

## Article

# A Technical–Tactical Analysis of Medal Matches in Wrestling: Results from the 2024 European Senior Championships

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## Abstract

**Background and Objective:** Match analysis plays a vital role in forming the scientific foundation of training and guiding strategic decision-making in wrestling. By objectively evaluating athletes' technical and tactical performances, coaches and athletes can optimize preparation and in-match strategies. This study aimed to analyze the technical and tactical characteristics of medal matches in Greco-Roman (GR), Freestyle (FS), and Women's Wrestling (WW) at the 2024 European Wrestling Championships. **Methods:** A total of 54 elite-level matches (18 from each style), held in Bucharest between 12 and 18 February, 2024, were retrospectively analyzed. Three expert observers evaluated the matches using video footage from the United World Wrestling (UWW) archive. Descriptive statistics were performed using SPSS 25.0. **Results:** Across 301 recorded actions, 2-point techniques (52.16%) and 1-point techniques (43.85%) were dominant; only 3.99% were 4-point actions. GR primarily utilized body lock and gut wrench; FS favored single-leg attacks and leg lace. In WW, the scores were obtained from techniques applied in the par terre position with a high frequency (60.8%). Most victories in all styles occurred by points rather than technical superiority or falls. **Conclusion:** The findings reveal a strategic preference for low-risk, controlled techniques in high-level matches. These insights can inform evidence-based training and match preparation for future championships.

**Keywords:** wrestling; match analysis; technical–tactical performance; European wrestling championships; match evaluation



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## 1. Introduction

Wrestling, one of the oldest and most respected disciplines in the world of sports, followed and participated in by millions of people worldwide, is a combat sport that involves the athlete's strategic efforts to gain physical control over their opponent, where high-intensity efforts alternate with short periods of low- to moderate-intensity activities or rest periods [1]. Wrestling is divided into two main categories: Greco-Roman (GR) and Freestyle (FS) [2]. The main difference between these two styles is that in GR wrestling,

holds targeting below the waist (including techniques involving the lower extremities) are prohibited. In contrast, FS wrestling allows for the use of techniques involving both the upper and lower extremities [3].

In recent years, experts examining the development trends of wrestling in the Olympic Games program have emphasized the need to maintain high match intensity, enhance scoring efficiency, and integrate performance analysis tools into the process to ensure the continued progress of the sport [4,5]. Although having a high level of physical preparation is a basic requirement for successful performance, it is not enough to achieve success or to reach the targeted result [6,7]. Previous studies have shown that wrestlers' technical skills play a significant role in achieving success [8]. However, the most critical factor in the development of modern wrestling is not only the ability to execute technical and tactical maneuvers but also the capacity to make accurate judgments under constantly changing match conditions, to take bold and rapid decisions in risky situations, and to analyze and anticipate the opponent's strategies. These factors are the main determinants of a wrestler's success and play a critical role in achieving the success and development of athletes [9–12].

Driven by technological advancements, scientific studies focusing on wrestling matches have significantly increased; this trend has been supported by easier access to video analysis tools and data-driven methodologies. A review of the literature on match analysis shows that physical, psychological, infrastructural, and managerial factors influencing the success of the 2012 London Olympic Games were evaluated based on the opinions of athletes and coaches [13]; the types of victories, techniques used, frequency of application, and scoring positions were analyzed in Greco-Roman medal matches at the 2015 World Wrestling Championships [14]; and point types, victory methods, score distributions by period, and passivity penalties were comparatively assessed in matches from the 2017 World, 2018 European, and 2018 World Championships [15]. Furthermore, the career data of 41 Freestyle Olympic champions from 1996 to 2016 were examined in terms of tournament participation and success trends across different age groups [16], and a valid competition analysis form was developed following the 2016 UWW rule updates for all age groups and wrestling styles [17]. These studies reveal the evolution of wrestling analytics and demonstrate that match analysis has become an indispensable tool for improving technical and tactical performance.

Match analysis is an important tool for evaluating wrestlers' performance, determining strategic approaches, and optimizing training processes. The most important factor for an athlete to achieve high performance is to be able to reflect the physical characteristics gained by applying the correct training programs to the field with appropriate technical and tactical elements [18]. One of the most reliable methods to create an effective training program and to determine the correct technical–tactical variations is to use the findings obtained from match analysis based on scientific data.

In high-level wrestling matches, the color of the medal often depends on small but critical details. The data obtained from matches provides an important foundation for optimizing athletes' technical and tactical skills, which in turn become one of the key determinants of the outcome. Rather than relying solely on traditional training approaches focused on physical preparation, the adoption of strategic training models supported by match analyses in the light of scientific data may be a decisive factor in achieving the highest level of success. This study was designed based on the following hypothesis: "As the 2024 European Championships represent the last major international event before the Olympic Games, will the technical–tactical profiles reflected in the medal matches of the GR, FS, and WW disciplines show significant differences?" It can be considered the first comprehensive study in the literature that jointly examines technical and non-technical points, period-based score distributions, and types of victories across different wrestling styles. The findings of

the study aim to contribute to the development of wrestling training methodologies and to offer scientific approaches that support athletes in reaching peak performance.

## 2. Materials and Methods

In this study, the technical and tactical characteristics of the third-place, fifth-place, and final matches held during the European Wrestling Championships in Bucharest, Romania, between 12 and 18 February 2024, were systematically analyzed. Only medal matches (final and bronze medal matches) were included in the analysis, as they represent the highest level of competition and involve athletes who qualified for the upcoming Olympic Games. Within the scope of the research, a total of 54 high-level matches were examined, consisting of 18 matches each from three different styles: GR, FS, and WW.

### 2.1. Data Collection

In the data collection process, video recordings published on the official website of United World Wrestling (UWW) were used as the primary source [<https://uww.org/uww-plus/buy-now> (accessed on 20 February 2025)]. Only medal matches (final and bronze medal matches) from each weight category in GR, FS, and WW were included in the analysis, covering all the medal matches held across all the categories at the 2024 European Wrestling Championships. All the matches were retrospectively analyzed using high-resolution video recordings obtained through UWW's online platforms. The recordings were reviewed by three independent observers (one national referee and two national team coaches), all of whom are experts in wrestling. The data obtained from the evaluations were systematically recorded using the standard observation form developed by Isik et al. [17]. Each observer independently watched the matches, after which a combined evaluation was conducted to ensure consistency in the recorded data. When the match evaluation results of the independent observers were examined, the correlation coefficient (Kohen's Kappa Analysis) between the observers was calculated as 0.83. This result shows that the wrestling match data obtained through independent observers has a near-perfect agreement. In cases where consensus could not be reached during the evaluation process, a re-monitoring and joint decision protocol was applied.

### 2.2. Analyzed Parameters

In this study, technical and tactical performance indicators in wrestling matches were systematically coded. The analysis included fleeing the mat, the number of cautions, passivity/activity times, the total number of scoring actions, and the points derived from these actions. The selected parameters enable the objective monitoring of in-match behaviors and provide valuable insights for coaches to develop athlete-specific technical and tactical planning. The distribution of points was examined based on the position in which they were scored (standing, par terre, or non-technical situations), and comparisons were made across wrestling styles. Additionally, the types and frequencies of techniques applied in standing and par terre positions were analyzed to identify the most commonly used techniques. The use of challenges during matches, along with their acceptance or rejection outcomes, was also recorded. Furthermore, the distribution of 1-, 2-, and 4-point techniques by period (first and second) was evaluated, and the methods by which matches were won (e.g., victory by points, technical superiority, fall, or three cautions) were analyzed in relation to wrestling style.

### 2.3. Data Coding and Analysis

All the technical and tactical data were coded in Microsoft Excel software and analyzed with SPSS 25.0 statistical software. The obtained data were reported using descriptive statistics (frequency and percentage).

### 3. Results

When Table 1 was examined, a total of 301 actions were analyzed in the GR, FS, and WW styles. Of the 96 actions recorded in the GR style, 55.2% were 1-point, 37.5% were 2-point, and 7.3% were 4-point techniques. In FS, 53.3% of the 90 actions were 1-point actions and 46.7% were 2-point actions; there were no 4-point actions in this style. In WW, a total of 115 actions were recorded, of which 27% resulted in 1-point, 68.7% in 2-point, and 4.3% in 4-point techniques. The caution score was 6.3% in GR, 5.6% in FS, and 2.6% in WW. Stepping out was most common in FS (21.1%), followed by GR (12.5%) and WW (8.7%). Passivity/activity times were most common in GR style (27.1%), followed by FS (20%) and WW (11.3%). Regarding the use of the challenge system, the most rejected challenge was in the GR style (9.4%), whereas the highest acceptance rate was observed in WW (9%). Overall, 43.8% of all the actions were 1-point, 52.1% were 2-point, and 3.9% were 4-point techniques.

**Table 1.** Distribution of technical components in wrestling matches.

Wrestling Styles	Matches	Actions	Points						Fleeing the Mat	Cautions	Stepping Outside	Passivity/Activity Time		Challenges						
			1		2		4					Accept		Reject						
			f	%	f	%	f	%				f	%	f	%	f	%			
GR	18	96	53	55.2	36	37.5	7	7.3	-	-	6	6.3	12	12.5	26	27.1	-	-	9	9.4
FS	18	90	48	53.3	42	46.7	-	-	-	-	5	5.6	19	21.1	18	20	1	1.1	4	4.4
WW	18	115	31	27	79	68.7	5	4.3	-	-	3	2.6	10	8.7	13	11.3	1	.9	3	2.6
Total	54	301	132	43.8	157	52.1	12	3.9	-	-	14	4.6	41	13.6	57	18.9	2	.6	16	5.3

When Table 2 was analyzed, a total of 53 non-technical points were recorded in GR wrestling. It constitutes 40.7% of the overall total. Of these points, 35.1% were performed standing and 18.4% in the par terre positions. The 47 non-technical points obtained in FS wrestling constituted 36.1% of the total. Of these points, 25.6% were obtained standing and 20.65% in the par terre positions. In WW, 30 non-technical points were determined, and this number corresponds to 23% of the total non-technical points. Of these scores, 39.1% were performed standing and 60.8% in the par terre positions. In total, 130 non-technical scores, 74 standing scores, and 92 par terre scores were identified.

**Table 2.** Place of points obtained in wrestling matches.

Wrestling Styles	Place of Points					
	Points Without Techniques		Standing Position		Par Terre Position	
	f	%	f	%	f	%
GR	53	40.7	26	35.1	17	18.4
FS	47	36.1	19	25.6	24	20.6
WW	30	23	29	39.1	56	60.8
Total	130	100	74	100	92	100

When the distribution of the scores according to the periods in Table 3 was analyzed, a total of 44 points were recorded in the first period of GR wrestling, and 61.4% of these points were obtained from 1-point, 27.3% from 2-point, and 11.4% from 4-point techniques. In the second period, a total of 52 points were scored; 50% of these points were scored by

1-point, 46.2% by 2-point, and 3.8% by 4-point techniques. In FS wrestling, 49 points were scored in the first period; 51% of these points were scored with 1-point techniques, 49% with 2-point techniques, and 49 points were scored in total. In the second period, 1-point techniques were used by 56.1%, 2-point techniques by 43.9%, and 4-point techniques were not recorded in any period. In the WW style, a total of 48 points were scored in the first period; 68.8% of these points were 2-point techniques, 27.1% were 1-point techniques, and 4.2% were 4-point techniques. In the second period, a total of 67 points were recorded, 68.7% of these points were obtained from 2-point, 26.9% from 1-point, and 4.5% from 4-point techniques.

**Table 3.** Distribution of points obtained in wrestling matches according to periods.

Wrestling Styles	Periods	Points	f	%
GR	1st Period	1	27	61.4
		2	12	27.3
		4	5	11.4
		Total	44	100.0
	2nd Period	1	26	50.0
		2	24	46.2
		4	2	3.8
		Total	52	100.0
FS	1st Period	1	25	51.0
		2	24	49.0
		Total	49	100.0
	2nd Period	1	23	56.1
		2	18	43.9
		Total	41	100.0
WW	1st Period	1	13	27.1
		2	33	68.8
		4	2	4.2
		Total	48	100.0
	2nd Period	1	18	26.9
		2	46	68.7
		4	3	4.5
Total	67	100.0		

According to the analyzed technics in wrestling matches, body lock (34.6%) and arm drug (23.1%) were the most common techniques applied in the standing position in GR, followed by suplex (15.4%), back-flip throw (11.5%), underhook (7.7%), and headlock throw and arm throw (3.8%). For the par terre positions in GR, the most common technique was the gut wrench (41.2%), followed by passing behind, front headlock, counter-offensive block, and suplex (17.6%) in equal proportions. In FS, the most preferred standing technique was single-leg attack (57.9%), followed by passing behind (21.1%), body lock (10.5%), double-leg attack, and counter-offensive block (5.3%). For the par terre positions in FS, passing behind and leg lace were the most preferred techniques in equal proportions (33.3%), followed by gut wrench (16.7%), reverse body lift (8.3%), front headlock, and

bridge (4.2%). In WW, the most common standing technique was single-leg attack (31.0%), followed by passing behind (17.2%), arm throw (17.2%), headlock throw (10.3%), double-leg attack (6.9%), back-flip throw, suplex (6.9%), body lock (3.4%), and arm drug (1.8%). For the par terre positions in WW, passing behind (46.5%) was the most preferred technique, followed by gut wrench (28.6%), reverse body lift (14.3%), counter-offensive block, leg lace (3.6%), bridge (1.8%), and arm drug (1.8%) (Table 4).

**Table 4.** Distribution of techniques performed in wrestling matches.

Wrestling Styles	Standing Position							Par Terre Position							
	Headlock Throw	Back-Flip Throw	Body Lock	Suplex	Underhook	Arm Throw	Arm Drug	Gut Wrench	Passing Behind	Front Headlock	Counter-Offensive Block	Suplex			
GR															
f	1	3	9	4	2	1	6	7	1	3	3	3			
%	3.8	11.5	34.6	15.4	7.7	3.8	23.1	41.2	5.9	17.6	17.6	17.6			
FS	Double-Leg Attack	Passing Behind	Counter-Offensive Block	Body Lock	Single-Leg Attack			Gut Wrench	Front Headlock	Bridge	Passing Behind	Reverse Body Lift	Leg Lace		
f	1	4	1	2	11			4	1	1	8	2	8		
%	5.3	21.1	5.3	10.5	57.9			16.7	4.2	4.2	33.3	8.3	33.3		
WW	Double-Leg Attack	Passing Behind	Headlock Throw	Back-Flip Throw	Body Lock	Suplex	Arm Throw	Single-Leg Attack	Gut Wrench	Bridge	Passing Behind	Reverse Body Lift	Counter-Offensive Block	Arm Drug	Leg Lace
f	2	5	3	2	1	2	5	9	16	1	26	8	2	1	2
%	6.9	17.2	10.3	6.9	3.4	6.9	17.2	31.0	28.6	1.8	46.5	14.3	3.6	1.8	3.6

When Table 5 was analyzed, it was seen that the most common type of win in the GR style was the decision by points (the loser scored technical points), accounting for 62.6% of the matches. This was followed by Victory by Technical Superiority, with 18.9% of the wins recorded both when the loser scored technical points and when the loser scored no points. Less frequently, matches were won by Victory by Fall (6.3%) and by three cautions due to error against the rules (6.3%). In the FS style, the majority of victories (66.6%) also occurred

through decision by points. Additionally, Victory by Technical Superiority was observed in 33.4% of the matches, split equally between cases where the loser scored technical points and did not score. No matches were won by Victory by Fall or three cautions in this category. In WW, most wins (66.7%) were also achieved through decision by points, while the remaining 33.3% were obtained by Victory by Fall. There were no recorded instances of Victory by Technical Superiority or wins by three cautions in this style.

**Table 5.** Distribution of classification points in wrestling matches.

Wrestling Style					
GR	Victory by Fall.	Three cautions due to error against the rules.	Victory by Technical Superiority. The loser without points.	Victory by Technical Superiority, with the loser scoring technical points.	Decision by points. The loser technical points.
f	1	1	3	3	10
%	6.3	6.3	18.9	18.9	62.6
FS	Victory by Technical Superiority. The loser without points.	Victory by Technical Superiority, with the loser scoring technical points.	Decision by points. The loser technical points.		
f	3	3	12		
%	16.7	16.7	66.6		
WW	Victory by Fall.	Decision by points. The loser technical points.			
f	6	12			
%	33.3	66.7			

#### 4. Discussion

In the analysis of a total of 301 actions across the GR, FS, and WW styles, 1- and 2-point techniques were the most frequently applied in all the styles. In GR, 1- and 2-point techniques accounted for 92.7% of the total, while no 4-point techniques were observed in FS. In WW, 2-point techniques were the most preferred with a rate of 68.7%. This distribution indicates that low-risk techniques are prioritized in current wrestling strategies (Table 1). When the technical score distributions are analyzed, it is seen that 1- and 2-point, low-risk techniques are more frequently preferred in all wrestling styles. This finding is supported by a 2019 study, which also revealed that high-scoring (4-point) techniques were used quite rarely [19]. These findings confirm that athletes in high-level competitions adopt more cautious strategies by prioritizing low-risk techniques. Another study from 2015–2016 also confirmed this, showing that 2-point techniques were used significantly more frequently than 4-point techniques [20]. A study conducted on the Olympic Games found that low-scoring techniques (1 and 2 points) were preferred more frequently compared to high-scoring techniques (4 points) [21].

The rate of caution points was higher in the GR and FS styles compared to WW, indicating that athletes had more difficulty complying with the rules or that referee interventions occurred more frequently. This finding is supported by Turgut's [22] technical analysis of the finals of the European Wrestling Championships, which reported that no caution points were awarded in FS and WW matches, while two caution points were given in GR

style. The restriction of techniques to the upper body in the Greco-Roman style appears to contribute to occasional passivity or rule violations by athletes.

When comparing stepping outside rates across wrestling styles, the highest rate was observed in FS (21.1%), followed by GR (12.5%) and WW (8.7%). The high rate in FS is associated with the style's greater freedom of movement, while the GR rate is linked to the intense physical contact. The lower rate in WW is attributed to technique preferences or effectiveness. In a study based on Olympic data, the stepping outside rate was found to be higher in WW and lower in GR and FS [21]. Soygüden et al. [23] stated that in the cadet category, the rate of stepping out increased with weight class. These findings indicate that as weight increases, the number of techniques applied in matches decreases, and accordingly, most points are gained by pushing the opponent out of the mat.

A total of 130 non-technical points (fleeing the mat, cautions, stepping outside, passivity/activity time, and challenges) were recorded in the GR, FS, and WW styles, with most of these points obtained from standing (74) and par terre (92) positions. The GR style had the highest rate of non-technical points, while WW had the lowest. Additionally, in WW, the majority of non-technical points were scored from the par terre position. These findings indicate that non-technical points vary depending on wrestling style and position (Table 2). The high number of such points in the Greco-Roman style may be explained by penalties for passivity. Increased physical load and fatigue can reduce athletes' endurance, making it easier for opponents to reach advantageous positions. While standing points are more prominent in the GR and FS styles, par terre position points are more common in WW. David et al. [21] compared the performances of male and female wrestlers in their study on wrestling matches in the Olympic Games held in 2021. In the study, it was determined that 77.8% of the points in the GR and FS categories were obtained in the standing position and 22.2% in the par terre position. In the WW style, 68.1% of the points were scored in the standing position and 31.9% in the par terre position. Our findings are in parallel with the study of David et al. (2023) [21] in the GR and FS categories. However, our data for the WW style differ from the results reported in that study. We think that the difference may be due to the prestige of the match level, athlete profile, athletes' strategies, and continental characteristics of WW. In the study by Turgut [22], the rates of technical success achieved in standing and par terre positions were compared by style; higher success was found in standing techniques for the GR and WW styles. Par terre success was relatively high across all the styles. In the study by Soygüden et al. [23], it was reported that in the cadet category for the FS style, the majority of points were obtained through standing techniques. These findings suggest that point-scoring strategies may vary depending on age category and competition level. These findings reveal that standing fighting techniques are the determining factor in the score production of the match result in the cadet category compared to the senior category.

When the distribution of scores by periods is examined, it is observed that more points are scored in the second period across all three wrestling styles. However, the study by Tropin and Chuev [20] found that attack attempts and successful actions were more frequent in the first period. This discrepancy may be attributed to recent rule changes penalizing passive wrestling and to athletes' strategic approaches. The increased number of points in the second period may be attributed to stricter penalties for passivity, athletes' strategic conservatism in the first period followed by more aggressive efforts in the second, and enhanced endurance resulting from modern training practices. In the study by Tropin and Chuev, more attacks were observed in the first period, and this difference is considered to be associated with the level of the tournament and the strategic importance of the organization.

The techniques used in wrestling matches vary according to the structure of each style. In GR, body lock and gut wrench were prominent, while in the FS and WW styles, single-leg attack was the most preferred standing technique. For par terre positions, leg lace was favored in FS and passing behind in WW. In the 2023 European Championship finals, some technique preferences differed [22]. These findings suggest that technical choices may vary depending on style characteristics, tournament level, and strategic approaches. In the technical analysis study for the FS style in the cadet category, the most common technique performed while standing was the single-leg attack, while the most common technique performed in the par terre position was gut wrench [23]. In the study analyzing the 2011 World Senior Wrestling Championships, it was found that the most frequently used techniques in FS wrestling in the standing position were the single-leg attack and double-leg attack, while the most commonly applied technique in the par terre position in the GR style was the suplex. In the WW style, the most frequently scored technique was passing behind [24]. Analyses based on high-level tournaments show that wrestlers generally prefer low-risk and safe techniques to minimize the chance of making mistakes. This reflects a strategy in which efficient and low-risk moves take precedence over technical diversity.

In the analysis of all three wrestling styles, it was determined that the most common type of victory was by points (where the losing wrestler also scored technical points). In the GR style, 62.6% of the wins were by points; in FS, 66.6%; and in WW, 66.7%. A similar distribution was observed in the technical analysis of the 2023 European Wrestling Championships finals. In both the FS and GR styles, two matches each were won by technical superiority, while points won the remaining matches. In the WW style, one match was won by technical superiority, one by fall, and one due to the opponent's withdrawal for health reasons; the rest were also won by points [22]. According to the 2019 analysis study, most victories in the European Championships were generally achieved by point difference, while victories by technical superiority were more common in the Asian Championships [19]. In the European Championship, the balanced level of competition suggests that athletes have similar performance capacities, leading to a preference for low-risk strategies and victories by narrow point margins. In contrast, in the Asian Championship, the lower wrestling level of some countries may allow stronger athletes to achieve technical superiority more easily.

This study is limited to the analysis of medal matches from the 2024 European Wrestling Championships. Therefore, the findings cannot be generalized to all competition levels or regional tournaments. In addition, only observable technical and tactical actions were analyzed, and physiological or psychological variables that may influence performance were not considered. To draw broader conclusions, longitudinal analyses covering multiple years and various championships are needed.

#### *Practical Implications*

In GR wrestling, increasing the frequency of upper-body techniques and their defensive applications in training; in FS, practicing leg attacks along with counterattacks and defenses; and in WW, emphasizing the teaching of combination techniques to enhance technical diversity, these can all contribute to strengthening style-specific strategic preparation. Developing training content tailored to these distinctions may have a direct impact on performance improvement. The observed increase in scoring during the second period highlights the importance of athletes' ability to make decisions and execute tactics under fatigue. In this context, fatigue-based technical repetitions supported by high-intensity interval training, simulation drills involving score-disadvantage scenarios, and time-controlled active wrestling drills can help athletes better adapt to the dynamics of real matches. Additionally, aspects such as challenge use and adaptation to referee deci-

sions, strategic awareness regarding passivity penalties, and match-ending score protection strategies may also play a decisive role in performance. Supporting these processes with video-based individual feedback enables athletes to evaluate and develop their technical and tactical behavior more consciously.

## 5. Conclusions

In this study, the technical and tactical characteristics of medal matches at the 2024 European Wrestling Championships were analyzed. It was determined that victories in all styles were mostly achieved by decision by points, low-risk techniques were predominantly used, and technical preferences varied across styles. Additionally, par terre scoring was more prominent in WW, while stepping out was more frequent in FS. The findings provide scientific insights to support training planning and strategy development. Future studies are encouraged to include athlete-level metadata and contextual match dynamics in order to enable more comprehensive technical and tactical evaluations.

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## Abbreviations

The following abbreviations are used in this manuscript:

GR Greco-Romen  
FS Freestyle  
WW Women Wrestling

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