



Comparative analysis of competitive performance indicators of freestyle wrestlers at the European and Asian championships

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Abstract

Purpose. Purpose: to conduct a comparative analysis of competitive performance indicators of freestyle wrestlers at the European and Asian Championships.

Material and methods. A total of 335 bouts from the 2025 European Championship (n=178) and Asian Championship (n=157) in senior freestyle wrestling were analyzed. Competitive activity was examined using the Internet platform Performance Data Analysis.

Results. The comparative analysis showed that scoring actions in the standing position dominated in both groups, with a slightly higher proportion among Asian wrestlers (71.89 % vs. 68.63 %). The analysis of standing techniques indicated that single leg attacks remained the basic offensive action, especially among European wrestlers. A higher proportion of takedowns and step outs among Asian wrestlers reflected a different tactical model. The dominance of gut wrenches in parterre for both groups confirmed their key role in scoring. The highest scoring activity was observed during the 2nd–3rd minutes of the bout in both groups. Lower scoring in the first minute among European wrestlers indicated a more cautious start, whereas Asian athletes demonstrated higher activity from the very beginning. The absence of significant differences in the average points per bout and per minute indicated a generally similar level of performance between wrestlers from the two continents. Higher values of the success index in standing and the overall index among Asian wrestlers indicated more effective execution of offensive actions. Nearly identical success indices in parterre suggested that this component was relatively uniform at the international level. The advantage of Asian wrestlers in both technical and non-technical indices reflected a more comprehensive competitive performance that included effective use of offensive techniques.

Conclusions. The comparative analysis of freestyle wrestlers' competitive activity showed that standing-position scoring dominated in both groups, with slightly higher values among athletes at the Asian Championship. Differences were identified in the structure of technical and tactical actions: European wrestlers more often used single leg attacks, whereas Asian wrestlers relied more on takedowns and step outs. At the same time, the overall scoring level did not differ significantly ($p>0.05$), although the success index was higher among wrestlers at the Asian Championship ($p<0.05$). The obtained data confirm both similarities and differences in the competitive activity of wrestlers from different continental schools and can serve as a basis for further improvement of athlete preparation with consideration of comparative characteristics.

Keywords: continental competitions, freestyle wrestling, competitive activity, performance, elite athletes.

Анотація

Порівняльний аналіз показників змагальної діяльності борців вільного стилю на Чемпіонатах Європи та Азії

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Мета. Мета: провести порівняльний аналіз показників змагальної діяльності борців вільного стилю на Чемпіонатах Європи та Азії.

Матеріал і методи. Проведено аналіз 335 поєдинків на Чемпіонаті Європи (n=178) та Чемпіонаті Азії (n=157) 2025 року з вільної боротьби серед дорослих. Аналіз змагальної діяльності проводився за допомогою internet platform (Performance Data Analysis).

Результати. У результаті порівняльного аналізу встановлено, що як у борців Чемпіонату Європи, так і Чемпіонату Азії домінує результативність у стійці, однак її частка є дещо вищою у представників Азії (71.89 % проти 68.63 %). Аналіз дій у стійці показав, що проходи в одну ногу залишаються базовим елементом атакуювальної діяльності, особливо у борців європейської школи. Вища частка звалювань і виштовхувань за килим у борців на Чемпіонаті Азії відображає іншу тактичну модель. Встановлене домінування накатів у партерній боротьбі як у європейських, так і в азійських спортсменів, що підтверджує їх ключову роль для набору балів. Встановлено, що найбільша результативність спостерігається на 2-3 хвилинах поєдинку у борців обох груп. Низька результативність на першій хвилині у європейських борців свідчить про більш обережний початок боротьби, тоді як азійські спортсмени демонструють вищу активність уже з перших секунд поєдинку. Відсутність достовірних відмінностей у середній кількості балів за поєдинок і за хвилину свідчить про загалом однаковий рівень результативності між борцями обох континентів. Вищі значення індексу успіху в стійці та загального індексу у борців на Чемпіонаті Азії свідчать про більш ефективну реалізацію атакуювальних дій. Практично однакові значення індексу успіху в партері підтверджують, що цей компонент боротьби є відносно уніфікованим на міжнародному рівні. Перевага азійських борців за індексами як технічних, так і нетехнічних дій свідчить про більш комплексний характер їх змагальної діяльності, що включає ефективне використання атакуювальних прийомів.

Висновки. Порівняльний аналіз змагальної діяльності борців вільного стилю показав, що в обох групах домінує результативність у стійці, з дещо вищими показниками у спортсменів Чемпіонату Азії. Встановлено відмінності у структурі техніко-тактичних дій: європейські борці частіше застосовують проходи в одну ногу, тоді як азійські – звалювання та виштовхування за килим. При цьому загальний рівень результативності не має достовірних відмінностей ($p>0.05$), однак індекс успіху є вищим у борців на Чемпіонаті Азії ($p<0.05$). Отримані дані підтверджують наявність як спільних рис, так і відмінностей у змагальній діяльності борців різних континентальних шкіл, що є підґрунтям для подальшого вдосконалення підготовки спортсменів з урахуванням порівняльних характеристик.

Ключові слова: континентальні змагання, вільна боротьба, змагальна діяльність, результативність, елітні спортсмени.





Introduction

Modern development of sports wrestling is characterized by a continuous increase in competition at the international level, which makes it necessary to improve athlete preparation systems on the basis of objective analysis of competitive activity (Коробейніков та ін., 2020; Шандрігось та ін., 2022; Tunnemann & Curby, 2016). In this context, particular importance is attached to the study of structural and substantive characteristics of wrestling bouts, which makes it possible to identify leading trends in the development of the sport and to enhance the effectiveness of the training process (Бойченко, 2024; Latyshev et al., 2024b).

Competitive activity in sports wrestling is an integral indicator of an athlete's preparedness, reflecting the interaction of technical-tactical, physical, and psychophysiological components (Голоха & Романенко, 2021; Latyshev et al., 2024a). Analysis of competitive performance indicators, such as the effectiveness of technical-tactical actions, activity, defensive reliability, and the ratio of points won to points lost, allows not only the assessment of athletes' performance efficiency but also the identification of bout-specific features depending on competition conditions (Бойченко та ін., 2024; Tropin et al., 2023b).

Of special scientific interest is the comparison of wrestlers' competitive activity at continental championships, in particular in Europe and Asia, which traditionally demonstrate different approaches to wrestling. The European wrestling school is characterized by a more rational and tactically balanced style, whereas Asian athletes are more often distinguished by high dynamism, pace, and variability of technical-tactical actions.

An analysis of scientific and methodological literature indicates a considerable number of studies devoted to particular aspects of wrestlers' competitive activity (Голоха, 2024; Latyshev et al., 2022; Tropin et al., 2021). However, the issue of comparative analysis of competitive performance indicators of wrestlers at the European and Asian Championships remains insufficiently covered.

Thus, the relevance of this study is determined by the need to identify the specific features of wrestlers' competitive activity at different continental competitions in order to improve athlete preparation systems and enhance the effectiveness of performances at the international level.

Relationship of the study with scientific programs, plans, and topics. The study was conducted in accordance with the research topic of the National University of Ukraine on Physical Education and Sport for 2021–2025, 2.9 «Mobilization of the personal resource of subjects of sports activity by means of psychological and pedagogical support» (state registration No. 0121U108290).

Purpose – to conduct a comparative analysis of competitive performance indicators of freestyle wrestlers at the European and Asian Championships.

Material and methods

The protocols and video recordings of the 2025 European Championship (EC) and Asian Championship (AC) in senior freestyle wrestling were analyzed. In total, 335 bouts were

studied: 178 at the EC and 157 at the AC. The source performance data were taken from the website of the international wrestling federation UWW.

Competitive activity was analyzed using the Internet platform Performance Data Analysis (PDA), which is employed by the UWW and had previously been tested in earlier studies (Dokmanac & Slacanac, 2018; Roklicer et al., 2020).

The following indicators were included in the analysis of competitive activity: bout duration (s); number of technical-tactical actions in standing and parterre positions (number of times); number of rule violations in standing and parterre (number of times); number of penalties for passive wrestling (number of times); number of challenges in standing and parterre (a protest arising in a disputed bout situation) (number of times); scoring effectiveness of techniques applied in standing and parterre (evaluated in points: 1 point, 2 points, 4 points, 5 points); and success index (WQ), defined as the ratio of points scored in all bouts to the total time of all bouts in minutes.

Statistical analysis of the data was performed using licensed Excel spreadsheet packages. For categorical data, results were expressed as absolute values (number of times) and percentages (%). Student's t-test was used to compare competitive activity indicators of wrestlers; differences were considered statistically significant at $p < 0.05$.

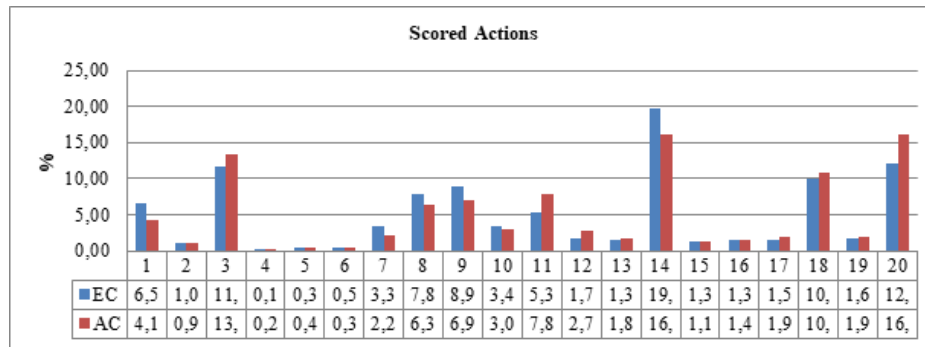
Research results and discussion

Figure 1 presents the percentage ratio of scored actions performed by freestyle wrestlers at the 2025 European and Asian Championships among adults. It was found that in parterre wrestling the largest share in both European (11.64 %) and Asian (13.40 %) athletes was represented by gut wrenches, which indicates their leading role in achieving scoring effectiveness. Wrestlers at both the European and Asian Championships also frequently used turn over (7.84 % and 6.35 %, respectively).

In the standing position, the dominant technical actions were single leg attacks, the share of which was higher among wrestlers at the European Championship (19.72 %) than at the Asian Championship (16.03 %). At the same time, wrestlers at the Asian Championship demonstrated greater effectiveness in performing takedowns (16.16 % vs. 12.15 %) and slightly more often used step outs (10.91 % vs. 10.06 %). Other technical-tactical actions accounted for a relatively small share, which indicates their auxiliary nature in the structure of competitive activity.

Table 1 presents the performance indicators of freestyle wrestlers in bouts at the 2025 European and Asian Senior Championships. It was found that the majority of points for both European and Asian athletes are scored in the standing position: 68.63 % (1085 points) at the European Championships and 71.89 % (1041 points) at the Asian Championships. Accordingly, the share of points scored in parterre is lower, amounting to 31.37 % (496 points) for European wrestlers and 28.11 % (407 points) for Asian competitors.

The total number of points scored is higher at the European Championships (1581 points) compared to the Asian Championships (1448 points), which may indicate slightly



Note. *Parterre*: 1 – ankle leg; 2 – front head lock; 3 – gut wrench; 4 – lifts-suplexs; 5 – parterre caution; 6 – parterre challenge; 7 – parterre counter; 8 – turn over. *Standing*: 9 – activity time; 10 – double leg attacks; 11 – forward bending throw; 12 – hip turning throw; 13 – shoulder turning throw; 14 – single leg attack; 15 – standing caution; 16 – standing challenge; 17 – standing counter; 18 – step out; 19 – suplex throw; 20 – take down.

Figure 1 - Percentage ratio of scored actions performed by freestyle wrestlers at the 2025 European Championship (EC) and Asian Championship (AC) among adults

Table 1 – Performance of freestyle wrestlers in bouts (n=335) at the 2025 European and Asian Championships among adults

Indicators	European Championship (n=178)		Asian Championship (n=157)	
	Total points scored	%	Total points scored	%
Standing points	1085	68.63	1041	71.89
Parterre points	496	31.37	407	28.11
Total points	1581	100	1448	100
Technical points	1224	77.42	1141	78.80
Non-technical points	357	22.58	307	21.20

Table 2 – Performance of freestyle wrestlers in each minute of the bout at the 2025 European and Asian Championships among adults

Bout minute	European Championship (n=178)		Asian Championship (n=157)	
	Total points scored	%	Total points scored	%
1st minute	157	9.93	223	15.40
2nd minute	333	21.06	290	20.03
3rd minute	324	20.49	290	20.03
4th minute	246	15.56	207	14.30
5th minute	268	16.95	255	17.60
6th minute	253	16.01	183	12.64

higher performance effectiveness or longer bout duration. An analysis of the scoring structure showed that the majority of points are technical in nature: 77.42 % (1224 points) for European athletes and 78.80 % (1141 points) for Asian wrestlers. At the same time, the proportion of non-technical points is relatively small, accounting for 22.58 % (357 points) at the European Championships and 21.20 % (307 points) at the Asian Championships.

Table 2 presents the distribution of freestyle wrestlers' performance by bout minutes at the 2025 European and Asian Senior Championships. It was found that at the European Championships, the highest number of points is scored in the second (21.06 %) and third (20.49 %) minutes of the bout, while the first minute accounts for the lowest share of points (9.93 %). Subsequently, a relatively even distribution of scoring is observed during the 4th–6th minutes (ranging from 15.56 % to 16.95 %).

For wrestlers at the Asian Championships, the highest values were recorded in the second and third minutes (20.03 % each), as well as in the fifth minute (17.60 %). The share of points scored in the first minute is 15.40 %, which is higher compared to the European Championships. The lowest performance among Asian athletes is observed in the sixth minute (12.64 %).

Overall, both groups demonstrate a concentration of scoring actions in the second half of the first period of the bout (minutes 2–3), whereas relatively fewer points are scored at the initial and final stages. At the same time, Asian wrestlers show a higher proportion of scoring in the first minute, while European athletes demonstrate a more even distribution of performance indicators during the second period of the bout.

The average number of points scored per bout and the number of points won per minute did not differ significantly ($p > 0.05$) between freestyle wrestlers at the European and Asian Championships (Figure 2).

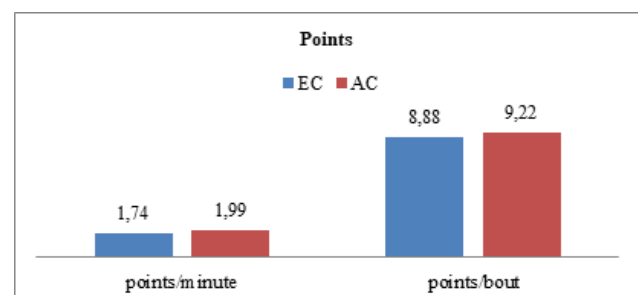


Figure 2 – Average number of points scored per bout and per minute at the 2025 European Championship (EC) and Asian Championship (AC) among adults



Table 3 presents the success index indicators of freestyle wrestlers in bouts at the 2025 European and Asian Senior Championships. The obtained data indicate that the success index in the standing position is significantly higher ($p < 0.05$) among wrestlers who participated in the Asian Championships (1.43) compared to those at the European Championships (1.19). This may suggest more effective performance in the standing position by Asian athletes, particularly due to a more active use of attacking actions.

The success index values in parterre are almost identical between the competitions, amounting to 0.55 for Europe and 0.56 for Asia, which indicates a similar level of effectiveness in executing technical and tactical actions in this position.

The overall success index is also higher among wrestlers at the Asian Championships (1.99) than at the European Championships (1.74), confirming a general trend toward more effective bout performance by Asian athletes.

An analysis of the structure of the success index shows that both technical and non-technical actions have higher values at the Asian Championships. In particular, the success index of technical actions is 1.56 for wrestlers at the Asian Championships compared to 1.35 for those at the European Championships, while for non-technical actions it is 0.43 versus 0.39, respectively. This indicates a comprehensive advantage of Asian wrestlers both in executing effective technical techniques and in utilizing tactical components of the bout.

Table 3 – Success index of freestyle wrestlers in bouts (n=335) at the 2025 European and Asian Championships among adults

Indicators	European Championship (n=178)	Asian Championship (n=157)
Success index in standing	1.19	1.43
Success index in parterre	0.55	0.56
Overall success index	1.74	1.99
Success index of technical actions	1.35	1.56
Success index of non-technical actions	0.39	0.43

Discussion

The obtained results make it possible to characterize modern trends in the competitive activity of freestyle wrestlers in more depth and are consistent with the provisions of previous studies on the dominance of rationalized, energy-efficient, and highly probable actions in its structure (Євтифійєв та ін., 2023; Pashkov et al., 2021; Tropin et al., 2023a).

First of all, the established dominance of gut wrenches in parterre among both European and Asian athletes confirms their key role as one of the most stable and controllable ways of scoring points. This is consistent with current views on the increasing importance of combined actions in parterre, where gut wrenches allow tactical advantage to be realized after a successful transition of the opponent. At the same time, the relatively high share of turn overs indicates preserved variability

of the technical arsenal, whereas their lower proportion may reflect greater risk or complexity of execution under conditions of high competition. The analysis of standing actions showed that single leg attacks remain a basic element of offensive activity, especially among wrestlers of the European school. This may be associated with an orientation toward classical technical-tactical models involving distance control and a prepared attack. In contrast, the higher share of takedowns and step outs among wrestlers at the Asian Championship reflects a different tactical model – more dynamic, aimed at constant pressure, the use of mobility, and imposing wrestling at the edge of the mat. Such a difference may indicate the existence of certain regional stylistic features of bout conduct.

The data on scoring effectiveness confirm that the main number of points is gained in the standing position, which corresponds to modern trends in the development of freestyle wrestling, where active wrestling while standing determines the course of the bout. The smaller share of points in parterre may be explained both by the increased level of athletes' defensive actions and by rule changes stimulating activity primarily in the standing position. At the same time, a high proportion of technical points in both samples indicates a predominance of effective offensive actions rather than rule violations or passive penalties. These results are consistent with other studies (Коробейніков та ін., 2026; Curby et al., 2023; Matkarimov et al., 2024).

The results of the analysis of the bout's time structure are also of interest. The concentration of scoring actions in the 2nd–3rd minutes may be associated with an optimal combination of athletes' functional preparedness and an already formed bout strategy. Low scoring in the first minute among European wrestlers indicates a more cautious start to the wrestling, whereas Asian athletes demonstrate higher activity from the very first seconds of the bout. A more even distribution of points during the second period among European wrestlers may indicate better endurance or a more rational distribution of effort, whereas a decrease in scoring effectiveness in the last minute among Asian wrestlers may result from the high intensity of wrestling at earlier stages.

The absence of significant differences in the average number of points per bout and per minute indicates a generally similar level of scoring effectiveness between wrestlers from both continents. However, a deeper analysis using the success index revealed qualitative differences in bout conduct. In particular, higher values of the success index in the standing position and of the overall index among wrestlers at the Asian Championship indicate more effective realization of offensive actions. This may be due both to a higher attack density and to better preparation and completion of attacks. Nearly identical values of the success index in parterre confirm that this component of wrestling is relatively unified at the international level and less dependent on regional training characteristics. At the same time, the superiority of Asian wrestlers in the indices of both technical and non-technical actions indicates a more comprehensive nature of their competitive activity, including effective use of both offensive techniques and tactical elements (control, pressure, provoking opponents' mistakes).

Thus, the obtained results confirm the presence of both



common trends in the development of freestyle wrestling (dominance of standing actions, a high role of technical actions, and the significance of gut wrenches in parterre) and regional differences manifested in the structure of technical-tactical actions and the effectiveness of their realization (Dokmanac & Slacanac, 2018; Shandrygos et al., 2023). This is important for improving athlete preparation systems, in particular in the aspect of modeling competitive activity, individualizing technical-tactical preparation, and taking into account the stylistic features of potential opponents.

The data on the analysis of competitive activity in sports wrestling have been supplemented (Korobeinikova et al., 2020; López-González, 2014; Tünnemann, 2013).

Conclusions

The comparative analysis of competitive activity of freestyle wrestlers showed that standing-position scoring domi-

nates in both groups, with slightly higher indicators among athletes at the Asian Championship. Differences were established in the structure of technical-tactical actions: European wrestlers more often apply single leg attacks, whereas Asian wrestlers more often use takedowns and step outs. At the same time, the overall level of scoring does not have significant differences ($p > 0.05$), although the success index is higher among wrestlers at the Asian Championship ($p < 0.05$). The obtained data confirm both common features and differences in the competitive activity of wrestlers from different continental schools and create a basis for further improvement of athlete preparation with consideration of comparative characteristics.

Prospects for further research. Further research in this area will be aimed at conducting a comparative analysis of the competitive activity of athletes from other continents and in other wrestling styles.

Conflict of interest

The authors disclose a potential conflict of interest. One of the co-authors, Korobeinikov G., has a personal relationship (spouse) with a member of the Editorial Board of the „Martial arts“ journal. The remaining authors declare no conflicts of interest. The peer-review process was handled entirely independently of the editorial board member involved.

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