Fencing Statistical Analysis System of On-The-Spot Technical Research

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Abstract. This paper introduces the technical approach statistic analysis of fencing match the design thought, system function structure and application characteristics, the system adopts the characteristics of C + Builder + SQL database, in Win-xp system development and design, with the interface is simple and convenient operation, the statistical results visualization features.

Keywords: Fencing; Technical; On-the-spot statistics; Research

In the modern high level sports training and competition, high-tech means more and more widely used. Among them, the computer aided analysis software, training and competition with its convenient, scientific and accurate characteristics is widely concerned. For example, by Italian company development of multiple DOTE on volleyball match analysis software, training and playing volleyball played a big role [1]. Zhou Yong who developed the statistical software, realize the technology of CUBA league players available statistics and analysis of the simulations, technical team score, the players and the histogram index scores of players such as teams coach, providing detailed statistical data [2]. Fencing is our competitive sports items, the advantage in the competition in an enviable record, for in the world series of fencing with greater breakthrough. Therefore, on the basis of previous studies, according to the need of fencing coaches, fencing, on-the-spot statistical analysis technique for the coaches and athletes system provides services to the training and competition.

1. System design thought

Grapple game and movement of project quality don’t have close relationship, for this kind of project application is very complex and tactics in the game, therefore, people need flexible application of project performance and backlash athletic exude a nonlinear relationships (Figure 1, Hohmann, Lames & Letzelter, 2002), it is difficult for people to exercise quality according to the competition result [3].

![Figure 1: Ball games with the nonlinear relation between the sports quality](Hohmann, Lames & Letzelter, 2002)
MaiJiu Tian (1988) divided the different sports tactical significance into 5 levels, and discrimination against the project will grapple as four tactics importance, therefore, fencing competition correct strategy and tactics will often be win-loss determinant, as is shown in table 1[3].

Table 1  The importance of different sports tactical level 5 (Tian MaiJiu 1988)

<table>
<thead>
<tr>
<th>Race Number</th>
<th>Competition Forms</th>
<th>Tactical Importance Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collective</td>
<td>To compete against</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Every nets against</td>
<td></td>
</tr>
<tr>
<td>Personal</td>
<td>Fighting against</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Every nets against</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fellow scrambling</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Grouping racing</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Ordinal competition</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ordinal performance difficult and beautiful</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Ordinal performance accuracy</td>
<td></td>
</tr>
</tbody>
</table>

Therefore, fencing competition pre-match preparation technique analysis is a very important link of the training work, which is a point (athletes, the state diagnosis), it is in the whole process of fencing sports training plays an important role. Figure 2 reveals the game and technical analysis and training, the relationship between adversarial programs can be seen in the analysis of technical throughout the training process. In different stages of training skills and tactics, the side key differs somewhat. Normally, the end means the new training cycle begins, skill and tactics of the analysis of the key is often their athletes, its purpose is to analyze athletes in the contest, the tactics of engineering of the advantages and disadvantages, for the next stage of training plans to provide the scientific basis. But in front of the contest, the emphasis is on the analysis of the characteristics of rival skills and tactics, the coaches and athletes accomplish know fairly well, pertinently reinforce practice, completes the race and practice preaching’s work. In a sense, the game of skill and tactics analysis of winning games may have more important significance.

Figure 2 Games, skill and tactics and training in accordance with the relationship between Lames change, (1994).
The analysis indicates that the development of fencing competition tactics to improve on-the-spot statistic analysis system of fencing sports training and competition level is very necessary, it can help coaches make quick, easy and accurate analysis of technical characteristics and play opponents.

1.1. According to the characteristics of fencing, record every minute of the technical properties

Fencing competition at the end of a clash on one side of the gain and loss into. According to the characteristics and fencing competition scene in the actual operation of the system, the feasibility of in the design process, only record fencing competition process, each share of the last game behaviour of tactics.

1.2. According to the requirement analysis fencing, establish the technical index system of observation

According to the demand national fencing coach, and the analysis of observing indexes of fencing tactics of the sword of characteristic, divided into technical indicators and body parts. Technical indexes as follows: (1) the main attack technology, (2) defence technology, (3) counter-offensive technology. The main body part of each index according to different parts of the sword and effectively.

2. The function of the system

The whole system based on the structural design method, data statistics and data analysis is divided into three modules, data output. Statistical data of the system is the core module, this module is responsible for data input, and data source is further treatment. Data processing module for input data analysis and synthesis, satisfy requirement of data and graph coaches. Responsible for handling data output module after data display, print and export. System interface Fig 3 shows:

![System Interface Diagram]

Figure 3 Fencing on-the-spot statistical analysis system of tactics

3. Fencing Tactics on-the-spot statistical analysis system

3.1. Fencing statistical analysis system of on-the-spot technical data flow chart as shown in figure 4

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3.2. Login

After the system start up, prompt the user to enter your user name and password to enter the system after verification, main interface, as shown in figure 5 and 6.

3.3. Initialization of the competition data

Select the Tools menu under the menu of event management, the interface of event management will appear, as shown in Figure 7.

Initialize the data of the game in the interface as shown in Figure 7. If the game has already existed, just

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select the appropriate event, and select "Set the current game as the statistical analysis object", click Save and close the current window, then you can start data statistics; If there is no event information, click the New button, add the corresponding game information, click Save and close the current window, then you can start statistics; If you need to modify the current events, select the appropriate event, click the Modify button, click Save after the modification and close the current window, then you can start statistics.

3.4. The record of Technical and tactical data of spot game

On-the-spot race tactics statistics interface, just enter statistical figure 6, interface is interface; click "add the lock locking" can cancel locking and statistical data. In statistics, simply click on the button of corresponding tactics of statistical data.

3.5. The records of the data of the game about on-the-spot competition

Data statistics and sorting through "data" and "statistics", "data" view can see backstage data table, as shown in figure 8.

![Figure 8 The screen of system of statistical analysis of tourney describe about on-the-spot competition statistical](image)

The view of statistics which is used by the samples of tables can give us a direct analysis of the score of losses and gain about different parts and kinds (Figure 9).

![Figure 9 the screen of system of statistical analysis of tourney describe about on-the-spot competition statistical](image)

3.6. Data statistics and data reduction

System provides two ways: first is Data printing—you can print the statistical data through printing.
menu under the system menu. Second is data derived—choose derived menu, you can get the statistical data derived to.xls format.

Figure 10 Statistical results. XLS format for export

3.7. Fencing on-the-spot techniques statistical analysis designed by using Excel.

According to the statistical analysis of the tactical fencing, using of Excel function beforehand design tables of statistics, the form is divided into three working table: technology, using statistical loss and gain a summary statistics division, as shown in figure 11 statistics.

The statistical methods with up-to-date, high efficiency, quick and easy to operate etc, its biggest advantage are after the game, you will get all the technical statistics and timely feedback to coach athletes.

Figure 11 fencing on-the-spot real-time tactical statistical analysis

4. System features

4.1 The design of the interface is the record of the system, the first cathedra interface is recorded, and a data interface, and the reality of form for coaches are very similar, statistics, use convenient, kind, simply
click on the appropriate technical coaches can be easily button to tactics statistics.

4.2 Records of the integration of the two interfaces can reflect the pillars of the real-time tactics used athletes.

4.3 Provide two views of freedom, user-friendly switch.

4.4 Results can be derived. XLS format, convenient for use of excel of powerful features.

4.5 The results will be every statistics, no need to worry about missing user data.

5. References


