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Indicators of Spectacle in Wrestling at the 2021 Olympic Games

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Abstract.

Background and Study: Spectacle plays a key role in sports wrestling in attracting viewers' attention, creating emotional involvement, and making the sport an integral part of culture. *Aim:* To identify the most significant indicators of wrestlers' competitive activity based on the analysis of the 2021 Olympic Games, which influence the spectacle in sports wrestling.

Material and Methods: The study involved 289 wrestlers. An analysis of protocols and video recordings of 340 matches at the 2021 Olympic Games in three types of sports wrestling was conducted: in women's wrestling – 113 matches (n=96 female wrestlers), in Greco-Roman wrestling – 113 matches (n=97 wrestlers), and in freestyle wrestling – 114 matches (n=96 wrestlers). Expert assessment method was used to evaluate the indicators of competitive activity. Statistical analysis of the data was conducted using licensed Excel spreadsheet packages.

Results: For Greco-Roman wrestling and women's wrestling, the ratio of actions performed in par terre and standing is about 70 to 30. Whereas, for freestyle wrestlers, almost 80% of actions are performed in standing. The efficiency coefficient of wrestling in standing for Greco-Roman style wrestlers averaged 1.43 points per action; for freestyle wrestlers, it was 1.78 points per action, and for female wrestlers – 2.01 points per action. The highest number of one-point actions was performed in Greco-Roman wrestling, which significantly and statistically significantly ($p<0.05$) exceeds the indicators in freestyle and women's wrestling. Meanwhile, female wrestlers and freestyle wrestlers statistically significantly ($p<0.05$) executed more two-point actions. The average number of actions per match does not significantly differ ($p>0.05$): 4.23 actions for Greco-Roman wrestling; 4.47 actions for freestyle wrestling, and 4.08 actions for women's wrestling. However, when considering the average number of points scored per match, statistically significant differences were found. Thus, Greco-Roman style wrestlers score an average of 6.95 points, this indicator is statistically significantly lower ($p<0.05$) than in freestyle (8.12 points) and in women's wrestling (8.07 points).

Conclusions: The analysis of matches at the 2021 Olympic Games made it possible to identify competitive activity indicators that influence the spectacle in sports wrestling. Positive indicators include: a large number of technical-tactical actions performed in standing; execution of throws in par terre by Greco-Roman style wrestlers; a high percentage of early victories in matches. Negative indicators: execution of simple one-point and two-point technical-tactical actions; in Greco-Roman wrestling, a large number of matches that ended with a score of 1:1; interruptions in matches (Challenge, Negative Wrestling, Caution), lack of dynamism in the match, and the inability to score too many points. The obtained results will help provide recommendations for changing competition rules and enhancing the spectacle of sports wrestling.

Keywords: Greco-Roman wrestling, freestyle wrestling, women's wrestling, Olympic Games, competitive activity, indicators, spectacle.

Анотація. ПОКАЗНИКИ ВИДОВИЩНОСТІ У БОРОТЬБІ НА ОЛІМПІЙСЬКИХ ІГРАХ-2021. Рашид Маткарімов, Георгій Коробейніков, Юрій Тропін, Вікторія Білецька, Девід Кербі, Мілорад Докманац, Фікрат Керімов

Передісторія та дослідження: Видовище відіграє ключову роль у спортивній боротьбі, привертаючи увагу глядачів, викликаючи емоційне залучення і роблячи спорт невід'ємною частиною культури. Мета: виявити на основі аналізу Олімпійських ігор 2021 найбільш значущі показники змагальної діяльності борців, що впливають на видовищність спортивної боротьби.

Матеріал та методи. У дослідженні взяли участь 289 борців. Проведено аналіз протоколів та відеозаписів 340 поєдинків на Олімпійських іграх 2021 року за трьома видами спортивної боротьби: з жіночої боротьби – 113 поєдинків (n=96 борців-жінок), з греко-римської боротьби – 113 поєдинків (n=97 борців), вільної боротьби – 114 поєдинків (n=96 борців). Для оцінки показників змагальної діяльності використовувався експертний метод оцінки. Статистичний аналіз даних проводили з використанням ліцензійних пакетів електронних таблиць Excel.

Результати: для греко-римської боротьби та жіночої боротьби співвідношення дій, що виконуються в партері та стійці, становить приблизно 70 до 30. Тоді як у борців вільного стилю майже 80% дій виконуються у стійці. Коефіцієнт ефективності боротьби у стійці у борців греко-римського стилю в середньому становив 1,43 балів за дію; у борців вільного стилю вона становила 1,78 балів за дію, а у борців-жінок – 2,01 балів за дію. Найбільша кількість одноочкових дій виконано в греко-римській боротьбі, що є достовірно та статистично значущим ($p<0,05$), перевищує показники у вільній та жіночій боротьбі. При цьому жінки-борці та борці вільного стилю статистично значимо ($p<0,05$) виконували більше двохоч-

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кових дій. Середня кількість дій за матч достовірно не відрізняється (p>0,05): 4,23 дії з греко-римської боротьби; 4,47 дій для вільної боротьби та 4,08 дій для жіночої боротьби. Однак при розгляді середньої кількості набраних очок за матч виявили статистично значущі відмінності. Так, борці греко-римського стилю в середньому набирають 6,95 балів, цей показник статистично значно нижче (p<0,05), ніж у вільній боротьбі (8,12 балів) і в жіночій боротьбі (8,07 балів).

Висновки: аналіз поєдинків на Олімпійських іграх 2021 дозволив виявити показники змагальної діяльності, що впливають на видовищність у спортивній боротьбі. До позитивних показників відносяться: велика кількість техніко-тактичних процесів, що виконуються стоячи; виконання кидків у партері борцями греко-римського стилю; високий відсоток дострокових перемог у матчах. Негативні показники: виконання простих одно- та двоточкових техніко-тактичних дій; у греко-римській боротьбі велика кількість матчів, що завершилися з рахунком 1:1; перерви у матчах («Виклик», «Негативна боротьба», «Обережно»), відсутність динамізму в матчі, неможливість набрати занадто багато очок. Отримані результати допоможуть дати рекомендації щодо зміни правил змагань та підвищення видовищності спортивної боротьби.

Ключові слова: греко-римська боротьба, вільна боротьба, жіноча боротьба, Олімпійські ігри, діяльність змагання, показники, видовище.

Introduction

One of the most popular spectacles in the modern world is sports. Sports is not only a battleground for trophies and records but also a unique sphere where technique, passion, and emotions merge, turning every event into a true art form [1]. In this kaleidoscope of athletic feats and strategic maneuvers, spectacle plays a key role, evoking unforgettable emotions for both participants and spectators [2, 3].

Wrestling is one of the oldest and most prestigious disciplines in the world of sports, attracting the attention of millions of fans and participants worldwide. Throughout the centuries, athletes have perfected their achievements in this art, technique, and physical abilities, embodying not only the beauty of movements but also psychological qualities [4, 5].

Spectacle in sports wrestling plays a key role in attracting viewers' attention, creating emotional engagement, and making the sport an integral part of culture [6, 7]. From the skill of executing a move to unexpected turns during a match, spectacle brings excitement, tension, and emotional saturation to the sporting action [8].

One of the important factors that influence spectacle is the rules of competition. To enhance the spectacle, the rules of competition in sports wrestling have undergone changes and revisions. Some aspects of the rules still need additions or adjustments based on a deeper analysis of competitive activity [9].

In recent years, analyzing the development trend of sports wrestling as a sport included in the Olympic Games program, most experts agree that to develop it further, efforts must be made to increase the effectiveness of wrestling matches while maintaining high intensity of the fight throughout the match [10, 11].

The purpose of the research is to identify the most significant indicators of competitive activity of wrestlers based on the analysis of the 2021 Olympic Games, which influence the spectacle in sports wrestling**.**

Material and methods.

Participants: The study involved 289 wrestlers: 97 representatives of Greco-Roman wrestling, 96 freestyle wrestling athletes, and 96 women's wrestling athletes. In all styles of wrestling, there were 16 athletes in each weight category, except for the 67 kg weight category (17 wrestlers). Weight categories: Greco-Roman wrestling (60 kg, 67 kg, 77 kg, 87 kg, 97 kg, 130 kg), freestyle wrestling (57 kg, 65 kg, 74 kg, 86 kg, 97 kg, 125 kg), women's wrestling (50 kg, 53 kg, 57 kg, 62 kg, 68 kg, 76 kg). The performance data were taken from the official website of the international wrestling federation "United World Wrestling" [12].

Procedure: An analysis of the protocols and video recordings of 340 matches at the 2021 Olympic Games in Tokyo in three types of sports wrestling was conducted: in women's wrestling – 113 matches (n=96 women wrestlers), in Greco-Roman wrestling – 113 matches (n=97 wrestlers), and in freestyle wrestling – 114 matches (n=96 wrestlers). For the analysis of competitive activity, the following indicators were taken: match time (s); number of technical-tactical actions in standing and par terre positions (n); number of matches won by fall (n); number of rule violations in standing and par terre positions (Standing Caution and Parterre Caution) (n); number of penalties for passive wrestling (Activity Time) (n); number of challenges in standing and par terre positions (a protest that arises at a contentious moment in the match) (Standing Challenge and Parterre Challenge) (n); effectiveness of the technique applied in standing and par terre positions (evaluated in points: 1 point, 2 points, 4 points).

Standing and Parterre Challenge refers to the interruption of the match to review a contentious moment, as a result of which one of the athletes may score points. Negative Wrestling, Standing and Parterre Caution are assessments for violations of the rules by wrestlers. Passivity, Activity Time are assessments for inactive wrestling by one of the athletes [13].

The competitive activity indicators were assessed by an expert group. The expert group consisted of 5 people who had experience (more than five years) in officiating and coaching activities. A high concordance coefficient (W=0.75-0.85; p<0.05) demonstrated the consistency of assessments within the expert group.

Statistical analysis: The statistical analysis of the collected data was conducted using licensed Excel spreadsheet packages. The mean value and percentage ratio were calculated. Additionally, a t-test was employed to compare the performance indicators of wrestlers. The chosen significance level was set at 0.05 [14].

Results

The ratio of actions performed in the standing and ground positions for each style of wrestling is presented in Figure 1.

For Greco-Roman and women's wrestling, the ratio of actions performed in par terre and standing is about 70 to 30. Whereas for freestyle wrestlers, almost 80% of actions are performed in standing. However, the ratio of points earned has a different distribution. For freestyle and women's wrestling, the number of points earned and the number of actions almost coincide: 77.8% and 68.1% of all points were earned in standing, respectively, for freestyle and women's wrestling. For Greco-Roman wrestling, only 59.4% of all points were earned in standing. The efficiency coefficient of wrestling in standing for Greco-Roman style wrestlers averaged 1.43 points per action;

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for freestyle wrestlers, it was 1.78 points per action, and for female wrestlers – 2.01 points per action. The number of points scored in standing for technical-tactical actions by Greco-Roman style wrestlers is statistically significantly lower ($p<0.05$) than that of representatives of other styles.

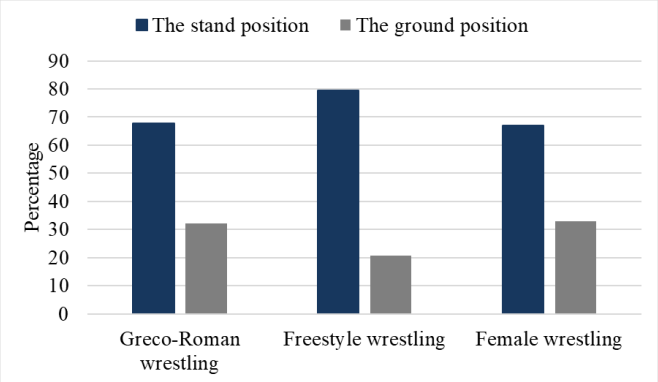

Figure 1. The percentage of actions in stand and ground positions

Table 1 demonstrates the effectiveness in different types of sports wrestling at the 2021 Olympic Games, based on the analysis of 340 matches. The table presents three types of wrestling: Greco-Roman, freestyle, and women's. For each type of wrestling, the following indicators are provided: the number of actions leading to the scoring of one, two, four, and five points, as well as the total number of actions and total number of points, expressed as a percentage.

The highest number of one-point actions was performed in Greco-Roman wrestling, which significantly and statistically significantly ($p<0.05$) exceeds the indicators in freestyle and women's wrestling. Meanwhile, female wrestlers and freestyle wrestlers statistically significantly ($p<0.05$) executed more two-point actions. Four-point actions are relatively rare in all styles of wrestling, but their share is highest in Greco-Roman and women's wrestling. Only one five-point action was recorded (Greco-Roman wrestling). The small number (less than 10%) of high-amplitude and spectacular actions negatively affects the overall spectacle of competitive wrestling.

The average number of actions per match does not significantly differ ($p>0.05$): 4.23 actions for Greco-Roman wrestling; 4.47 actions for freestyle wrestling, and 4.08 actions for women's wrestling. However, when considering the average number of points scored per match, statistically significant differences were found. Thus, Greco-Roman style wrestlers score an average of 6.95 points, this indicator is statistically significantly lower ($p<0.05$) than in freestyle (8.12 points) and in women's wrestling (8.07 points).

A positive aspect that positively influences the spectacle is the number of matches won by fall. This indicator is quite significant in all styles of wrestling: in Greco-Roman (24.8% of all matches), in freestyle (24.6%), and in women's wrestling (32.7%). That is, a quarter of matches among men and almost a third of matches among women end prematurely.

Table 2 presents the number of non-standard situations and the points scored for them. This is a negative aspect of spectacle: the more such situations in a match, the less spectacular the wrestling.

Another aspect that negatively affects the spectacle is the matches that ended with a score of 1:1. In these, the winner was the athlete who scored the last one point. In most of these matches, there were no effective actions, and points were awarded for passivity. In Greco-Roman wrestling, there is a large number of such matches (9.7% of all matches), which is significantly higher ($p<0.05$) than in freestyle (1.8%) and in women's wrestling (0.0%).

Discussion

The article presents an analysis of competitive activity at the 2021 Olympic Games in Tokyo. The analysis of competitive activity was conducted in all types of sports wrestling: Greco-

Table 1

Performance Indicator of Wrestlers at the 2021 Olympic Games (n=340 matches)

Indicators	Greco-Roman wrestling		Freestyle wrestling		Female wrestling	
	The number of actions	%	The number of actions	%	The number of actions	%
The number of one-point actions	254	53.1	122	23.9	76	16.5
The number of two-points actions	183	38.3	374	73.4	352	76.4
The number of four-points actions	40	8.4	14	2.7	33	7.1
The number of five-points actions	1	0.2	0	0	0	0
The total number of actions	478	100.0	510	100.0	461	100.0
The total number of points	785	100.0	926	100.0	912	100.0

Table 2

The number of non-standard technical situations

Technical situation	Greco-Roman wrestling		Freestyle wrestling		Female wrestling	
	The number of actions	%	The number of actions	%	The number of actions	%
Passivity, activity time	163	77.6	65	59.1	52	77.6
Negative wrestling	3	1.4	6	5.4	0	0
Standing challenge	9	4.3	8	7.3	3	4.5
Parterre challenge	14	6.7	10	9.1	4	6.0
Standing caution	5	2.4	18	16.4	6	8.9
Parterre caution	16	7.6	3	2.7	2	3.0
The total number of actions	210	100	110	100	67	100
The total number of points	230		110		67	

Roman [15, 16], freestyle [17, 18], and women's wrestling [19, 20].

Based on the analysis of competitive activity, authors determined the influence of competitive matches on physiological indicators [21]; predicted future results of athletes in competitions [22]; studied the effectiveness and technical structure of champions with scoring by technique types [23]; conducted a comparative analysis of the efficiency coefficient at competitions of different levels [24]; analyzed techniques often used by winners in Greco-Roman and freestyle wrestling at major international competitions [4]; studied the relationship between functional brain asymmetry and tactical strategies during competitions [25].

The results of the study allowed for the identification of the main technical-tactical actions in three types of sports wrestling and highlighted the competitive activity indicators that influence the spectacle of this sport. One of the main factors affecting the spectacle is the rules of competition [26]. Even minor changes in their content are reflected in the indicators of competitive activity and the peculiarities of athletes' preparation [27, 28].

Many scientists have conducted research in which changes in rules affect competitive activity. For instance, specialists [29] conducted an analysis of matches at the 2016 Olympic Games in freestyle wrestling and determined that changes made to the wrestling rules have a positive effect in terms of the attractiveness and dynamism of the wrestling.

In the study [9], 300 wrestling competitions were analyzed, revealing deficiencies, discrepancies, and defects in the competition protocols, and a general decision was made regarding the variables. The authors developed a new form. This form provides access to the latest wrestling rules, which will ease the work of researchers analyzing wrestling competitions, and also help coaches and managers to record the matches of their wrestlers and their opponents. As a result, wrestlers can use this form to decide when, where, and how they applied technique; from which side they applied the technique; and how many points they scored. Moreover, the form will help them to achieve consistent results. Thus, the characteristics of wrestlers can be recorded according to the latest competition rules in wrestling.

Specialists [10] analyzed the indicators of technical-tactical preparedness of the top freestyle wrestlers at the European Championships 2013, 2014, and the European Games 2015 to determine the influence of rule changes on competitive performance. The results of the study indicate that the average number of actions and the repertoire of applied techniques in competitions remained unchanged, with attractive techniques being used less frequently, and techniques that do not pose significant health risks remaining the same. The offensive wrestler dominates. The number of points is significantly higher due to a higher efficiency of actions, and the difference in the intensity of scoring was insignificant due to the longer duration of the match. The number of executed actions per unit of time has decreased even further, and the differences are on the verge of statistical significance (p=0.052). However, more frequent penalization for passivity contributed to greater dynamism in this type of wrestling.

The results of our study showed that wrestlers perform more techniques in standing than in par terre, and this positively affects the spectacle of sports wrestling. López-González [30], in his study noted that after the 2012 Olympic Games, standing wrestling has become more significant for achieving victory in Greco-Roman wrestling. Similar results were obtained in freestyle wrestling based on the analysis of the 2019 World Championship [31].

The effectiveness of Greco-Roman style wrestlers is significantly lower than in freestyle and women's wrestling. This coincides with the results of previous years, which were obtained based on the analysis of the 2017 World Championship [32].

Some previous studies [33] were focused on factors that negatively affect spectacle. Our study showed that interruptions in matches (Challenge, Negative Wrestling, Caution) can be considered an indirect indicator of reduced spectacle in sports wrestling. Also, a large number of assessments for passive wrestling by one of the athletes (Passivity, Activity Time) negatively affects the spectacle of sports wrestling, and this factor is confirmed in previous research [34].

Thus, the results of the conducted research on the competitive activity of elite wrestlers indicate the presence of significant problems facing specialists in terms of the need for substantial modernization of the rules with the aim of increasing the effectiveness and spectacle of wrestling matches.

Conclusions

The analysis of matches at the 2021 Olympic Games made it possible to identify competitive activity indicators that affect the spectacle in sports wrestling. Positive indicators include: a large number of technical-tactical actions performed in standing; execution of throws in par terre by Greco-Roman style wrestlers; a high percentage of early victories in matches. Negative indicators include: execution of simple one-point and two-point technical-tactical actions and the presence of passivity. In Greco-Roman wrestling, there is a higher number of one-point actions, lower effectiveness, and a greater number of matches that ended with a score of 1:1; interruptions in matches (Challenge, Negative Wrestling, Caution). However, Greco-Roman style wrestlers perform more high-scoring and spectacular techniques. The obtained results will help provide recommendations for changing competition rules and enhancing the spectacle of sports wrestling.

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Conflict of interest.

The authors declare no conflict of interest.

References

1. Kruszewski A. Wrestling fight between tradition, sport and spectacle. Arch Budo 2023; 19: 21-27.
2. Ullah F, Wu Y, Mehmood K, Jabeen F, Iftikhar Y, Acevedo-Duque Á, Kwan HK. Impact of spectators' perceptions of corporate social responsibility on regional attachment in sports: Three-wave indirect effects of spectators' pride and team identification. Sustainability. 2021;13(2):597. https://doi.org/10.3390/su13020597.
3. Koronios K, Dimitropoulos P, Kriemadis A, Papadopoulos A. Understanding sport media spectators' preferences: the relationships among motivators, constraints and actual media consumption behaviour. European Journal of International Management. 2021;15(2-3):174-96. https://doi.org/10.1504/EJIM.2021.113237.

4. Supriadi D. Technical Performance Analysis of Greco Roman and Freestyle Categories in Wrestling. JUARA: J Olahraga. 2022;7(3):937-945. https://doi.org/10.33222/juara.v7i3.2460.
5. Tropin Y, Romanenko V, Korobeynikova L, Boychenko N, Podrihalo O. Special physical training of qualified wrestlers of individual styles of wrestling. Slobozhanskyi Herald Sci Sport. 2023;27(2):56-63. https://doi.org/10.15391/snsv.2023-2.001.
6. Franchini E. Future Issues In Wrestling Research: A Sport Sciences Perspective. International Journal of Wrestling Science. 2021;11(2):2-7.
7. Zadorozhna OR, Briskin YA, Pityn MP, Bohuslavska VY, Hlukhov IG. Participation tactics of elite freestyle wrestlers in competition system in 2013-2016 Olympic cycle. Pedagogy Phys Cult Sports. 2021;25(5):275-278. https://doi.org/10.15561/26649837.2021.0502.
8. Korobeynikov G, Korobeinikova L, Raab M, Korobeinikova I, Danko T, Kokhanevich A, Cynarski WJ, Mytskan T. Psychophysiological state and decision making in wrestlers. Ido Movement for Culture. 2022;22(5):1-9. https://doi.org/10.14589/ido.22.5.2.
9. Isik O, Cicioglu HI, Gul M, Alpay CB. Development of the wrestling competition analysis form according to the latest competition rules. Int J Wrestling Sci. 2017;7(1-2):41-45. https://doi.org/10.1080/21615667.2017.1422815.
10. Marković M, Kasum G, Dopsaj M. Comparison of freestyle wrestlers' competitive activity at the European competitions in 2013, 2014 and 2015. Internatıonal Scıentıfıc And Professıonal Conference On Wrestlıng "Applicable Research İn Wrestling". Novi Sad; 2017. p. 226-238.
11. Ünver R. A Quantitative Study on the Score and Technical Analysis of the 2021 Olympic Games and 2021 World Championships Olympic Weights-Men's Freestyle Wrestling. Pakistan J Med Health Sci. 2022;16(5):464. https://doi.org/10.53350/pjmhs22165464.
12. United World Wrestling. Wrestling to Debut Ranking Series in 2023 [Internet]. Unitedworldwrestling.org. 2023 [cited 2023 Mar 7]. Available from: https://unitedworldwrestling.org/article/wrestling-debut-ranking-series-2023.
13. United World Wrestling. International wrestling Rules. Corsier-sur-Vevey: United World Wrestling; 2020 [accessed 2023 Sep 25]. Available from: https://uww.org.
14. Thomas JR, Martin P, Etnier JL, Silverman SJ. Research methods in physical activity. Human kinetics; 2022 Apr 28.
15. Tropin Y, Latyshev M, Saienko V, Holovach I, Rybak L, Tolchieva H. Improvement of the Technical and Tactical Preparation of Wrestlers with the Consideration of an Individual Combat Style. Sport Mont. 2021;19(2):23-28. doi: 10.26773/smj.210604.
16. Hoffmann J, Amici C, Minelli C, Borboni A. Biomechanics of suplex in Greco-Roman wrestling: a qualitative and time-motion analysis of international competitions. Int J Perform Anal Sport. 2023;23(1):1-14. https://doi.org/10.1080/24748668.2023.2181563.
17. Mykola L, Sergii L, Alexander K. Performance analysis of freestyle wrestling competitions of the last Olympic cycle 2013–16. Journal of Physical Education and Sport. 2017;17(2):590-594. doi:10.7752/jpes.2017.02089.
18. Sciranka J, Augustovicova D, Stefanovsky M. Time-motion analysis in freestyle wrestling: Weight category as a factor in different time-motion structures. Ido Movement for Culture. Journal of Martial Arts Anthropology. 2022;22(1):1-8. doi: 10.14589/ido.22.1.1.
19. Ito S, Crawshaw L, Kanosue K. Differences between male and female elite free-style wrestlers in the effects of "set up" on leg attack. Arch Budo. 2019;15:131-137.
20. Kruszewski A, Kruszewski M, Kuźmicki S, Tabęcki R. Directions of changes in match structure in female wrestling based on World Wrestling Championships 2014 and The Olympic Games 2016 observations. Arch Budo Sci Martial Arts Extreme Sports. 2019;15:45-52.
21. Miarka B, Soto DA, Aedo-Muñoz E, Fernandes JR, Brabec L, Brito CJ. Effects of Competitive Wrestling Bouts on Physiological Measures: A Systematic Review and Meta-analysis. Sports Orthop Traumatol. 2020;36(1):34-51. https://doi.org/10.1016/j.orthtr.2020.01.005.
22. Latyshev M, Tropin Y, Podrigalo L, Boychenko N. Analysis of the Relative Age Effect in Elite Wrestlers. Ido Movement for Culture. Journal of Martial Arts Anthropology. 2022;22(3):28-32. https://doi.org/10.14589/ido.22.3.5.
23. Tunnemann H, Curby D. Scoring Analysis of the Wrestling from the 2016 Rio Olympic Games. Int J Wrestling Sci. 2016;6:90-116. https://doi.org/10.1080/21615667.2017.1315197.
24. Aquino TND, Macedo FDV, Gomes AC, Torres FC, Borin JP. Analysis of the effectiveness coefficient in Greco-Roman fighting athletes at different levels of competition. Rev Bras Med Esporte. 2023;30:e2022_0222. https://doi.org/10.1590/1517-8692202430022022_0222i.
25. Korobeinikova L, Korobeynikov G, Cynarski WJ, Borysova O, Kovalchuk V, Matveev S, et al. Tactical styles of fighting and functional asymmetry of the brain among elite wrestlers. Ido Movement for Culture. Journal of Martial Arts Anthropology. 2020;20(4):24-30. https://doi.org/10.14589/ido.20.4.4.
26. Tünnemann H. Evolution and adjustments for the new rules in wrestling. International Journal of Wrestling Science. 2013 Sep;3(2):94-104. https://doi.org/10.1080/21615667.2013.10878992.
27. Pashkov I, Tropin Y, Romanenko V, Goloha V, Kovalenko J. Analysis of competitive of highly qualified wrestlers. Slobozhanskyi Herald Sci Sport. 2021;9(5):30-39. doi:10.15391/snsv.2021-5.003.
28. Biletic I, Karnincic H, Baic M. Effects of Age and Popularity of Sport on Differences among Wrestlers' Parental Support: An Exploratory Study. Journal of Functional Morphology and Kinesiology. 2023;8(2):65. https://doi.org/10.3390/jfmk8020065.
29. Ababaci R, Sahin S, Cicioglu I. Technical-tactical analysis of wrestling competitions in 2016 Rio Olympic games. J Phys Educ Res. 2018;5(3):08-13. https://www.joper.org/JOPER/JOPERVolume5_Issue3_7_9_2018_152.pdf.
30. López-González D. Technical-tactical performance in Greco-Roman wrestling: analysis of 2013 senior world championships through multivariate analysis. Int J Wrestling Sci. 2014;4(1):95-130. https://doi.org/10.1080/21615667.2014.10879004.
31. Gutiérrez-Santiago A, Vázquez-Estévez C, Paramés-González A, Argibay-González JC, Reguera-López-de-la-Osa X, Vila-Fernández N, et al. The temporal structure of male freestyle wrestling bouts in 65, 86 and 125 kg categories. PLoS ONE. 2023;18(3):e0282952. https://doi.org/10.1371/journal.pone.0282952.
32. Mirzaei B, Faryabi I, Alizaei Yousefabadi H. Time-Motion analysis of the 2017 Wrestling World Championships. Pedagogy Phys Cult Sports. 2021;25(1):24-30. https://doi.org/10.15561/26649837.2021.0104.
33. Curby D, Dokmanac M, Kerimov F, Tropin Y, Latyshev M, Bezkorovainyi D, Korobeynikov G. Performance of wrestlers at the Olympic Games: gender aspect. Pedagogy Phys Cult Sports. 2023;27(6):487–493. https://doi.org/10.15561/26649837.2023.0607.

34. Soyguden A, Imamoglu O. Technical Analysis of 12th World Universities Wrestling Championship Greco-Roman Style Competition. Baltic J Sport Health Sci. 2017;4(107):28-37. https://doi.org/10.33607/bjshs.v4i107.37.

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