sciendo
Pol. J. Sport Tourism **2024**, *31(2), 26-32*
DOI: 10.2478/pjst-2024-0011

Original research papers

PERFORMANCE ANALYSIS IN CHINESE FEMALE CLUB SOCCER BASED ON OFFENSIVE AND DEFENSIVE TECHNICAL-TACTICAL INDICATORS

YANG XING[1], WLODZIMIERZ ERDMANN[1], TOMASZ CHAMERA[2]

Gdańsk University of Physical Education and Sport, [1]Department of Biomechanics and Sports Engineering, [2]Department of Sailing

Mailing address: Yang Xing, Gdańsk University of Physical Education and Sport, Department of Biomechanics and Sports Engineering, 1 Kazimierza Górskiego Street, 80-336 Gdańsk, Poland, e-mail: yang.xing@awf.gda.pl

Abstract

Introduction. This study aimed to analyze how technical and tactical performance indicators differ by different match outcomes in women's soccer and apply a comprehensive approach to match analysis. ***Material and Methods.*** The investigation analyzed many technical and tactical indicators of female club players from 28 matches in the Chinese Women's Super League during the 2020 and 2021 seasons. These included both offensive and defensive indicators, such as goal kicks, clearances, interceptions, and more. Standard scores and T-scores were considered in illustrating the typical performance status of the team. In evaluating the technical and tactical performance indicators across various match outcomes, we applied non-parametric Kruskal-Wallis tests. This approach was taken because the data were found appropriate for the non-normal distribution, allowing the comprehensive detection of the differences across game states. ***Results.*** Kruskal-Wallis test-based statistical analysis showed that there is a substantial number of differences in team performance across slumped and high-performance phases within the games. The passable offensive indicators, such as shot frequency and forward passes, dropped significantly during the slump ($p < 0.05$). Amongst the defensive actions, there were significant increases. By contrast, in high-performance phases, offensive actions-shots and forward passes were significantly more frequent ($p < 0.01$), indicating dynamics in the change of the team approach according to the state of play. ***Conclusions.*** Our analysis showed that more offensive actions relate to a win in a match, while defensive action usually leads to a lost match. This result will offer valuable information to coaches for training and game strategies.

Key words: sports performance, soccer game, women's soccer, women's super league, match analysis

Introduction

Team performance is a complex facet of soccer performance influenced by the decisional skills of players, their cognition and physical abilities, but most importantly, by their technical and tactical actions. Previous work has looked at single dimensions of performance without embedding them in a more general team context. This method of performance analysis is a good form of feedback [1]. The relationship between athletic performance and team technical and tactical metrics has rarely been studied before [2]. Therefore, Hughes et al. [3] proposed a method for determining the normality of motion performance. Basing on this method, O'Donoghue and Peter [4] proposed a new approach. It will not be limited to individual or group performance, but movement performance analysis that combines individual and group performance. The sports performance analysis method is a direct analysis method rather than an indirect evaluation by means of laboratory tests, Rating of Perceived Exertion (RPE) load scale surveys [5].

The main purpose of sports training is to participate in competitions and win them as much as possible. Therefore, the athletes' performance in the competition can be more intuitive to find the problem [6]. This problem includes the athletes' usual training level, the coaches' training ideas for the athletes and other issues. In addition to sports training as an influencing factor of sports performance [7], it also includes the time, the playing field, the tactics and the importance of the game [8, 9, 10]. However, the quality of the opponent is still considered to be an important factor limiting sports performance [11].

Sports performance analysis allows to objectively record any events that occur during a match in relation to technical and tactical indicators [12], understand the relationships and gaps that occur between teams both at the same and at different stages of play [13]. In addition, by establishing a radar chart of team characteristics, the overall performance characteristics of the whole team in winning, drawing and losing games were viewed from a macro perspective. When facing teams with different abilities, coaches can use this analysis to reduce or avoid some details of mistakes when arranging the tasks of the game for players and increase the probability of winning the game. In the training goal, also as much as possible, athletes work toward the data indicators of good sports performance. It can still be applied to other team sports or individual sports performance analysis, using the mode of visual data registration to understand the performance of the game.

This makes it possible to analyze performance directly and not through other indirect methods like laboratory tests or scales of perceived exertion. As a result, the feedback drawn from this methodology is applied directly during competition. This is because optimal performance and winning is the prime desire for sportspersons. Competition, in this case, performance, therefore, serves as a direct indicator of aspects of potential tra-

ining and strategic consideration influenced by such factors as game timing, location, as well as the level of importance of the fixture, and quality of the opponent.

During registration of the game data, it should be taken into account that the results of the team will differ [14, 15], both when the team plays with different opponents, and with the same opponent, but at different times. Some researchers believe that after a minimum of ten games, a team's results begin to stabilize and the results become representative [16].

The performance of an individual in team sports, and in women's soccer in particular, is dependent on many technical and tactical variables. However, comprehensive analyses that relate game outcomes to performance variables over several matches are not available in the current literature. The present study seeks to fill this gap using a detailed match analysis methodology that captures various performance indicators for two seasons within the Chinese Women's Super League. This study tries to shed new light on the kinds of tactical adjustments required to enhance team performance by analyzing these indicators about win-loss and draw-game outcomes. Another aim was to present correlations between various tactical approaches and their efficacy in terms of match results – wins, losses, and draws – centering on a population of elite female athletes competing at a high level. The last aim is to objectively show a team's technical and tactical style through this method. This approach bridges an essential gap in sports performance analysis and sets the stage for future research endeavors toward advancing coaching strategies and athlete training regimes.

Material and Methods

Match Sample

The experiments were conducted with 18 players (height – 170.3 ± 5.1 cm, age – 24.1 ± 2.0 years, body mass – 59.8 ± 5.5 kg), including the goalkeeper and the players who played as substitutes in the game. It should be noted that in this study, only the data of players who played more than 60 minutes in one match were registered. Informed written consent was obtained from all individual participants included in the study. All study procedures were in accordance with the ethical standards of the 1964 Helsinki declaration and its subsequent amendments or comparable ethical standards. The observer (the first author) had previous experience in sports analytics, and he resorted to a rigorous training program to standardize the techniques under which observations had to be made. Inter-rater reliability was tested in several preliminary studies before the actual one: Cohen's kappa coefficient of 0.85 indicated good to excellent agreement between observing activities. The observer was a specialist in sports analysis and with every next match he got more experience. As the only person making the analysis, he had the same approach to the technique of analysis.

Three strategically fixed Canon K8C+K8B cameras were used for effective match monitoring during the 2020 and 2021 seasons. One was placed in front of the center of the pitch, and two others were behind the goals. This setup was standard in all matches with both home and away effects from the various teams so that a more comprehensive collection of diverse tactical behaviors could be captured. This approach offers a fine--grained performance analysis within varied game contexts and has contributed significantly to the development of advanced analytical methods within sports science.

Technical and tactical indicators of women's club players in 28 matches in the Chinese Women's Super League for the 2020 and 2021 seasons were registered (2020 season: 14 matches + 1 friendly match; 2021 season: 13 matches). Within the league, teams receive three points for winning a game, one point for drawing, and zero points for losing a game. The total of all points was used for ranking at the end of the season. Because of the Covid-19 pandemic, all teams lived in the same training facility until the end of the season. There are 15 standard football fields where games can be played at the same time. There were no "home" (the team under study plays on home field) or "away" (the team under study plays on the opponent's field) matches in the 2020 and 2021 seasons. Ten teams participated in the 2020 and 2021 seasons, but the rules changed slightly. In the first stage of the 2020 season, after each team played one single round robin match, the match points would be cleared. In the second stage, the whole group of the teams was divided into two smaller groups: the top four teams and the bottom six teams. Next, the teams of each group played a single round robin. The top four teams would compete for the championship and one of the bottom six teams would be relegated. In the 2021 season, only in the second stage would the ten teams be evenly divided into two groups. So, we did not examine technical and tactical performance based on the location of the match in this study. Performance indices were selected based on the coaching staff's requirements for the team, as well as after viewing video replays of the game and discussing technical and tactical moments of the team's play. The performance indicators were divided into 2 groups: offense-related technical and tactical indicators of performance and defense-related technical and tactical indicators of performance. Lago-Peñas noted differences in technical and tactical indicators of athletic performance when teams face opponents of varying strengths [17]. A better understanding of the overall distribution of technical and tactical indicators at different levels of game quality is provided by radar charts, which depict the T-level of the corresponding indicator.

Offense-related technical and tactical indicators included: a) goals; b) shots; c) passes forward; d) crosses; e) through balls; f) offsides; g) throw-ins; h) interceptions.

Defense-related technical and tactical indicators included: a) passes backward; b) goal kicks ; c) clearances; d) saves; e) aerial duels.

Data analysis

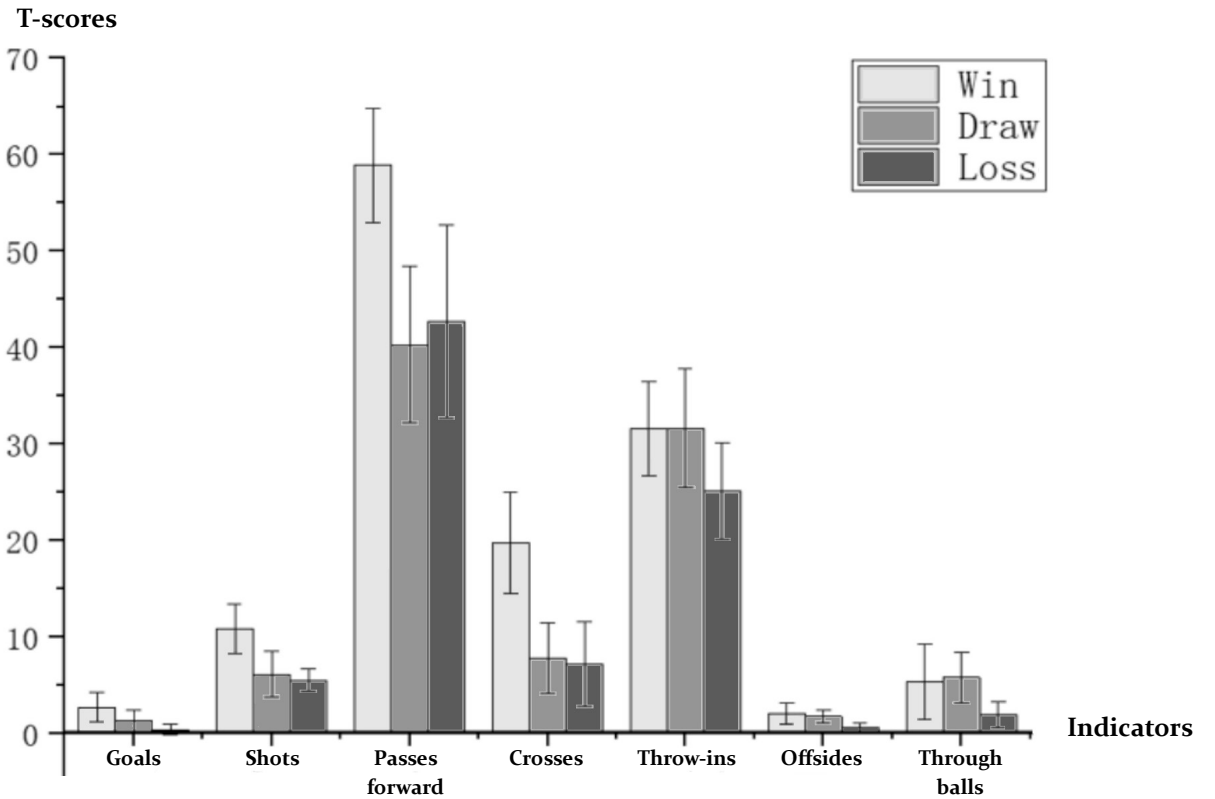
All statistical analyses were performed using IBM SPSS STATISTICS 26 (SPSS Inc., Chicago, USA) software for technical and tactical metrics registration over 28 games. Data are expressed as the means ± SEM for each group. To analyze differences between the same technical and tactical indicators in the investigated group (wins, losses and draws), a non-parametric independent samples Kruskal-Wallis Test was used. Values of $p < 0.05$ were considered significant. The data were converted into Z-scores and T-scores, and finally the match metrics were presented in the form of radar plots. The Z-score (also called the standard score) ranks how far a data point is from the mean. Technically, however, it is a measure of how many standard deviations below or above the mean a raw score is. The formula is as follows: $Z = (x-\mu)/\sigma$. These metrics were first converted to standard scores (Z), and then the data were calculated using $T = 50+10*Z$ for offensive metrics and $T = 100-(50+10*Z)$ for defensive metrics. The Kruskal-Wallis one-way analysis of variance (K-W ANOVA) was used to compare differences between independent indicators (wins, draws, and losses).

Results

Offense- and defense-related technical and tactical indicators were presented in Figures 1 and 2, respectively, with related match outcomes. The generated Intraclass correlation coefficient (ICC) ranged from 0.75 to 0.89, which described a substantial to excellent value; this informs that the measures were stable in changing the game scenarios. Results of statistical assessment can be found in Table 1. The table notices that match result has a statistically significant impact on the value of corresponding indicators ($p < 0.05$). Based on the aforementioned figures, certain indicators can be identified, which displayed significantly higher values in the won games as compared to the lost or drawn ones. In the latter cases, these indicators were smaller in value, albeit roughly equivalent to each other. Examples of such indicators include shots (49.13, $p = 0.000$), passes forward (50.37, $p = 0.001$), crosses (50.89, $p = 0.000$) (Fig. 1) and passes backward (47.76, $p = 0.035$) (Fig. 2). Only the goal kick indicator (58.19, $p = 0.001$) displayed the highest values for the lost games (Fig. 2). The values of interception (49.79, $p = 0.026$), aerial duel (52.82, $p = 0.026$), and save (50.88, $p = 0.002$) indicators were higher for the drawn games. However, they displayed a significantly greater variability. Notably, such indicators were observed only in the group of defensive indicators (Fig. 2). In addition, we compared the same indicator across the independent variables (win, draw, and loss) states (Tab. 2). Significant differences were observed in Table 2 at $p < 0.05$. It is worth noting that for the indicators Through Ball, Throw-In, and Passes Backward, while $p < 0.05$ in a two-tailed test, after applying the Bonferroni correction, $p > 0.05$, indicating no significant difference.

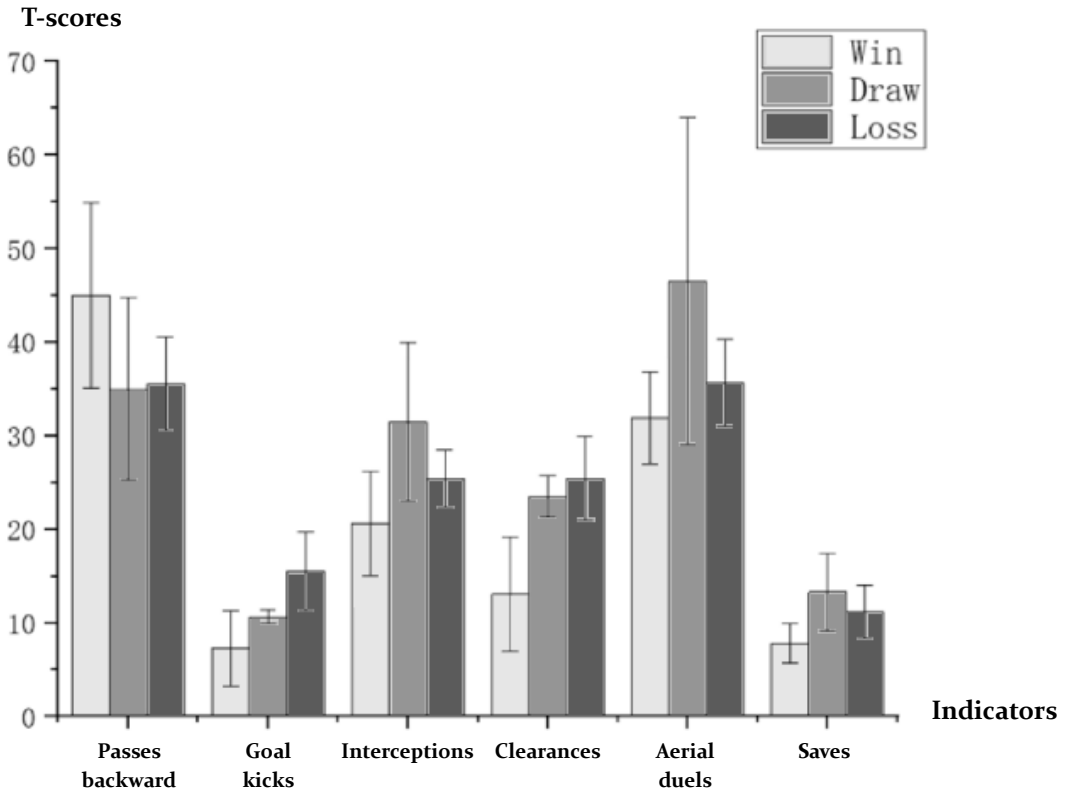
Table 1. T-scores of technical and tactical indicators for different types of team performance

Offense-related					Defense-related				
Indicator	Performance			p	Indicator	Performance			p
	High	Normal	Low			High	Normal	Low	
goals	53.05	46.48	39.92	**0.001**	passes backward	54.04	47.76	42.26	0.035
shots	56.78	49.13	41.47	**0.000**	goal kicks	40.84	51.45	58.19	**0.001**
passes forward	57.20	50.37	42.04	**0.001**	aerial duels	46.71	52.82	56.10	0.026
crosses	56.16	50.89	41.34	**0.000**	interceptions	44.74	49.79	56.65	0.026
through balls	53.31	49.57	40.61	0.009	saves	47.47	50.88	54.29	**0.002**
offsides	55.09	45.58	45.58	**0.002**	clearances	43.27	48.25	57.20	**0.001**
throw-ins	56.39	49.00	42.85	0.022					



Axis X presents names of corresponding indicators (for more details see the text). Axis Y shows the quantity number of the indicators. Each bar in group represents a corresponding game result. Each value presents mean ± standard deviation.

Figure 1. Offense-related technical and tactical indicators depending on match results (win, draw, loss)



Axis X presents names of corresponding indicators (for more details see the text). Axis Y shows the quantity number of the indicators. Each bar in group represents a corresponding game result. Each value presents mean ± standard deviation.

Figure 2. Defense-related technical and tactical indicators depending on match results (win, draw, loss)

Table 2. The Kruskal-Wallis one-way ANOVA test was used to compare the indicators across different outcomes (win, draw, or lose)

	Goals			**Shots**			**Passes forward**			**Crosses**		
	Win	Draw	Loss	Win	Draw	Loss	Win	Draw	Loss	Win	Draw	Loss
Win					0.012	0.00		0.004	0.003		0.006	0.00
Draw				0.012			0.004			0.006		
Loss				0.00			0.003			0.00		
	Through balls			**Offsides**			**Throw-ins**			**Passes backward**		
	Win	Draw	Loss	Win	Draw	Loss	Win	Draw	Loss	Win	Draw	Loss
Win			**0.056***		0.003				0.031		**0.067***	**0.121***
Draw			0.017	0.003		0.042			**0.131***	**0.067***		
Loss	**0.056***	0.017			0.042		0.031	**0.131***		**0.121***		
	Goal kicks			**Aerial duels**			**Interceptions**			**Saves**		
	Win	Draw	Loss	Win	Draw	Loss	Win	Draw	Loss	Win	Draw	Loss
Win			0.00		0.027			0.021			0.012	0.006
Draw				0.027			0.021			0.012		
Loss	0.00									0.006		
	Clearances											
	Win	Draw	Loss									
Win		0.046	0.001									
Draw	0.046											
Loss	0.001											

* – denotes $p < 0.05$ in a two-tailed test and $p > 0.05$ after Bonferroni correction.

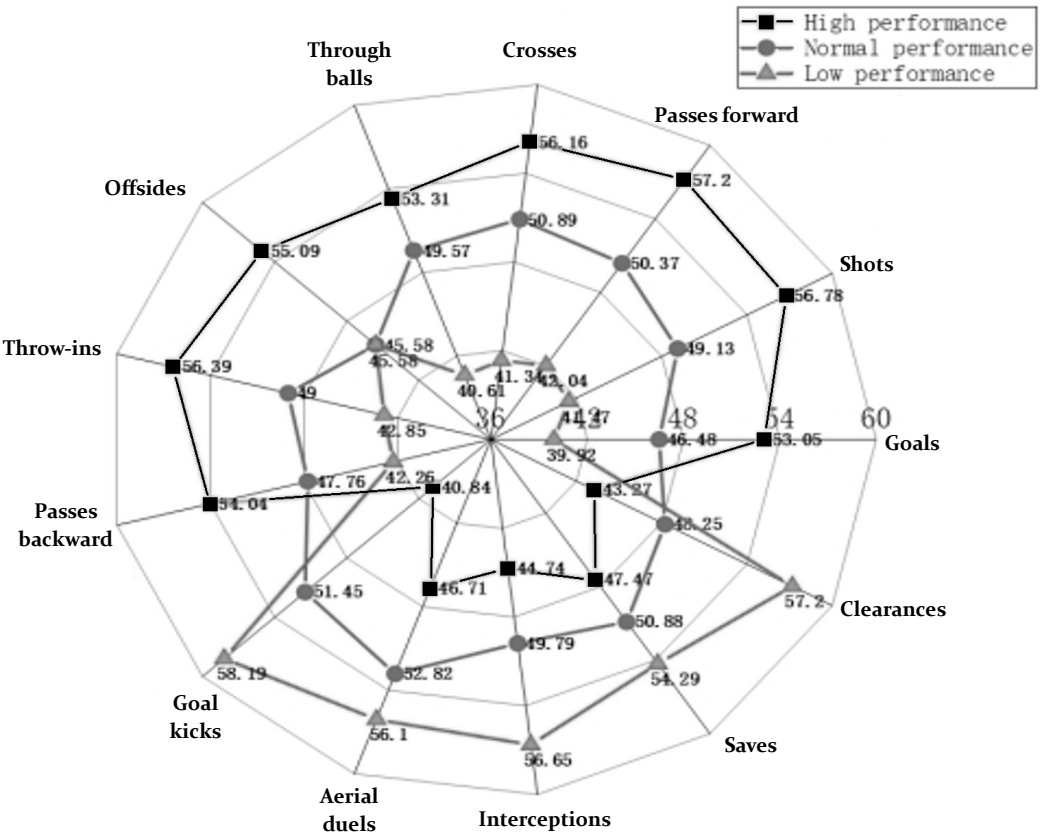


Figure 3. Radar chart of team performance. Radial values represent T-scores of technical and tactical indicators, names of which can be found around the circle. Green, blue and red lines show high, normal and low team performance.

The corresponding values in Fig. 3 are grouped in such a way that the upper half of the chart represents offensive indicators, while the lower half represents defensive ones. On the mentioned diagram, it can be observed that in the case of high performance, T-scores of the indicators form a kind of "mushroom" turned upwards. This visually demonstrates that the corresponding T-scores are significantly higher for offensive indicators compared to defensive ones. At the same time, the "mushroom" of T-scores for low performance indicators is inverted downwards. The T-scores for normal performance indicators were arranged in an oval shape that lay between two "mushrooms".

Discussion

This study is a way to present sports performance in the simplest and most direct way. Since there is a great variation in the units of each indicator or the number of times each indicator appears in the competition, a standard score was used in this study. Standard scores are a statistical method of comparing different units of an indicator, but it is not possible to find out where each indicator is located. For some data where the indicators are negatively correlated with the match results, a T = 100-(50+10*Z) was used to handle the data and T-score as the result to form a radar chart. The radar chart makes it as easy as possible to see the team's characteristics and weaknesses. It helps to see a match in better quality and address the weaknesses of the team. As shown in Figure 3, the radar icons have three states: normal team performance, low team performance and high team performance. For the selection of high and low status data, O'Donoghue pointed out the reason for choosing the size quartiles [4]. If the athletic performance data collected were normally distributed, one standard deviation would contain 68% of the data.

When the team is in low performance, the metrics related to the team's offense decrease and those related to the team's defense increase (Fig. 3). This state generally occurs when athletes are injured, in a poor state of mind and training condition, encountering a strong opponent or having recently increased their number of appearances. Then the team is likely to lose, but of course in soccer we cannot exclude that there are some luck factors that can lead to a draw or victory. However, after recording more matches, when the result of the match tends to be stable, although there is an element of luck, the match is still won or lost depending on the team's own quality and the quality of the opponent. After each match, coaches can compare the current data with the radar graph of match data accumulated in the previous period. When this team has a loss or slump, the data are basically the low performance in Figure 3. This gives the coach more guidance. Coaches can find out what the team is not doing well by themselves and modify the training plan to make up for the team's deficiencies.

The team's normal performance is the normal quality of this team, and this state is the players showing their proper level. In Figure 3, one can see the overall quality and characteristics of the team comprehensively, and even the tactical intention of the coaches in the game. The team has high performance in terms of shots (56.78, p = 0.000) and goals (53.05, p = 0.001). In the direction of passing, the T-score of passes backward (54.04) is low and the T-score of passes forward (57.20, p = 0.001) is

high. It indicates that when the team is in good shape, it has a higher proportion of forward attacks and a strong desire to attack. Because the number of passes forward increases, the number of through balls (53.31, p = 0.009) and crosses (56.16, p = 0.000) also increases, and in turn, the number of offsides for forward players also increases. As the team is attacking well, the pressure on the defensive side is reduced. It is worth noting that the throw-in (56.39, p = 0.022) indicator is also a better way to organize the attack. The save indicator represents a goalkeeper's action to prevent the ball from entering the goal or the opposing player has a chance to pose a threat to the attacking player and possibly score a goal. When the team is in good performance, this indicator also decreases, indicating that the opposing player poses less threat to the goal. Interceptions (44.74, p = 0.026) and clearances (43.27, p = 0.001) are also caused by less pressure on the defense when the team is in good performance. This study results show that tactical behaviors have a decisive impact on the outcomes of soccer matches, supporting recent study findings. For instance, Guimarães et al. [18] analyzed the influence of different tactical setups on match load across the seasons and emphasized the required adaptability in team tactics. Moreover, concerning the level of running performance, Asian-Clemente et al. [19] explained how tactical behaviors influence the running performance of high-performance soccer teams and stated that running speeds and distances are higher in teams whose style is characterized as counterattacking. This supports our observation of enhanced performance metrics under specific game tactics.

More importantly, Modric et al. [16] focused on cause-effect relations between physical performance and tactical outcomes in UEFA Champions League games, providing evidence that teams with superior physical performance metrics like high-intensity running significantly influence technical actions such as shots or successful passes, which further correlates with authors' findings that tactical decisions made mainly to enhance physical exertion under controlled conditions result in better match outcomes.

These studies together depict a broad view of how tactical variations and physical performance intertwine to dictate game intensity, all supporting authors' hypothesis that strategic and tactical adjustments could impact measurable improvements in team performance.

The value of this study, despite providing a decent insight into how tactical behaviors might result in match outcomes, has some limitations. First, the fact that the data are observational limits the ability to infer causality between tactical decisions and the result of performance. Secondly, Table 1 as a whole shows that each indicator is significantly different ($p < 0.05$) across win, draw, and loss results. However, when these indicators were compared pairwise with the independent variables (win, draw, and loss) in Table 2, some indicators did not show significant differences ($p > 0.05$). This limitation affects the ability to compare and study the same indicators in more detail within the context of the three outcomes. Thirdly, the study sample was only made up of Chinese Super League women's soccer teams; generalization to other leagues and sports could therefore be limited.

Future research could also use experimental designs for the establishment of better causality and involve different sports contexts to enhance generalization. Additionally, a lot better insight into effectiveness in tactical behaviors may result from looking into the psychological and physiological effects of making tactical decisions.

Conclusions

This study provides an analysis of the athletic performance of different metrics during the game. This analysis calculated the typical performance of the team as well as the performance of a single game. It also shows that the metrics in soccer matches are not stable. Therefore, this technical approach is used to relate to unstable match metrics. This method is used to explain the performance of teams in different states.

In the development of women's soccer, on the one hand, scientific training methods are needed to promote the growth of athletes' abilities. On the other hand, it is necessary to choose the right sports training monitoring method to check the sports performance. Many teams choose only the former as the main goal of the team. It is not advisable to put too much emphasis on the first aspect. Some methods to give feedback on the quality of team performance at the end of training and after the game are necessary. It would be very one-sided to judge the team's performance only by the win or loss of the game.

This research method not only assesses the three performance states of the team, but also shows the positives and negatives of the team. By showing them, one can find out the tactical methods to improve the winning rate of the game. If one wants to have a comprehensive understanding of the team's performance in the game, it is essential to collect data on the team's offensive and defensive performance in all games. The collection of these data is an important reference indicator of the team's performance in different states of the game. The practical implications of this study are associated with coaches and sports strategists in soccer, although these relationships can be extended to other team sports. Understanding the relationship between tactical conduct and match performance will enable coaches and the training staff to prepare more effective training programs and match strategies appropriately. As such, we believe that incorporating flexibility in tactical planning and giving importance to physical conditioning to support high-intensity activities would improve match outcomes. These insights can be particularly useful in planning training sessions and during game halftime analyses to adjust tactics and strategies in real time.

References

1. Drust B. (2010). Performance analysis research: Meeting the challenge. *Journal of Sports Sciences* 28(9), 921-922. DOI: 10.1080/02640411003740769
2. Lago C., Casais L., Dominguez E., Sampaio J. (2010). The effects of situational variables on distance covered at various speeds in elite soccer. *European Journal of Sport Science* 10(2), 103-109. DOI: 10.1080/17461390903273994
3. Hughes M., Evans S., Wells J. (2001). Establishing normative profiles in performance analysis. *International Journal of Performance Analysis in Sport* 1(1), 1-26. DOI: 10.1080/024604102320675602
4. O'Donoghue P. (2005). Normative profiles of sports performance. *International Journal of Performance Analysis in Sport* 5(1), 104-119. DOI: 10.1080/24748668.2005.11868319
5. Bangsbo J. (1994). The physiology of soccer – with special reference to intense intermittent exercise. *Acta Physiologica Scandinavica Supplementum* 619, 1-155.
6. Lyons K. (1998). *What is in a name? Are we all performance analysts*. World Congress of Notational Analysis of Sport IV. Retrieved 19 June, 2014 from: https://www.slideshare.net/Postillion/what-is-in-a-name-are-we-all-performance-analysts

7. Carling C., Williams A.M., Reilly T. (2007). *Handbook of soccer match analysis: A systematic approach to improving performance*. London, Routledge.
8. Devlin, G., Brennan D.A., O'Donoghue P. (2004). Time--motion analysis of work-rate during home and away matches in collegiate basketball. In P. O'Donoghue and M. Hughes (eds.), *World Congress of Performance Analysis of Sport VI* (pp. 174-178). Cardiff, UK: CPA, UWIC.
9. Hale S. (2004). Work-rate of Welsh National League Players in training matches and competitive matches. In P. O'Donoghue and M. Hughes (eds.), *World Congress of Performance Analysis of Sport VI* (pp. 35-44). Cardiff, UK: CPA, UWIC.
10. Reilly T. (2003). Motion analysis and physiological demands. In A.M. Williams, P. Ford, T. Reilly, B. Drust (eds), *Science and soccer* (59-72). London, Routledge.
11. McGarry T., Franks I.M. (1994). A stochastic approach to predicting competition squash match-play. *Journal of Sports Sciences* 12(6), 573-584. DOI: 10.1080/02640419408732208
12. Dellal A., Wong D.P, Moalla W., Chamari K. (2010). Physical and technical activity of soccer players in the French First League – with special reference to their playing position. *International Sport Med Journal* 11(2), 278-290.
13. Hughes M., Barlett R. (2002). The use of performance indicators in performance analysis. *Journal of Sports Sciences* 20(10), 739-754. DOI: 10.1080/026404102320675602
14. Wells J., O'Donoghue P.G., Hughes M. (2004). *The need to use representative player data from multiple match's inperformance analysis.* In Proceedings of the World Congress of Performance Analysis in Sport VI, Belfast, Northern Ireland, 22-25 June 2004.
15. Memmert D., Raabe D., Schwab S., Rein R. (2019). A tactical comparison of the 4-2-3-1 and 3-5-2 formation in soccer: A theory-oriented, experimental approach based on positional data in an 11 Vs. 11 game set-up. *PLoS ONE* 14(1), e0210191. DOI: 10.1371/journal.pone.0210191
16. Modric T., Malone J., Versic S.., Andrzejewski M., Chmura P. et al. (2022). The Influence of physical performance on technical and tactical outcomes in the UEFA Champions League. *BMC Sports Science, Medicine Rehabilitation* 14, 179. DOI: 10.1186/s13102-022-00573-4
17. Lago-Peñas C., Lago-Ballesteros J. (2011). Game location and team quality effects on performance profiles in professional soccer. *Journal of Sports Science Medicine* 10(3), 465-471.
18. Guimarães R.S., García-Calvo T., Raya-González J., Ponce--Bordón J.C., Fatela P. (2024). Effects of contextual variables on match load in a professional soccer team attending to the different season periods. *Sensors* 24(2), 679. DOI: 10.3390/s24020679
19. Asian-Clemente J., Suarez-Arrones L., Requena B., Santalla A. (2022). Influence of tactical behaviour on running performance in the three most successful soccer teams during the competitive season of the Spanish First Division. *Journal of Human Kinetics* 82, 135-144. DOI: 10.2478/hukin-2022-0040

Submitted: June 19, 2024
Accepted: July 1, 2024