

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

Chuanjie Zhao <sup>1</sup>, Deyun Ma <sup>2</sup>, Hui Zhang<sup>1</sup>, Jie Wang <sup>3</sup>

<sup>1</sup>Physical education training institute of Shanghai sports university, shanghai 200438

<sup>2</sup>Economic management institute of Shanghai sports university, shanghai 200438

<sup>3</sup>Sports technique research center of Shanghai sports university, shanghai 200438

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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 <sup>[1]</sup>. 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 coaches, providing detailed statistical data <sup>[2]</sup>. 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 <sup>[2]</sup>.

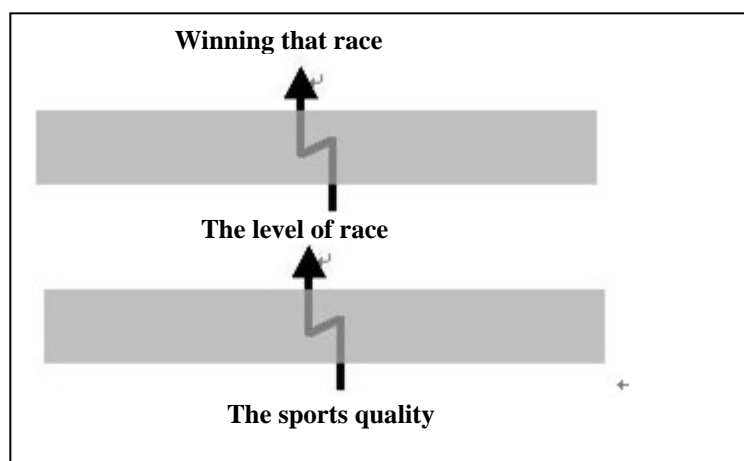


Figure 1: Ball games with the nonlinear relation between the sports quality (Hohmann, Lames & Letzelter, 2002)

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<sup>[3]</sup>.

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

Race Number	Competition Forms	Tactical Importance Rating
Collective	To compete against	5
	Every nets against	
Personal	Fighting against	4
	Every nets against	
	Fellow scrambling	3
	Grouping racing	2
	Ordinal competition	1
	Ordinal performance difficult and beautiful	
	Ordinal performance accuracy	

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.

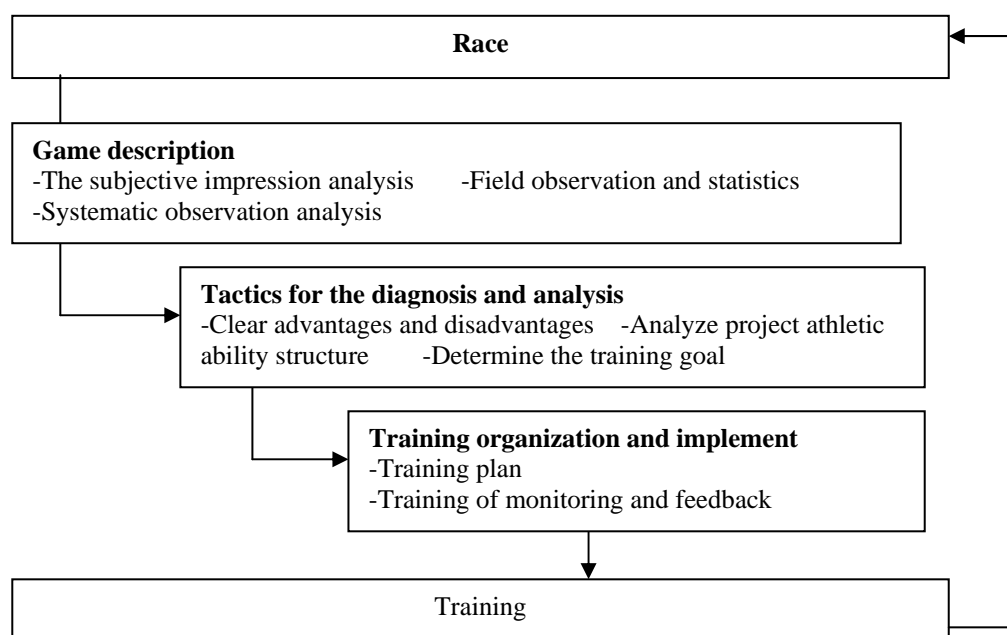


Figure 2 Games, skill and tactics and training in accordance with the relationship between Lames change, (1994).

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:

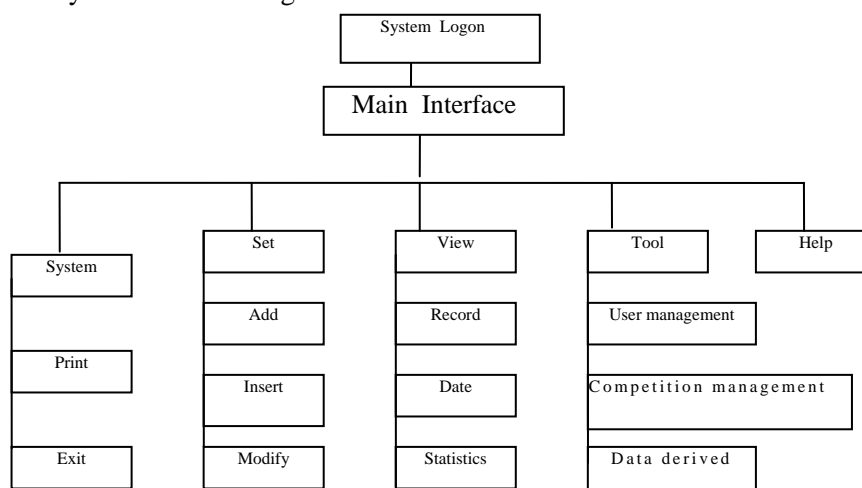


Figure 3 Fencing on-the-spot statistical analysis system of tactics

## 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

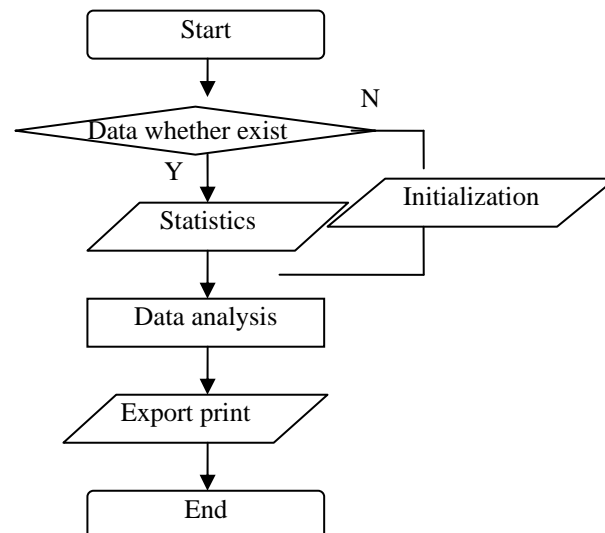


Figure 4 Fencing statistical analysis system of on-the-spot technical data flow

### 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.



Figure 5 Login screen

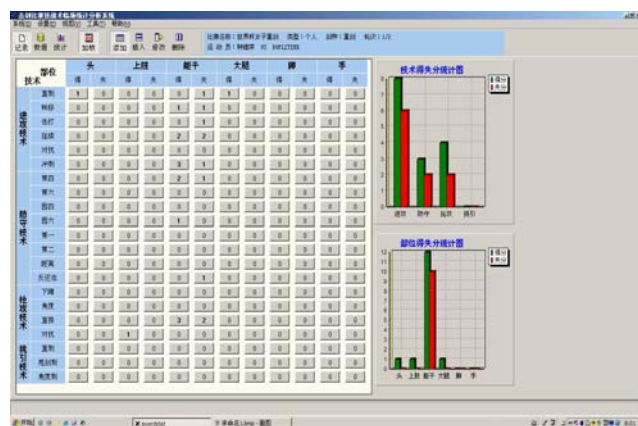


Figure 6 Statistical analysis of main interface on-the-spot tactics

### 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.

比赛名称	比赛地点	比赛日期	比赛类型	比赛类别	运动员姓名	对手姓名
世界杯女子重剑	南京	9:30	个人	重剑	谭丽	MARTY Lorraine
世界杯女子重剑	南京	14:30	个人	重剑	谭丽	TOL Senja
世界杯女子重剑	南京	15:00	个人	重剑	张丽	DUPLITZER ImKe
世界杯女子重剑	南京	15:40	个人	重剑	谭丽	KIRALY PICOT
世界杯女子重剑	南京	17:30	个人	重剑	钟维萍	DUPLITZER
世界杯女子重剑	南京	18:00	个人	重剑	钟维萍	ERMAKOVA
世界杯女子重剑	南京	12:00	团体	重剑	李、张、钟、骆	R. S. K. F

比赛名称: 世界杯女子重剑		比赛地点: 南京	
比赛类型: 个人	剑种: 重剑	比赛轮次: 1/2	比赛时间: 17:30
<b>运动员信息</b> 姓名: 钟维萍    持剑手: 右 年龄: 25    世界排名: 国籍: 中国		<b>对手信息</b> 姓名: DUPLITZER    持剑手: 右 年龄:    世界排名: 3 国籍: 德国	
<input checked="" type="checkbox"/> 当前比赛设为统计分析对象			
<input type="button" value="新建"/> <input type="button" value="修改/查看"/> <input type="button" value="删除"/> <input type="button" value="保存"/> <input type="button" value="取消"/> <input type="button" value="关闭"/>			

Figure 7 Competition management interface

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

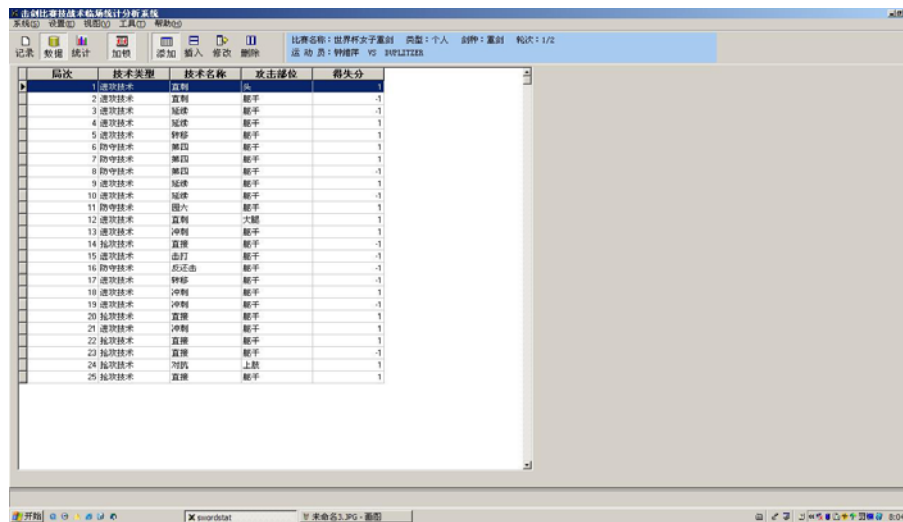
select the appropriate event, and select "Set the current game as the statistical analysis object", click Save and close the current window, then you can start data statistics; If there is no event information, click the New button, add the corresponding game information, click Save and close the current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



局次	技术类别	技术名称	攻击部位	得失分
1	进攻技术	直刺	头	1
2	进攻技术	直刺	躯干	-1
3	进攻技术	直刺	躯干	-1
4	进攻技术	直刺	躯干	1
5	进攻技术	直刺	躯干	1
6	防守技术	直刺	躯干	1
7	防守技术	直刺	躯干	1
8	防守技术	直刺	躯干	-1
9	进攻技术	直刺	躯干	1
10	进攻技术	直刺	躯干	-1
11	防守技术	直刺	躯干	1
12	进攻技术	直刺	躯干	1
13	进攻技术	直刺	躯干	1
14	进攻技术	直刺	躯干	-1
15	进攻技术	直刺	躯干	-1
16	防守技术	直刺	躯干	-1
17	进攻技术	直刺	躯干	-1
18	进攻技术	直刺	躯干	1
19	进攻技术	直刺	躯干	-1
20	进攻技术	直刺	躯干	1
21	进攻技术	直刺	躯干	1
22	进攻技术	直刺	躯干	1
23	进攻技术	直刺	躯干	-1
24	进攻技术	直刺	躯干	1
25	进攻技术	直刺	躯干	1

Figure 8 The screen of system of statistical analysis of tourney describe about on-the-spot competition statistical

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).

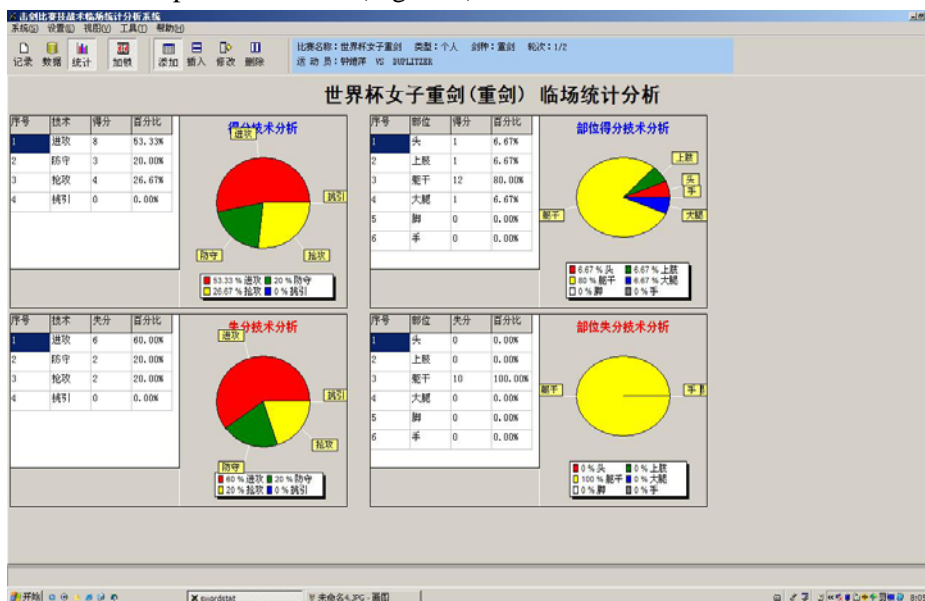


Figure 9 the screen of system of statistical analysis of tourney describe about on-the-spot competition statistical

### 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.

Microsoft Excel - Lobs											录入竞赛数据(14/1/2012)										
文件(F) 编辑(E) 视图(V) 插入(I) 格式(O) 工具(T) 数据(D) 窗口(W) 帮助(H)											格式 12 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 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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.

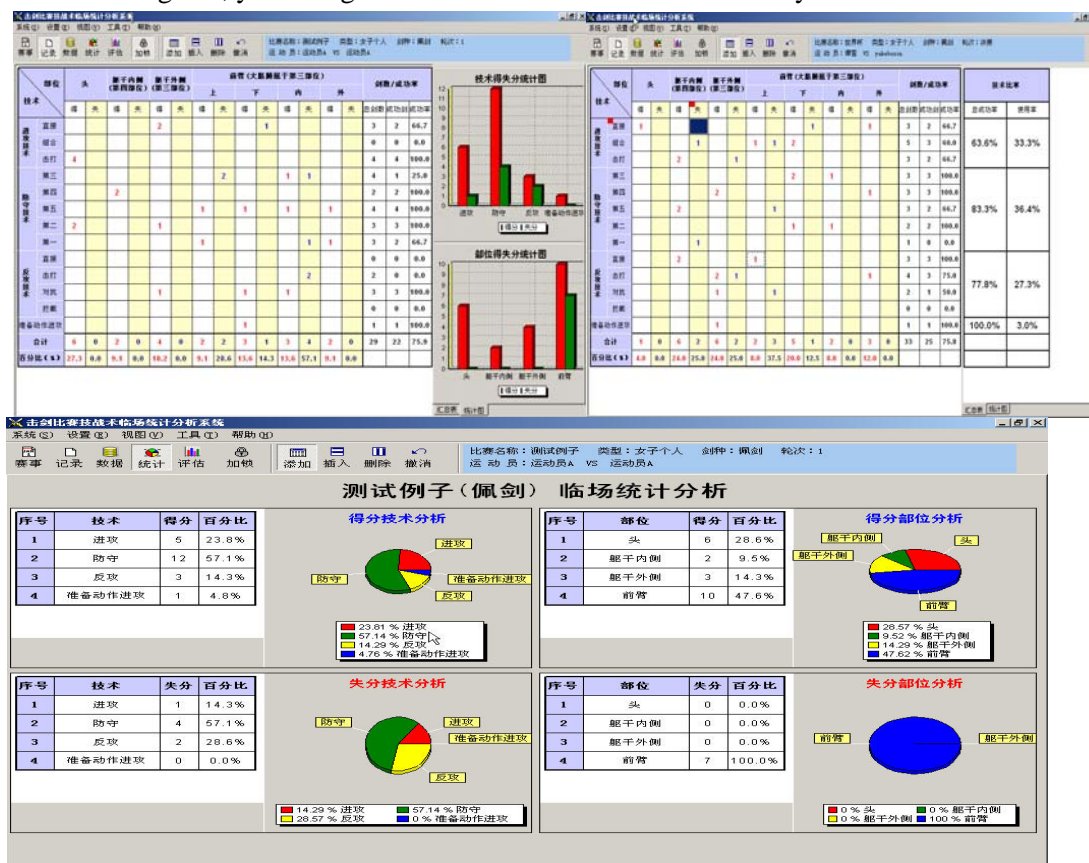


Figure 11 fencing on-the-spot real-time tactical statistical analysis

## 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

- [1] LiJun Cheng. Using high-tech software to assist training and competition [J]. *China volleyball*. 2002, (5): 32-33.
- [2] Zhou Yong. The statistical software CUBA's development and application [J]. *Journal of hangzhou normal university*. 2004, **3**(2): 140-144.
- [3] Hohmann, A., Lames, M., & Letzelter. M. *Einfuehrung in die Trainingswissenschaft*[M]. Wiebelsheim: Limpert, 2002.
- [4] MaiJiu Tian. *Theory of sports training plan*. [M]. Beijing: Beijing sport university press, 1997.
- [5] Hu Zhang i, HeMan Huo. Andreas. Mathematical simulation game competitive diagnosis of theory and practice [J]. *Journal of sports science*. 2005, (8): 39-44.
- [6] Chuanjie Zhao, et al.. Development of the movement from the world about China's saber training saber [J]. *Journal of Nanjing Institute of Physical Education*. 2000, 4.
- [7] Zhao ChuanJie, etc. From the development of Chinese sword had about the training [J]. *Journal of NanJing institute of physical education*. 1991, 2.
- [8] Zhao ChuanJie etc. In today's world man had feature analysis technique [J]. *Journal of Chinese sports science and technology*. 2002, 12.