---|---|
| | 3-Rd | 5-Rd | Total | 3-Rd |
| Bouts (n) | 20 | 3 | 23 | 19 |
| Incomplete bouts | 6 | 1 | 7 | 12 |
| Incomplete rate (%) | 30 | 33.3 | 30.4 | 63.1 |

*3.2.2. Round-by-round analysis*

UFC regular bouts consist of three rounds and championship fights of five rounds, with one-minute rest intervals. Completing the full three or five rounds poses a significant endurance challenge for athletes.

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Full-distance bouts numbered 25, accounting for 49.5% of the sample, making decision victories the primary winning method in small-weight-class competition.

Among 46 bouts that failed to reach the scheduled distance, 21 ended in the first round (45.6% of early stoppages), followed by second-round (26.1%) and third-round (21.8%) victories, totaling 47.9% (see Table 3). Additionally, among 15 five-round championship bouts, 8 ended early (see Table 2): 4 in Round 1, 1 in Round 2, 3 in Round 5, with no fourth-round stoppages.0

Analysis indicates that the first round is the critical period for rapid fight conclusion, requiring athletes' utmost attention and caution. Featherweight recorded 15 first-round victories—the highest among all rounds. This phenomenon stems from athletes' peak physical condition and morale at fight onset, highly destructive striking capability, and insufficient mutual familiarity between opponents. Therefore, athletes should prioritize first-round preparation through thorough pre-fight analysis of opponents' technical characteristics, tactical patterns, and physical capabilities, adopting a strategy of initial probing followed by committed attacks—know yourself and know your enemy.

The substantial victory rates in Rounds 2–3 reflect athletes capitalizing on first-round reconnaissance to secure victories through competitive ability, tactical execution, and seizing critical opportunities.

Table 3 Distribution of Fight-Ending Rounds Across Weight Classes

| | Round 1 | Round 2 | Round 3 | Round 4 | Round 5 | Total |
|---|---|---|---|---|---|---|
| Flyweight | 1 | 3 | 2 | 0 | 1 | 7 |
| Bantamweight | 5 | 4 | 3 | 0 | 2 | 14 |
| Featherweight | 15 | 5 | 5 | 0 | 0 | 25 |
| Total | 21 | 12 | 10 | 0 | 3 | 46 |
| Percentage | 45.6% | 26.1% | 21.8% | 0 | 6.5% | 100% |

*3.2.3. Analysis of positional time characteristics*

Match positions were categorized into four types based on athlete posture: mutual stand-up confrontation, mutual ground engagement, mutual clinch, and asymmetric stand-up/ground positions. Analysis revealed that mutual stand-up confrontation was the dominant position (49.63% of total time), followed by mutual ground time (36.17%) and mutual clinch (13.36%) (see Figure 3). This indicates stand-up dominance in temporal distribution; however, ground techniques and ground-and-pound produced 35 victories compared to only 9 from stand-up striking—an inverse relationship between time investment and victory efficiency. This disparity likely stems from reduced striking power in lower weight classes, creating greater submission and KO opportunities in ground combat. Therefore, training should emphasize both stand-up technique to improve victory rates and ground defense to mitigate vulnerability.

Notably, cage time—defined as periods when one or both athletes engaged with the fence—merits specific attention. Embedded within stand-up, ground, and clinch durations, total cage time reached 12,977 seconds (20.91% of match time). The confined space restricts technical execution, making cage time strategically significant for tactical preparation.

### 3.3. Analysis of victory methods

This study found 45 decision victories (49.4%), 23 KOs (25.3%), 21 submissions (23.1%), and 2 doctor stoppages (2.2%) (see Figure 1). Thus, KO and submission victories combined reached 48.4%, nearly matching the 49.4% decision rate. Historical comparison shows evolution in UFC outcomes: 2008 (201 bouts: 41.3% KO, 26.9% submission, 31.8% decision) versus 2010 (276 bouts: 27.5% KO, 23.6% submission, 47.7% decision).[1] This KO decline and decision increase reflect improving technical proficiency and defensive sophistication across all weight classes.

Compared to heavier divisions, small-weight-class athletes generate less striking power, yielding relatively lower KO rates and slightly elevated decision percentages—though this elevation remains

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non-significant, maintaining rough parity with overall UFC statistics. Ultimately, technical ability, training quality, and fight management capability determine competitive success.

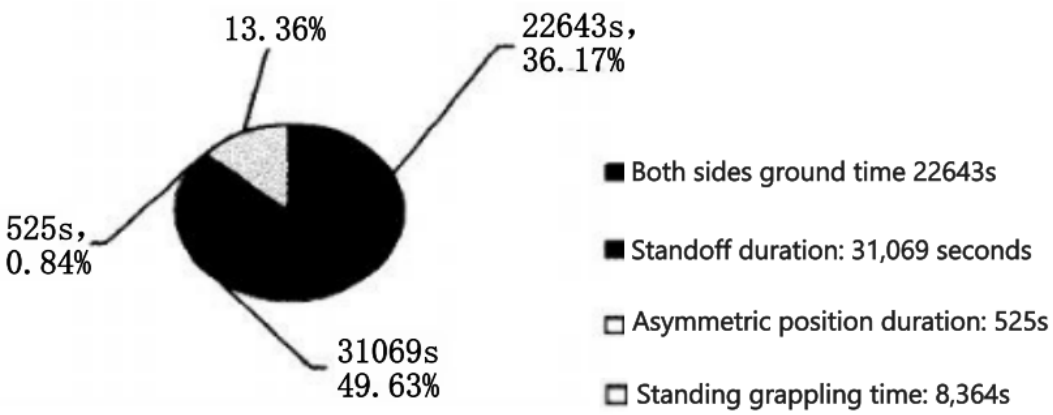


Figure 1 Temporal Distribution of Positional Characteristics

### 3.4. Technical analysis

*3.4.1. Analysis of KO and submission techniques*

"Victory techniques" refer to decisive techniques that determine outcomes beyond score-based judgments. These comprise two categories: (1) stand-up striking techniques, and (2) integrated techniques combining stand-up striking, takedowns, joint locks, chokes, and ground techniques. Among single-technique victories, punching techniques predominated at 13.0% of wins, while kicks, knees, and punch-kick combinations each contributed one victory (6.6% combined). This reflects punches' speed, precision, and power—capable of securing immediate victories, inflicting damage to create opportunities, or setting up complementary techniques. Kicks, knees, elbows, and combinations proved less effective due to tight defensive vigilance against these high-impact techniques.

Integrated techniques produced 35 victories (76.1%), representing the primary victory modality. The most successful integrated approach was stand-up striking combined with takedowns and chokes (30.4%). Stand-up-to-ground striking (10 bouts, 21.7%) and takedown-to-ground striking (4 bouts, 8.7%) formed a related category, while ground joint locks accounted for 7 victories (15.3%).

Analysis indicates that victory patterns reflect sport-specific demands: comprehensive technical ability is required, with stand-up striking as the foundation and ground striking/chokes as decisive elements—characteristic of small-weight-class MMA. Rear-naked chokes, triangle chokes, armbars, and shoulder locks were the principal ground techniques for victory.

*3.4.2. Analysis of strike targets and submission locations*

Among 46 decisive victories, 24 resulted from head strikes (52.2%) (see Figure 2). This includes 2 doctor stoppages caused by head trauma. Neck control leading to asphyxiation accounted for 14 submissions (30.4%), while upper-limb joint locks produced 7 submissions (15.2%). Thus, the head, neck, and upper limbs represent both primary targets for victory and critical defensive priorities.

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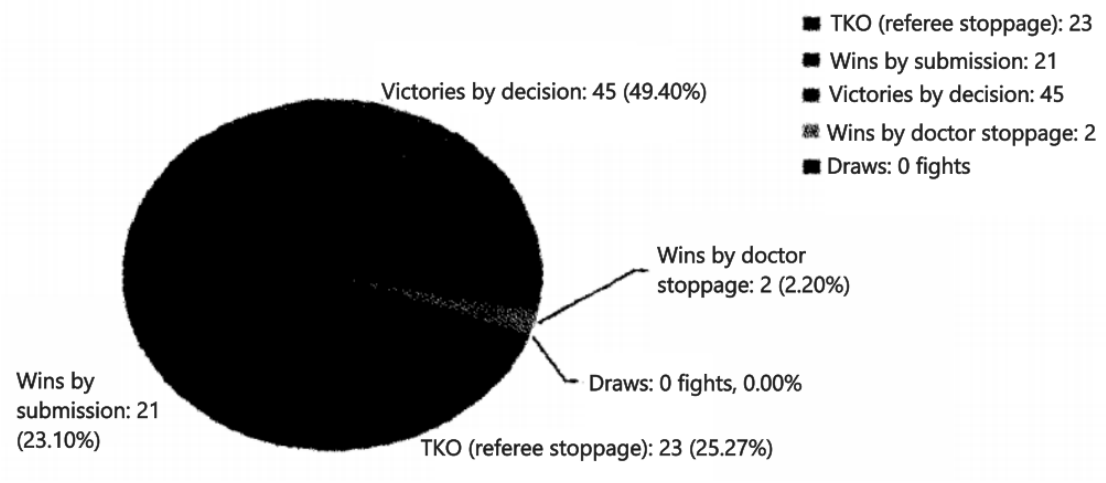


Figure 2 Distribution of Victory Methods

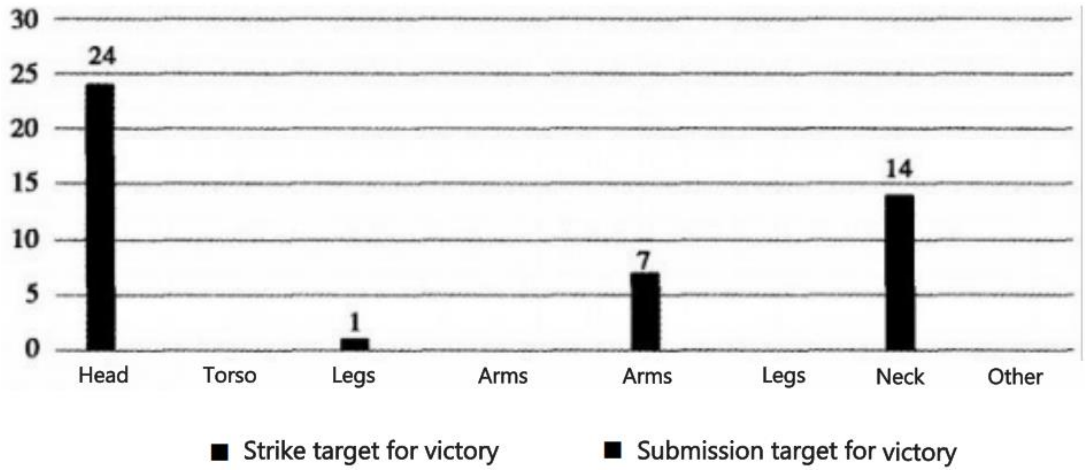


Figure 3: Winning Strike Targets and Submission Hold Locations

*3.4.3. Punching and kicking techniques*

Decision victories comprised 49.4% of outcomes in UFC small-weight-class bouts, necessitating stand-up dominance to secure favorable judging. Analysis indicates that straight punches, hooks, and roundhouse kicks served as primary offensive weapons. Straight punches and hooks were most frequently employed with relatively high accuracy (36.3% and 40.1%, respectively), while hooks—though less utilized—achieved the highest connection rate at 51.2% (see Table 5). However, punching techniques directly produced only 13% of victories (see Table 4), suggesting their primary role is inflicting damage to set up integrated attacks.

Roundhouse kicks were the most utilized leg technique with the highest stand-up accuracy (67.7%), yet kicks and punch-kick combinations yielded only 2 direct victories—indicating kicks are not decisive finishing techniques. This stems from reduced power in lower weight classes, tactical targeting of legs rather than heads, and defensive vigilance protecting against high-amplitude techniques.

Knees were deployed 1,268 times with 37.8% accuracy but produced merely 1 victory. Despite their power, knees were predominantly utilized in close quarters with limited range and impact. Effective knee deployment requires distance management for enhanced efficiency.

Among front kicks (push/teep), sidekicks, spinning kicks, and other leg techniques, only front kicks showed substantial utilization (33.1% accuracy), while sidekicks, spinning kicks, and miscellaneous techniques demonstrated low frequency and accuracy—representing significant technical development opportunities.

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Table 4 Breakdown of KO and Submission Methods by Technique Type

| Technique | Punching +Combinations | Kicks | Kicks | Elbows | Punch-Kick Combinations | Punch-Takedown Combinations | Takedown + Ground Striking | Stand-up + Ground Striking | Stand-up + Takedown + Joint Locks | Stand-up + Takedown + Chokes | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bouts (n) | 6 | 1 | 1 | 0 | 1 | 0 | 4 | 10 | 7 | 14 | 2 |
| Percentage (%) | 13.0 | 2.2 | 2.2 | 0 | 2.2 | 0 | 8.7 | 21.7 | 15.3 | 30.4 | 4.3 |

Table 5 Striking Technique Utilization

| Technique | Straight | Hook | Uppercut | Elbow | Other | Roundhouse Kick | Front Kick | Side Kick | Spinning Kick | Knee | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Attempts | 5127 | 4661 | 938 | 107 | 223 | 1579 | 353 | 64 | 29 | 1268 | 76 |
| Per round | 21.7 | 19.7 | 3.9 | 0.5 | 0.9 | 6.7 | 1.5 | 0.3 | 0.12 | 5.4 | 0.32 |
| Landed | 1861 | 1869 | 481 | 24 | 97 | 1069 | 117 | 5 | 4 | 479 | 9 |
| Accuracy (%) | 36.3 | 40.1 | 51.2 | 22.4 | 43.5 | 67.7 | 33.1 | 7.8 | 13.8 | 37.8 | 11.8 |

*3.4.4. Application of takedown techniques*

In MMA competitions, there are two primary combat positions: standing and ground. The main technique for athletes to transition from standing to ground is the takedown. Some MMA athletes have transitioned from wrestling, and their advantage lies in using takedowns to gain ground control, engage in grappling, and secure victory. Thus, takedown techniques are a critical transitional skill for athletes moving from standing to ground, warranting analysis and discussion.

Based on whether the athlete initiates the attack or counters defensively, takedowns can be categorized as active takedowns and counter takedowns. Takedowns were applied a total of 1,023 times, with successful takedowns totaling 323, resulting in a success rate of 31.6%. Among these, active takedowns demonstrated both higher frequency of use (694) and higher success rate (36.3%) compared to counter takedowns, indicating that actively initiating takedowns is the primary offensive method for transitioning to the ground (see Figure 4).

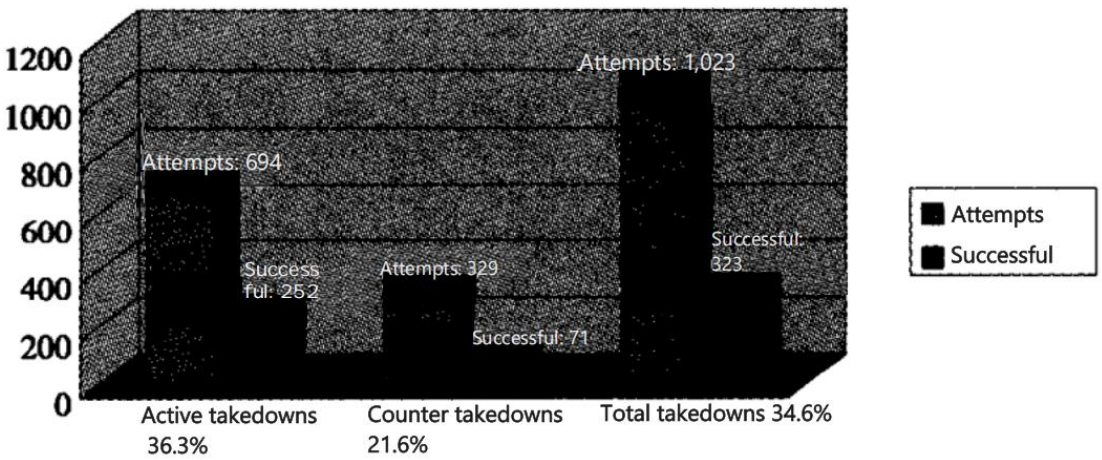


Figure 4 Utilization of Active and Counter Takedowns

Based on grip positioning, takedowns were categorized as upper-body, lower-body, and combined upper-lower techniques. Lower-body takedowns were employed 542 times with the highest success rate (39.8%) and frequency. These primarily utilized double-leg techniques, whose high usage stems from technical simplicity and accessibility from both offensive and counter-offensive positions, enabling rapid execution.

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Upper-body takedowns targeting above the waist totaled 347 attempts but only 13.8% success. Analysis suggests these served primarily as transitional techniques—rarely initiated proactively but frequently employed in reactive clinch situations, where balanced strength and tight defense reduced effectiveness.

Combined upper-lower takedowns demonstrated the highest success rate (44%) but limited application across both offensive and counter-offensive scenarios (see Table 6).

Table 6 Takedown Application and Success Rates by Type

| | Upper-Body Takedowns | Lower-Body Takedowns | Combined Takedowns | Total |
|---|---|---|---|---|
| Attempts (n) | 347 | 542 | 134 | 1023 |
| Per round | 1.47 | 2.3 | 0.56 | 4.33 |
| Successful (n) | 48 | 216 | 59 | 323 |
| Success rate (%) | 13.8 | 39.8 | 44.0 | |
| Overall success rate (%) | 4.7 | 21.1 | 5.8 | 31.6 |

*3.4.5. Ground techniques*

"Ground techniques" encompass all combat techniques employed on the mat, primarily categorized as ground striking and ground joint locks. Ground striking—characterized by concise, practical movements—enables top-position athletes to utilize hammer fists, presses, and strikes against bottom opponents. Ground striking and joint locks produced 14 and 21 victories respectively (see Table 4), comprising 76.1% of KO and submission wins, establishing them as decisive ground skills. Analysis indicates that ground hammer fists and elbows were most frequently deployed with the highest success rate (58.6%). Rapid execution speed and high frequency allow top-position athletes—particularly those securing mount—to capitalize on advantageous positioning for victory.

During ground exchanges, athletes continuously seek choking and locking opportunities through positional control and transitions. The rapid technique conversion from striking to joint locks and chokes demands exceptional ground transition capability. Among neck-related techniques, the rear-naked choke demonstrated the highest ground success rate (38.1%; 8/21 attempts). Upper-limb joint locks—shoulder locks (22.2%) and armbars (15.4%)—slightly exceeded the overall ground technique success rate (13.4%). Despite lower individual success rates (guillotine 10.5%, triangle choke 11.5%), these techniques contributed 5 of 21 submission victories (23.8%). Leg joint locks—ankle locks, knee bars, and heel hooks—showed zero success (0/16 attempts), likely attributable to limited strength, technical proficiency, and fight management capability in lower weight classes, suggesting leg submissions are unsuitable for small-weight-class competitors.

Table 7 Ground Submission Techniques of UFC Small-Weight-Class Athletes

| | Upper-Limb Joint Locks | | | Neck Chokes | | | Lower-Limb Joint Locks | Other | Total | Ground Elbows/Punches | Other Strikes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Armbar | Kimura | Shoulder Lock | Rear-Naked Choke | Guillotine | Triangle Choke | | | | | |
| Attempts | 26 | 13 | 9 | 21 | 19 | 26 | 16 | 27 | 157 | 931 | 352 |
| Successful | 4 | 1 | 2 | 8 | 2 | 3 | 0 | 1 | 21 | 546 | 87 |
| Success Rate (%) | 15.4 | 7.7 | 22.2 | 38.1 | 10.5 | 11.5 | 0 | 3.7 | 13.4 | 58.6 | 24.7 |

## 4. Conclusions and recommendations

The height and reach of UFC fighters in the lower weight classes increase with weight. Significant differences in height and reach exist between the flyweight and featherweight divisions. There are no significant differences in age characteristics among fighters in the lower weight classes.

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A total of 21 bouts ended in the first round, indicating that emphasizing the first round is crucial for securing victory. The ratio of wins by decision is almost equivalent to that by KO/submission.

Standing engagement time constitutes the primary position time during matches, followed by ground engagement time. Clinch/cage time coexists within both standing and ground engagements, and the techniques and tactics employed in the cage deserve attention.

In the standing striking techniques utilized by lower-weight-class athletes, straight punches, hooks, and roundhouse kicks are the primary offensive techniques. Takedowns are predominantly proactive shots from a lower position, with double-leg takedowns and combination takedowns (high-low) having the highest success rates. The head is the main target area for winning via strikes. In ground techniques, ground-and-pound primarily consists of ground punches and ground elbows. The primary winning techniques among ground submission holds are neck-related chokes, mainly including the rear-naked choke, triangle choke, and guillotine choke. For upper limb joint locks, the armbar and kimura are predominant.

Chinese mixed martial artists in the lower weight classes should focus on improving strength and endurance training; emphasize power training for punching and kicking techniques, especially straight punches, hooks, and roundhouse kicks, to enhance striking power; prioritize the development of shooting (shot) takedown techniques; increase the intensity of training for ground punches and ground elbows; strengthen research and training in upper limb ground techniques and neck-targeting ground techniques.

Training should place emphasis on standing and ground techniques used by both fighters against the cage, and research and discussion on cage/corner techniques should be intensified; research and training for leg lock techniques should be expanded; importance should be placed on studying and analyzing opponents' technical characteristics before matches for targeted training; and the critical nature of the first round in competition should be duly recognized.

## 5. Conclusion

This study reveals the core competitive dynamics of lower-weight-class UFC matches: while standing engagements consume the most time, ground techniques demonstrate higher finishing efficiency. The first round and cage/clinch situations are critical junctures that often determine the match outcome. On a technical level, straight punches, hooks, and roundhouse kicks form the foundation of standing offense; shot takedowns serve as an efficient means to transition to the ground; and submission holds targeting the neck and upper limbs, such as the rear-naked choke and armbar, are central to securing victories via submission.

For Chinese athletes, it is essential to cultivate a "first-round initiative-taking" mindset and develop specialized cage/clinch skills during training. Building a complete technical chain encompassing "standing setup – takedown transition – ground finish" is crucial, while simultaneously avoiding less efficient leg lock techniques. Only by integrating technical comprehensiveness with tactical specificity can competitive performance in the UFC be enhanced, achieving the leap from mere "participation" to genuine "contention."

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