

Concept Mapping of Play Failure Factors in Soccer Players

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Abstract: Soccer players sometimes suffer from performance failures in competitive matches that do not correspond to their level of competitiveness. Two undergraduate soccer-specific physical education students, six master's degree students in soccer-specific physical education, one doctoral degree student in soccer-specific physical education, four primary and secondary school soccer coaches, one in-service teacher in a highly efficient soccer academy, and one active professional soccer player of the First Division of the Chinese Football Association (CFA) were used as the interview subjects for the study using Concept Mapping. The results found that the factors causing soccer players to play poorly were three aspects: the actual situation during the game, their own competitive level and the actual situation before the game, specifically including the emotional situation during the game, external factors during the game, their own competitive ability, their own psychological quality and quality of consciousness, the unfavorable factors before the game, and the adjustment of the pre-game setup in six dimensions.

Keywords: soccer player; play failure; conceptual compositional approach

1. Background of the study

In competitive sports, the phenomenon of athletes playing abnormally has become a problem that coaches and athletes, especially high-level athletes, have to pay attention to. In the pressure situation some athletes can play normally, some athletes can even play beyond the usual training level of performance, while some athletes play below the usual training level of performance, there is a malfunction, this situation is known as "Clark" phenomenon or this is known as the "Clark" phenomenon or the "Choking" phenomenon.

"Choking" was first used to describe the phenomenon of sudden physiological asphyxiation, and in the early 1980s, it was cited in psychology to describe the phenomenon of decreased performance or abnormal operation (Qu Yongchao, 2009) [1]. Domestic research on athletes' performance disorders mainly focuses on the study of the phenomenon of "Choking", and in 1981, Daniel, a sports psychologist, used the term "Choking" to describe the phenomenon of "game disorders". Baumeister defined "Choking" as "a decline in performance under stress" (Baumeister, 1984) [2], and in subsequent studies it was further interpreted as "a decline in performance despite the fact that the player has not performed as well as he would like to" (Baumeister, 1984). In a subsequent study, it was further interpreted as "underachievement despite efforts to achieve excellence" (Baumeister, 1986) [3]. Wang Jin (Wang, 2003) [4] considers "Choking" to be the decay of the habitual motor execution process that occurs at critical moments of a game or during a major competition.

The phenomenon of "Choking" has been studied by many scholars. Hu Guiying et al. (2006) [5], through a case study of a senior shooter, concluded that senior athletes' attention was too focused on the competition process, which led to the phenomenon of "Choking". The phenomenon of "Choking" occurs. The athletes' strong self-consciousness, irrational self-directed goals and low sense of competition efficacy were the main factors contributing to the phenomenon of "Choking". Xu Xiaobin (2009) [6], using basketball players as research subjects, concluded that improving individual self-confidence of athletes under stressful conditions can indirectly reduce the chances of "Choking" phenomenon. Also using basketball players as research subjects, Xu Zhenying et al. (2010) [7] concluded that the extra effort of senior athletes is the main cause of "Choking", and Gao Xibin et al. (2010) [8] concluded that preventing extra effort can reduce the occurrence of the "Choking" phenomenon by studying trampoline athletes. "Phenomenon. In terms of intervention strategies to alleviate "choking", Lou Hu et al. (2016) [9] believe that it may be related to the four traditional principles of "no desire - no mind - no self - self-improvement", which are "no desire - no mind - no

self - self-improvement" and "self-improvement", " which are 4 traditional Chinese wisdom. Zhong Yufang et al. (2017) further explored the two theories of the "choking" phenomenon, suggesting that the interference theory applies to athletes with low levels of interpretation and the automatic execution theory applies to high-level athletes. Zou Xuefang et al. (2018) [10], on the other hand, from an embodied cognition perspective, argued that the emergence of "choking" is an embodied behavior that disrupts the successful coupling of the organism with the environment. In terms of the factors leading to "choking", in addition to extra effort, Shang Yi et al. (2019) [11] studied tennis players and concluded that attentional change is a determining factor in the occurrence of "choking". Summarizing the previous studies, it can be seen that the causes of athletes' performance failure come from many aspects, mainly including psychological and environmental aspects, and lack of research on the factors in the actual competition, based on the above prior research, the present study defines performance failure as: "athletes' competitive level in sports competitions is far lower than the level of athletes in their usual training or not fully played", and "athletes' competitive level is far lower than the level of athletes in their usual training". This study defines malfunction as "the athletic level of an athlete in a sports competition is much lower than or does not fully fulfill the competitive level that should be achieved in normal training".

Concept Mapping is a mixed method, which has both qualitative research parts (such as interviews, coding, etc.) and quantitative research parts (such as multidimensional scale analysis, cluster analysis, etc.), and is a structural construction method designed to form a concept based on a certain topic. There are also scholars in China who have conducted research using conceptual mapping in the fields of psychology (Wang Song et al., 2014; Zhang Jun et al. 2019) [12, 13], education (Wang Jiangyang et al., 2021) [14] and sports (Lou Hu et al., 2014, 2016) [9, 15]. Conceptual mapping usually consists of six steps: creating units of analysis, categorization, multidimensional calibration, cluster analysis, completing the conceptual mapping, and interpreting the conceptual mapping (Trochim, 1989; Lou Hu, 2016) [9, 16]. This study intends to explore the factors that cause soccer players to play poorly through conceptual mapping, to form a theoretical structure, to enrich the psychological training theory specializing in soccer, to further guide the practice of sports training, and to improve the phenomenon of soccer players' playing poorly in the game.

2. Research methodology

2.1 Objects of study

A total of 16 research participants were interviewed in this study, including six master's degree students in soccer-specific kinesiology, one doctoral student in soccer-specific kinesiology, two undergraduate students in soccer-specific kinesiology, four elementary and middle school soccer coaches, one in-service teacher at a highly effective soccer academy, and one active professional soccer player of the Chinese Football Association's First Division.

2.2 Content of interviews

Before the interviews were conducted, the content of the interviews was sent to the interviewees in the form of text, with offline face-to-face interviews for those who were close and could be directly contacted, and WeChat voice interviews for those who were farther away and could not be contacted directly. Before the interview, the interviewee is thanked first, followed by a brief introduction of the entire interview process, including the interviewer's self-introduction, the topic and content of the interview, and the duration of the interview. During the interview, the interviewee is asked the following questions:

- 1) Have you ever played out of position in a game, practice, or any other situation where soccer is played? Yes Briefly share what was going through your mind.
- 2) What do you think causes a soccer player to play poorly?
- 3) Is there anything else you would like to know or share about this interview or any other aspect of it?

During the interview, the interviewee is guided to give as detailed answers as possible to the above questions, and the entire interview process is conducted without interrupting the interviewee's answers, except in special circumstances. The interview was open-ended so that the interviewee was not limited by the questions and could obtain more information from the interviewee's answers. After all the

questions were answered, the researcher proactively communicated with the interviewee, informing the interviewee that his/her cooperation was still needed to complete the later classification of the analyzed units, and kept in touch with the interviewee to ensure that he/she was able to actively participate in the subsequent classification work. At the end of each interview, the unit of analysis was organized according to the interviewee's answers, taking into account the method of organizing the unit of analysis of conceptual mapping.

2.3 Research process of conceptual mapping

2.3.1 Creating a unit of analysis

The unit of analysis in the conceptual mapping usually consists of a sentence or a phrase, and the unit of analysis is extracted according to the interviewee's answer in the interview, for example, an interviewee mentioned in the answer to question 1: "Yes, I was nervous at the beginning, and I wanted to make a breakthrough when I was overconfident and then I made a mistake". For example, one of the interviewees answered question 1 by saying, "Yes, I was nervous at the beginning, and I wanted to make a breakthrough when I was overconfident, and then I made a mistake." Among them, "nervousness at the beginning" and "overconfidence" can be extracted as units of analysis, and so on, and then the contents of the interviews of the 16 interviewees can be extracted. The final result was 68 independent and non-duplicated units of analysis.

2.3.2 Classification of units of analysis

After the 68 units of analysis were extracted, they were organized into a separate document and distributed to each interviewee, requiring that the Interviewees be categorized into no fewer than three categories (inclusive), and there are no strict time limits on when interviewees can complete their categorization and submit it. The document is written in addition to the original unit of analysis. There are criteria and requirements for categorizing units of analysis:

- 1) Each unit can only be categorized into one category and cannot be in more than one category at the same time. For example, once "P1. Self-reproach" is categorized as the first category, "P1. Self-reproach" cannot be categorized as any other category.
- 2) There should be more than one unit in each category, not just one.
- 3) When you have finished categorizing, please name each category.

The requirement that interviewees categorize no fewer than three categories and the phrase "After categorization, please name each category" were primarily intended to prevent negative, random categorization by interviewees. 18 After all of the interviews were distributed, some of the interviewees were not able to categorize the units of analysis due to time, work, and other unavoidable factors. The final 12 categorized documents were retrieved, with the highest number of categories categorized being seven and the lowest being three. At the end of the categorization process, each participant was given 15 RMB as a participant fee as a token of appreciation for the positive cooperation of the interviewees in the interview and categorization process.

2.3.3 Multidimensional scaling analysis

Based on this criterion, the two-dimensional matrix was scored according to the categories submitted by each interviewee to obtain 12 different two-dimensional matrices, and then the scores in the 12 different two-dimensional matrices were superimposed to finally obtain a superposition matrix, which was imported into SPSS for multidimensional scale analysis to obtain a two-dimensional planar Cartesian scatterplot, with each point in the plot being an analyzed unit.

2.3.4 Completing and interpreting conceptual compositions

After clustering analysis, the conceptual mapping has been basically completed, and finally need to be analyzed through the center of mass (Centroid), calculated in each category of all the analytical units of the center of mass, to the center of mass in the two-dimensional planar coordinate system as a reference to calculate the distance from the center of mass coordinates of the nearest analytical unit, the analytical unit's name can be used for the name of the category belonging to the reference. After naming all the categories, the conceptual schema is completed, and the conceptual schema is interpreted and analyzed by drawing diagrams.

3. Results

3.1 Multidimensional scaling analysis

A total of 68 units of analysis were extracted from the 18 interview texts (Table 1), which were categorized by the interviewees into 3 to 7 categories. A multidimensional scaling analysis of the 68 × 68 superimposed distance matrix showed a stress value of 0.17808, which is smaller than the average stress value of 0.285 of the existing studies on conceptual mapping (Williams, Judith, & Rose, 1994) [17]. The smaller stress value indicates a higher degree of fit (Oudejans, Kuijpers, Kooijman, & Bakker, 2011) [18]. The next step in the conceptual mapping analysis can be carried out. With the multidimensional scaling analysis, all 68 units of analysis were output in a 2 × 2 planar rectangular coordinate system, in which all units of analysis were presented as points (Fig. 1).

3.2 Cluster analysis

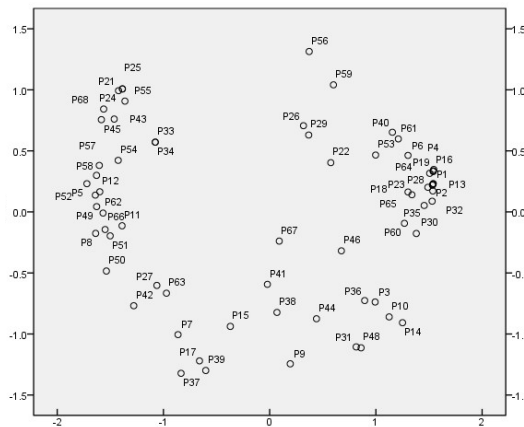


Figure 1: Analyzing unit point diagrams

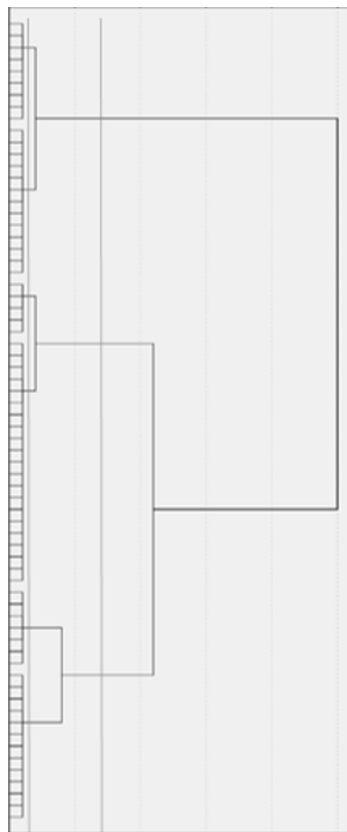


Figure 2: Cluster analysis tree diagram

In the multidimensional scale analysis, the distance and distribution of each analysis unit have been roughly presented, but how to classify them cannot be obtained by multidimensional scale analysis alone. Therefore, it is necessary to input the coordinates of 68 analysis units into statistical spss for cluster analysis, and the ward method is used to calculate the cluster tree (Fig.2). It can be seen that there are 6 dimensions in the first level and 3 dimensions in the second level, and the distance between the 3 dimensions and the 6 dimensions is acceptable within 10. In the classified text of the interviewees, 68 analysis units are divided into 3 ~ 7 dimensions, so the results of 3 categories and 6 dimensions are accepted.

3.3 Name of the category

In the multidimensional scale analysis, the coordinate values of each analysis unit are calculated (Table 1), based on which the center of mass of each category can be calculated, and then by comparing the distance between all analysis units and the center of mass of each category, the closest analysis unit to the center of mass can be derived, which can be used as the naming reference of the category.

Table 1: List of analyzing unit coordinate values

dimension (math.)	analysis unit	horizontal coordinate value	vertical coordinate value
1	P26's play in the game	0.32	0.71
1	P29 pressure	0.37	0.63
1	P59 player impatience	0.6	1.04
1	P22 Ideas don't match up with coaches	0.58	0.4
1	P56 Players' emotions	0.37	1.31
2	P43 Coach's encouragement	-1.46	0.76
2	P54 Coach's clinical adjustments	-1.43	0.42
2	P45 Team cohesion	-1.58	0.76
2	P68 Mutual encouragement among teammates	-1.56	0.84
2	P57 Referee's Call	-1.6	0.38
2	P55 opponents are brutal and rude	-1.36	0.91
2	P58 fans	-1.63	0.3
2	P33 debut	-1.08	0.57
2	P34 replacement	-1.08	0.57
2	P21 Audience Impact	-1.42	0.99
2	P24 Blame from teammates	-1.39	1.01
2	P25 Negative response from teammates	-1.39	1.01
2	P5 Off-site factors	-1.72	0.23
2	P12 Opponent level	-1.6	0.17
2	P52 Encouragement from family members	-1.64	0.14
3	P36 Less experience in competitions	0.89	-0.73
3	P3 Physical condition	0.99	-0.74
3	P10 stress tolerance	1.12	-0.86
3	P31 Basic Technology	0.81	-1.11
3	P48 doesn't invest enough in normal training	0.86	-1.11
3	P14 Solid Foundation	1.25	-0.91
3	P44 Taking on the heavy lifting	0.44	-0.88
3	P46 Own mistake leads to a turnover	0.68	-0.32
4	P28 The quality of tenacity and hard work	1.49	0.2
4	P64. Fear	1.51	0.32
4	P23 in a bad mood	1.53	0.22
4	P13 Guilt	1.54	0.22
4	P1 Blame yourself	1.54	0.23
4	P2 Shame	1.54	0.23
4	P65 misses more	1.34	0.14
4	P47 Personality Types	1.54	0.17
4	P19 Overconfidence	1.54	0.33
4	P20 is not confident	1.54	0.33
4	P18 Burnout	1.3	0.16
4	P16 is too tight.	1.54	0.34
4	P4 Psychological status	1.54	0.35
4	P32 Willpower	1.53	0.09
4	P35 Tension	1.45	0.05
4	P6 Inattention	1.3	0.46
4	P60 Physical exhaustion, fatigue	1.27	-0.09
4	P61 wants to play well	1.21	0.6
4	P30 Ability to adjust emotions	1.38	-0.18
4	P53 didn't take advantage of the opportunity	1	0.47
4	P40 Mental disorder	1.16	0.65
5	P51 Conflict in the family	-1.5	-0.2
5	P11 interference	-1.39	-0.11
5	P50 Family stress	-1.54	-0.48

5	P66 Home and Away Game Factors	-1.55	-0.14
5	P8 Environmental factors	-1.64	-0.18
5	P62 Change of location, unfamiliar location	-1.57	-0.01
5	P49 Weather	-1.63	0.04
5	P27 Adequate warm-up time	-1.06	-0.6
5	P42 Important Competitions	-1.28	-0.77
5	P63 Long time without a match	-0.97	-0.67
6	P15 Pre-match de-escalation	-0.37	-0.94
6	P17 Pre-match decompression	-0.66	-1.22
6	P38 Frustrating experiences	0.07	-0.82
6	P39 Adversity training	-0.6	-1.3
6	P41 not adapted to the local environment	-0.02	-0.59
6	P7 Interpersonal relations	-0.86	-1.01
6	P9 Habits	0.19	-1.24
6	P37 pre-game training adjustments	-0.83	-1.32
6	P67 Misfit Tactics	0.09	-0.24

The first dimension contains P22, P26, P29, P56, P59, its center of mass coordinates are (0.45, 0.82), the nearest unit of analysis is P26 (play during the game), combined with the names of the other units of analysis within the dimension, the final name of this dimension is "in-game emotional state".

The second dimension contains P5, P12, P21, P24, P25, P33, P34, P43, P45, P52, P54, P55, P57, P58, P68, with center of mass coordinates (-1.46, 0.6), and the closest unit of analysis is P43 (Coach's encouragement). Combined with the names of the other units of analysis of this dimension, this dimension was finally named "Extrinsic Factors in the Game".

The third dimension contains P3, P10, P14, P31, P36, P44, P46, P48, with center of mass coordinates of (0.88, -0.83), and the closest unit of analysis is P36 (less experience in competitions), which, combined with the names of the other units of analysis within the dimension, was finally named "own athletic ability".

The fourth dimension contains P1, P2, P4, P6, P13, P16, P18, P19, P20, P23, P28, P30, P32, P35, P40, P47, P53, P60, P61, P64, P65, with center of mass coordinates (1.42, 0.25), and the closest unit of analysis is P28 (the quality of tenacity). Combined with the names of the other units of analysis within the dimension, this dimension was finally named "own psychological quality and will quality".

The fifth dimension contains P8, P11, P27, P42, P49, P50, P51, P62, P63, P66, with center of mass coordinates (-1.41, -0.31), and the closest unit of analysis, P51 (family conflict), which, combined with the names of the other units of analysis within the dimension, was finally named "Pre-match Disadvantages".

The sixth dimension contains P7, P9, P15, P17, P37, P38, P39, P41, P67, with center of mass coordinates (-0.33, -0.96), and the closest unit of analysis is P15 (pre-game de-escalation), which, combined with the names of the other units of analysis within the dimension, was finally named "pre-game setup adjustment".

3.4 Completing the conceptual composition

Based on the scatterplot calculated from the multidimensional scale analysis and the classification results from the cluster analysis, the conceptual constructs were mapped (Figure 3).

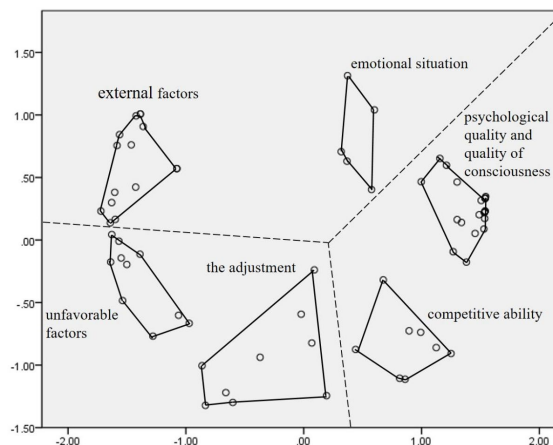


Figure 3: Conceptual conceptualization of soccer players' play failure factors

Combining the dimensions corresponding to each of the three categories in the cluster analysis tree diagram (Figure 2), category 1 contains dimension 1 "emotional condition during the match" and dimension 2 "external factors during the match", category 2 contains dimension 3 "own competitive ability" and dimension 4 "psychological quality and will quality", category 3 contains dimension 5 "pre-match unfavorable factors" and dimension 6 "pre-match setup adjustment", and category 3 contains dimension 5 "pre-match adverse factors" and dimension 6 "pre-match setup adjustment". Category 2 contains dimension 3 "own athletic ability" and dimension 4 "psychological quality and will quality", category 3 contains dimension 5 "unfavorable factors before the match" and dimension 6 "adjustment of pre-match setup". Combining the names of the two dimensions in each category, the three categories were named category I "actual situation during the match", category II "own competitive level", and category III "actual situation before the match" (Table 2).

Table 2: Classification dimensions

Dimension One	Dimension II
In-competition realities	Emotional situation during the race
	extraneous factors in a competition
own competitive level	Self-competitiveness
	Self-mental quality and willpower
Actual situation before the match	Pre-match disadvantages
	Pre-game setup adjustments

4. Discussion

4.1 In-competition realities

Regarding the influence of emotions on soccer players, the way of emotion regulation can affect the correct rate of soccer players (Zhang Xiaobo, Chi Lizhong, 2013) [19], and the emotion regulation strategy is also able to reduce the influence of emotions on soccer players (Wang Wan, Jiang Yuan, 2018) [20], which also corresponds to the situation of emotions in the actual situation of the game in the match, and the emotional fluctuations of soccer players in the game, unstable emotional conditions can affect their level of play, which in turn leads to misplay. Various non-soccer players' own factors in the game will also have an impact on them. In a soccer game, the referee's operational ability will also influence the result of the game, and the soccer players' performance in the game will be limited by the referee's judgment. In addition, the behavior of coaches and teammates also affects the play of soccer players, for example, the encouragement of coaches will strengthen the self-confidence of soccer players, the same coaches through the substitution of players, the use of the game interruption time to make tactical adjustments to the arrangement of such on-the-field adjustments to allow soccer players to get better play, the response of teammates, the team's mental outlook, and the atmosphere in the locker room, etc. is also an aspect of the impact of the play. In addition, the level of competition of the opponent, fans, home and away, off-field factors, etc., can also limit the soccer player's play. In-game emotional conditions and in-game external factors are both actual situations that occur during the game, so the first level dimension of both is named "in-game actual conditions".

4.2 Own competitive level

Dimension 3 "own competitive ability", the competition experience, physical condition, stress resistance, basic skills, etc. are specific aspects of the competitive ability of soccer players, high level of soccer players thanks to the high level of competitive ability, can make up for the shortcomings in some areas to make up for the shortcomings and thus play a better level of athleticism, while lower level of soccer players are limited by their own athletic ability cannot skillfully exercise their own athletic ability to cope with the ever-changing situations in the game, resulting in failure to play well. The lower level soccer players are limited by their own athletic ability, unable to skillfully exercise their own athletic ability to cope with the ever-changing situations in the game, thus leading to the failure to play. P60 "physical exhaustion, fatigue" is a unit of analysis that reflects the aspect of physical condition, which is not strongly related to the psychological quality and will quality, but the results of cluster analysis show that this unit of analysis is not closely related to the psychological quality and will quality. However, the results of the cluster analysis show that this unit of analysis belongs to dimension 4, and after referring to other units of analysis within this dimension, it is assumed that the interviewees may think that physical fatigue and exhaustion can be overcome by their

willpower quality, and therefore categorize it as dimension 4, and similarly, P53 "failing to grasp opportunities" can be solved under the tenacious willpower quality. The same is true for P53 "not grasping the opportunity".

4.3 Pre-competition practicalities

The units of analysis in Dimension 5 have a common characteristic in that they all occur or appear before the referee blows the whistle to signal the official start of the soccer match. Combined with the unit of analysis P51 "Family conflicts", which is the closest to the center of mass of this dimension, it is further found that all the units of analysis in dimension 5 will have certain obstacles for soccer players, and by combining the names of the units of analysis in dimension 5, dimension 5 is finally named "Pre-match unfavorable factors". Similarly, the common characteristic of the analytical units in dimension 6 is that they occur before the official start of the soccer match, but P15, P17, P37, P39 belong to the training arrangement of the soccer coaches, while P7, P9, P38 belong to the soccer player's own qualities or experiences, and P41, P67 belong to the soccer player's athletic status or situation before the match. Referring to the nearest analytical unit P15 "pre-match guidance" in dimension 6, the coaches should make timely and targeted adjustments to minimize or even eliminate the impact of this unfavorable factor if the soccer players do not adapt to the local environment or tactics before the match. And the soccer players' own characteristics or experiences can help them better adjust their state and thus play the ideal competitive level. Therefore, all the units of analysis in dimension 6 belong to the content of setup adjustment, and dimension 6 is finally named "pre-match setup adjustment". Combining the names of Dimension 5 and Dimension 6, and referring to the naming process of Dimension 1 and Dimension 2, the first-level dimension to which Dimension 5 and Dimension 6 belongs is named "pre-game actual situation".

5. Conclusion

In this study, we created and analyzed the interview text as a unit, and then completed the conceptual map of the factors that cause soccer players to play poorly through classification, multidimensional calibration, cluster analysis, and the factors are mainly "the actual situation in the game", "their own competitive level" and "the actual situation before the game".

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