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Technical Characteristic Analysis of Sanda at Home and Abroad Based on the Data Comparison Analysis

Xiaojie Yu

Liaoyang Vocational College of Technology, Liaoyang, 111004, China

Abstract: In this study, it carries through the corresponding data extraction from video data of Sanda at home and abroad, extracts the number of use, frequency of use, scores and scoring contribution rate of various techniques per game of Sanda players at home and abroad. This study first analyzes the overall data comparison condition of the individual technology, two portfolio combination technologies and three portfolio combination technologies in Sanda technology and then conducts data comparison analysis one by one on the using condition of the individual technology, two portfolio combination technologies and three portfolio combination technologies. Research shows domestic players are better than foreign athletes in the counterattack scoring and foreign athletes are better than the domestic players in the offensive scoring; the domestic focus on defense than the attack and the abroad focus on offense than defense. Through the analysis of the text, it provides directions for direction of improvement in the competitive race development for Sanda.

Key words: Data comparison, contribution rate, sanda, both offensive and defensive capabilities

INTRODUCTION

Sanda is a fighting and contagious project that takes skill class as dominant content. In the two sparring process, according to certain rules of the game they attack each other. Each Sanda athlete is trying to effectively hit each other and efficiently defense to be smitten. Factors that determine the outcome of Sanda are generally divided into two categories, one is a solid level of basic skills, the other is the use techniques of basic skills in order to better explore Sanda features. Since the pilot of Sanda (1979) in Beijing Institute of Physical Education, Wuhan Institute of Physical Education, Zhejiang province national athletic committee three units, after the constant practice and summary of majority martial workers Sanda has been vigorous developed (Cui, 2013). It has now become a worldwide sports project, events at home and abroad has gradually increased; competition has been carried out in increasingly diverse forms (Gu, 2013). It receives more and more Chinese and foreign martial arts enthusiasts' love, the theoretical system of the sport is maturing, technical and tactical training means and methods are increasingly matured (Liu, 2013). In the Sanda, athletes' pursuit the winning goal of completing scoring through fast, accurate and powerful strike on the score parts of the opponents. In the process of achieving our goal, we need to use a variety of Sanda techniques to complete an effective offense and counterattack (Tan, 2013). Equally effective offense and counter-attack is also dependent on the rational use of attack and defense techniques (Fan, 2013). In the Sanda course the

mainly used attack and defense techniques is mainly kicking, punching and wrestling three individual technology or combinations application of more individual technology (Wang and Yang, 2013).

In this study, on the basis of previous studies, conducts statistical processing video data on men's Sanda process at home and abroad, analyzes the techniques using situation for Sanda at home and abroad, in order to provide improvement approach for the country's Sanda through analyzing and exploring the strengths and weaknesses of Sanda at home and abroad.

DATA COMPARISON ANALYSIS OF SANDA ATHLETES' OFFENSIVE AND COUNTERATTACK TECHNOLOGY AT HOME AND ABROAD

The following conducts the data comparative analysis on the general offensive and counterattack use condition, the use situation of single technique, the use situation of double combination techniques and the use situation of three combination techniques for Sanda at home and abroad.

Overall technical data comparison of Sanda athletes at home and abroad: The overall technological condition is reflected in the use of individual technology, use of double combination technologies and use of three combination techniques, as shown in Table 1 the use condition of offensive and counterattack technology for Sanda at home and abroad.

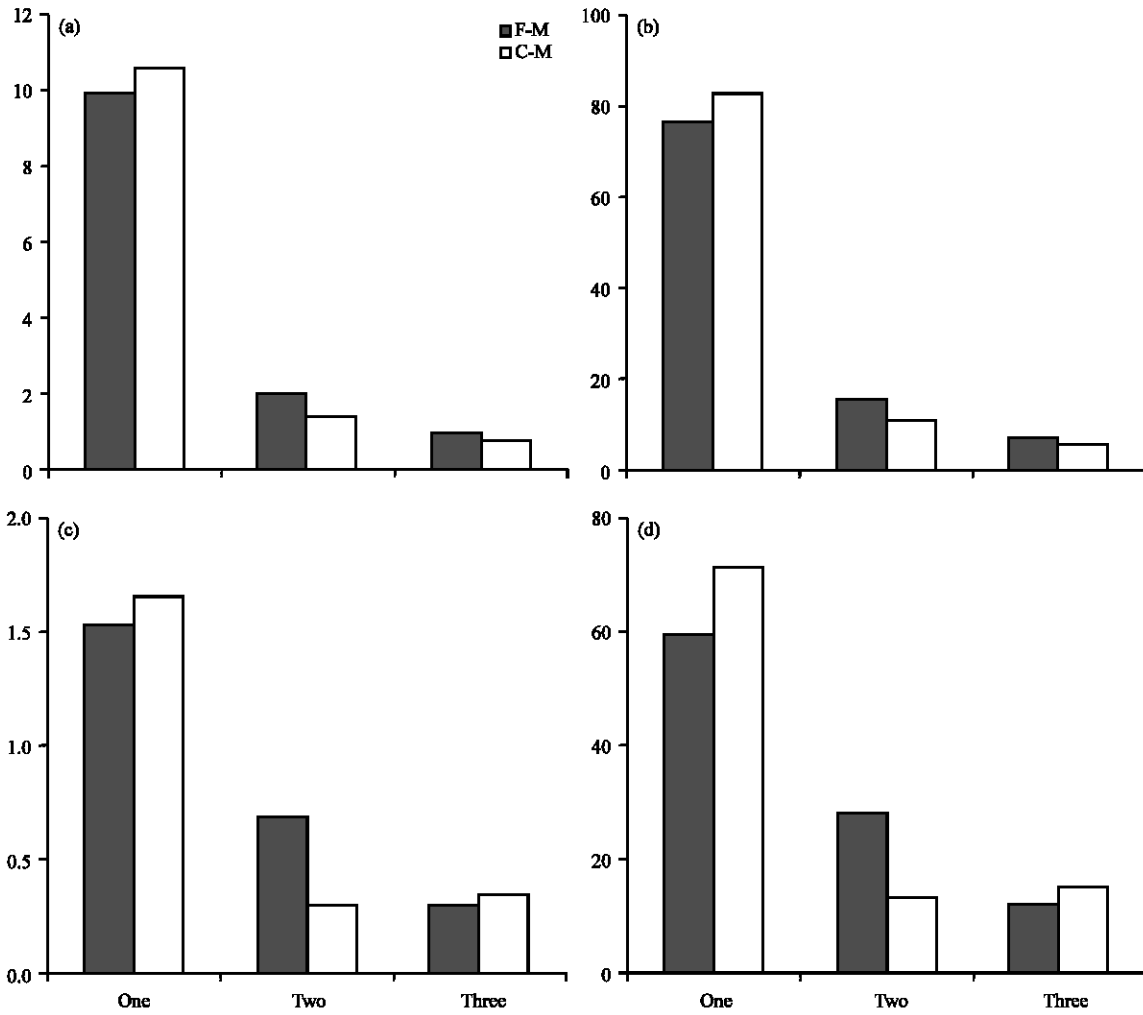


Fig. 1(a-d): Overall offensive technical data comparison of Sanda athletes at home and abroad

Table 1: Overall offensive and counterattack technical data comparison list of Sanda athletes at home and abroad

	F-M	C-M	F-N	C-N	F-O	C-O	F-P	C-P
Data comparison of offensive technique								
One	9.87	10.55	76.39	82.75	1.44	1.65	59.50	71.74
Two	2.06	1.45	15.94	11.37	0.68	0.30	28.10	13.04
Three	0.99	0.75	7.66	5.88	0.30	0.35	12.40	15.22
Total	12.92	12.75	100.00	100.00	2.42	2.30	100.00	100.00
Data comparison of counterattack technique								
One	6.52	10.55	79.71	84.40	2.24	7.0	82.66	82.35
Two	1.23	1.55	15.04	12.40	0.41	1.15	15.13	13.53
Three	0.43	0.40	5.26	3.20	0.06	0.35	2.21	4.12
Total	8.18	12.50	100.00	100.00	2.71	8.50	100.00	100.00

F: Foreign athletes, C: Chinese athletes, M: Technology using times, N: Technical usage rate%, O: Score when technique is used, P: The contribution rate of technological score%, One: Single technology, Two: Double technologies, Three: Three technologies

From the data in Table 1 the visual data comparison diagram of the overall offensive technologies for Sanda Athletes at home and abroad can be obtained, as shown in Fig. 1.

Figure 1 draws that domestic players is superior to the foreign athletes in the application of individual technology; foreign players are higher than domestic players in the application of double technologies and in three technical combination foreign players are higher than domestic players in the application times and ratio but the effectiveness is weaker than domestic players (Zhang, 2013).

From the data in Table 1 the visual data comparison diagram of the overall counterattack technologies for Sanda Athletes at home and abroad can be obtained, as shown in Fig. 2.

Figure 2 draws that domestic players are superior to the foreign athletes in the individual technology but the contribution rate is basically flat with foreign players; foreign players are higher than domestic players in aspects of double technology ratios and the contribution rate, domestic players are higher than the

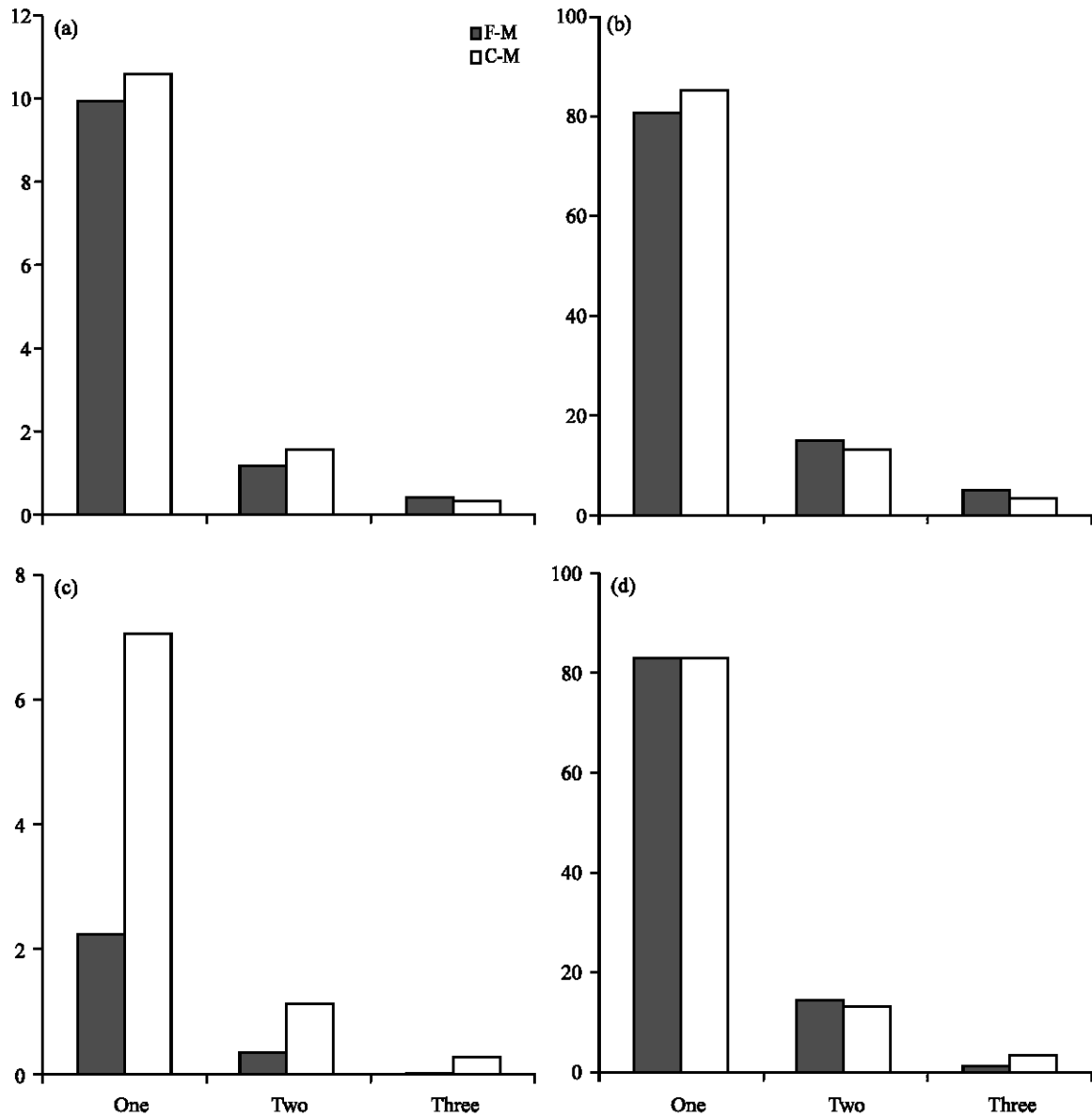


Fig. 2(a-d): Overall counterattack technical data comparison of Sanda athletes at home and abroad

foreign players in aspects of the using frequency and score and in three technical combination foreign players are higher than domestic players in the application times and ratio but the effectiveness is weaker than domestic players (Yang, 2013).

Data comparison list of the single technology for Sanda athletes at home and abroad: The single technology of Sanda is divided into boxing technique, leg technique and wrestling three categories; wherein the boxing technique has punch-boxing, hook-boxing and whip-boxing three main forms; leg technique has whip-leg, side kick,

straight-kicking and turn around four main form; wrestling technique has close fitting and take it two main forms; the following is the comparative data analysis on the application of the three types of individual technologies for Sanda Athletes at home and abroad, the data comparison is shown in Table 2 below.

From the data in Table 2 the visual comparison chart of the single technology in offensive process for Sanda athletes at home and abroad can be obtained as shown in Fig. 3.

Figure 3 shows the use rates of the whip-leg for Sanda players at home and abroad is the highest and

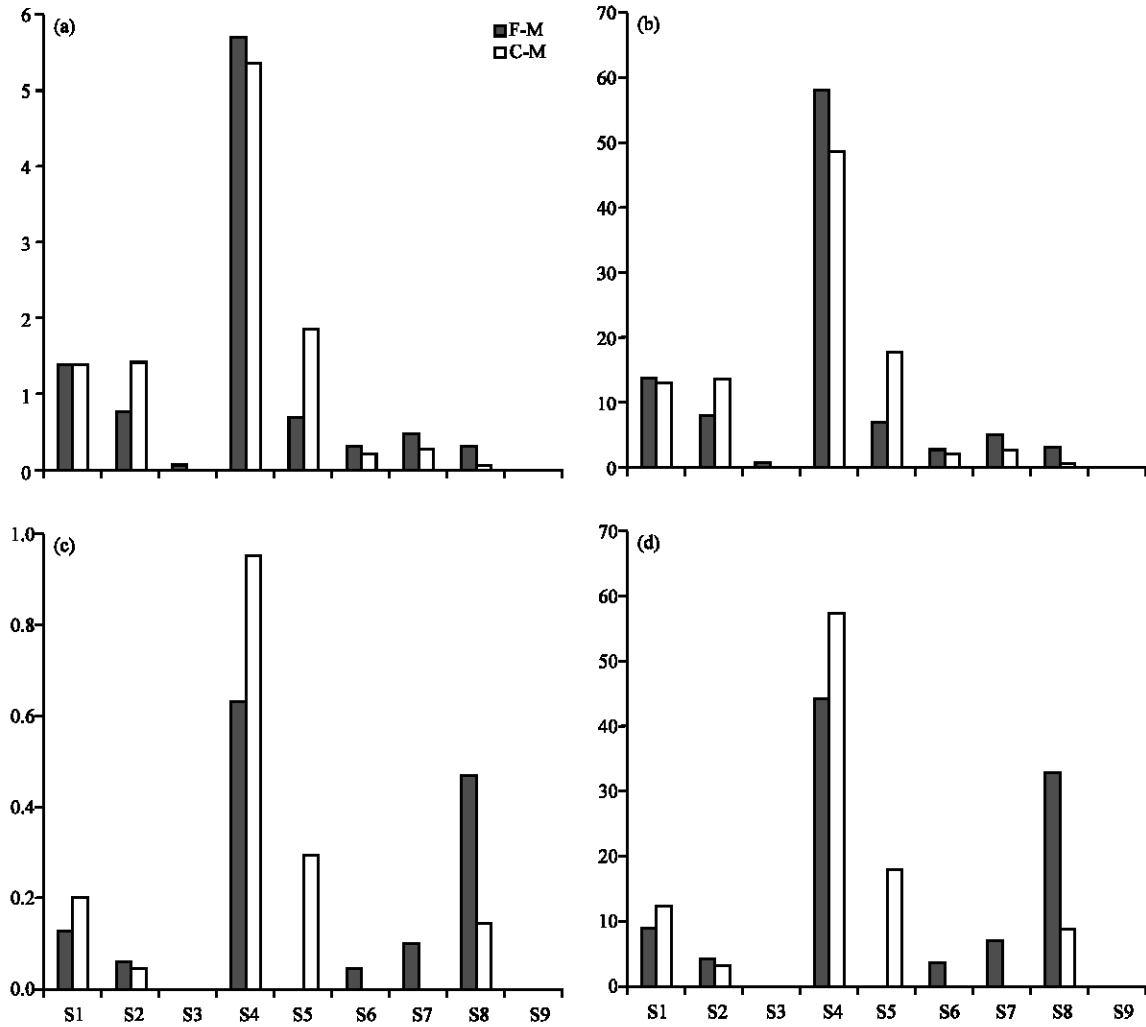


Fig. 3(a-d): Data comparison of the single technology in offensive process for Sanda athletes at home and abroad

Table 2: Data comparison list of the single technology in offensive and counterattack process for Sanda athletes at home and abroad

Boxing technique		F-M	C-M	F-N	C-N	F-O	C-O	F-P	C-P
Data comparison of offensive technique									
	S1	1.38	1.40	13.97	13.27	0.13	0.20	8.77	12.12
	S2	0.80	1.45	8.08	13.74	0.06	0.05	4.39	3.03
	S3	0.09	0.00	0.90	0.00	0.00	0.00	0.00	0.00
	Total	2.27	2.85	22.95	27.01	0.19	0.25	13.16	15.15
Leg technique	S4	5.71	5.4	57.82	48.82	0.63	0.95	43.86	57.58
	S5	0.72	1.90	7.31	18.01	0.00	0.30	0.00	18.18
	S6	0.32	0.25	3.21	2.37	0.05	0.00	3.51	0.00
	S7	0.51	0.30	5.13	2.84	0.10	0.00	7.02	0.00
	Total	7.25	7.60	73.46	72.04	0.78	1.25	54.39	75.76
Wrestling technique	S8	0.35	0.10	3.59	0.95	0.47	0.15	32.46	9.10
	S9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	0.35	0.10	3.59	0.95	0.47	0.15	32.46	9.10
Total		9.87	10.55	100.00	100.00	1.44	1.65	100.00	100.000
Data comparison of counterattack technique									
Boxing technique	S1	1.13	0.85	17.28	8.06	0.11	0.15	5.08	2.14
	S2	0.99	1.50	15.15	14.22	0.03	0.15	1313	2.14
	S3	0.04	0.00	0.01	0.00	0.01	0.00	0.56	0.00
	Total	2.03	2.35	30.07	22.28	0.15	0.30	6.78	4.28

Table 2: Countinue

Boxing technique		F-M	C-M	F-N	C-N	F-O	C-O	F-P	C-P
Leg technique	S4	1.81	2.95	27.77	27.96	0.43	1.40	19.21	20.00
	S5	0.04	0.45	0.58	4.27	0.00	0.10	0.00	1.43
	S6	0.15	0.40	2.33	3.79	0.00	0.20	0.00	2.86
	S7	0.03	0.00	0.39	0.00	0.00	0.00	0.00	0.00
	Total	2.03	3.80	31.07	36.02	0.43	1.70	19.21	24.29
Wrestling technique	S8	0.92	2.40	14.17	22.75	0.61	2.30	27.12	32.86
	S9	1.54	2.00	23.69	18.96	0.67	2.70	29.94	38.57
	Total	2.47	4.40	37.86	41.71	1.28	5.0	74.01	71.43
Total		6.52	10.55	100.00	100.00	2.24	7.0	100.00	100.000

F: Freign athletes, C: Chinese athletes, M: Technology using times, N: Technical usage rate%, O: Score when technique is used, P: The contribution rate of technological score%, S1: Punch-fist, S2: Hook-fist, S3: Whip-fist, S4: Whip-leg, S5: Side kick, S6: Straight kicking, S7: Turn around, S8: Close fitting, S9: Take it

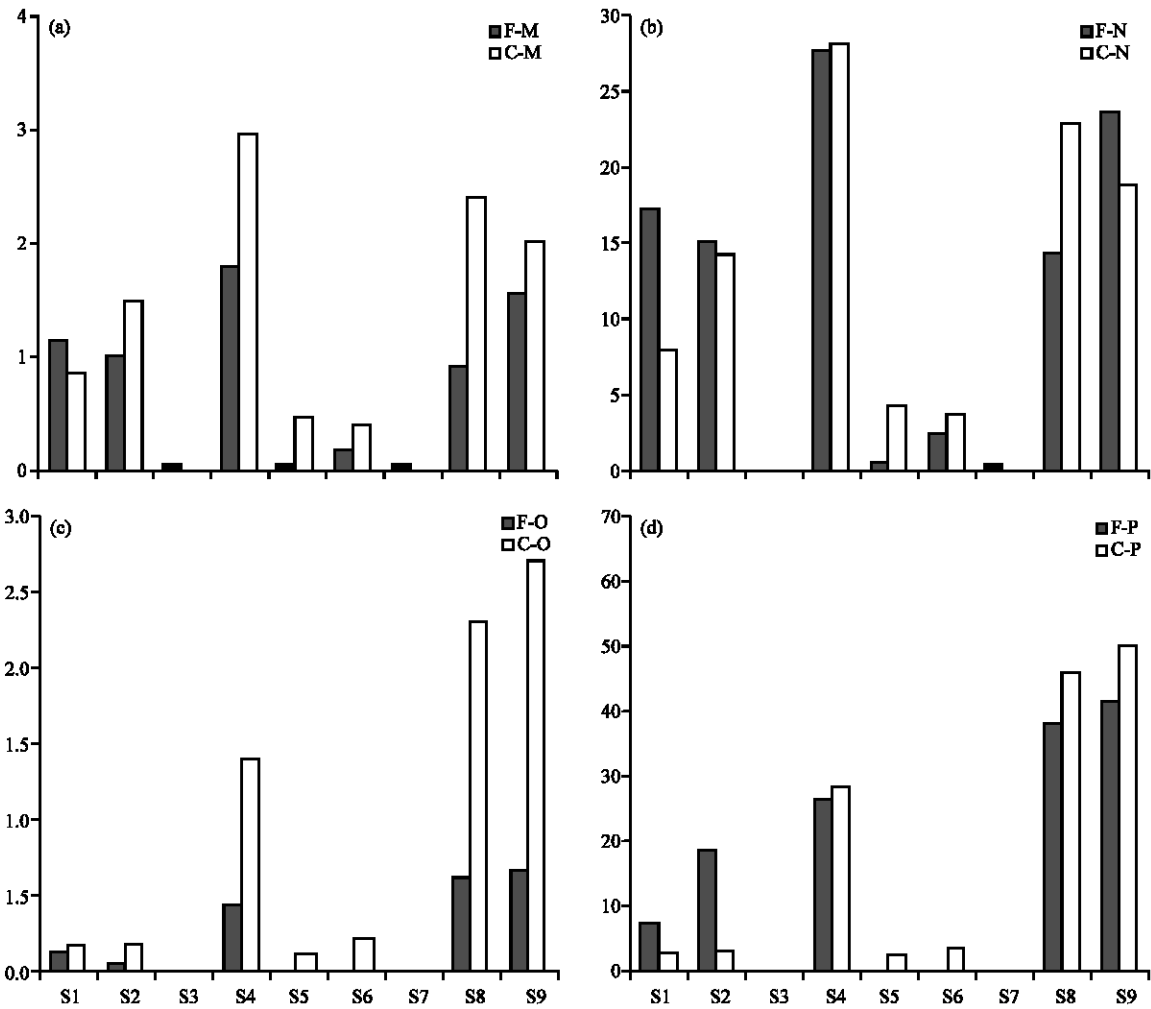


Fig. 4(a-d): Data comparison of the single technology in counterattack process for Sanda athletes at home and abroad

foreign players are higher than domestic players in aspect of use times and utilization rate; while in aspect of scoring and contribution rate domestic players are higher than foreign athletes, the take that usage in wrestling is both at home and abroad.

From the data in Table 2 the visual data comparison diagram of single technologies in counterattack process for Sanda Athletes at home and abroad can be obtained, as shown in Fig. 4.

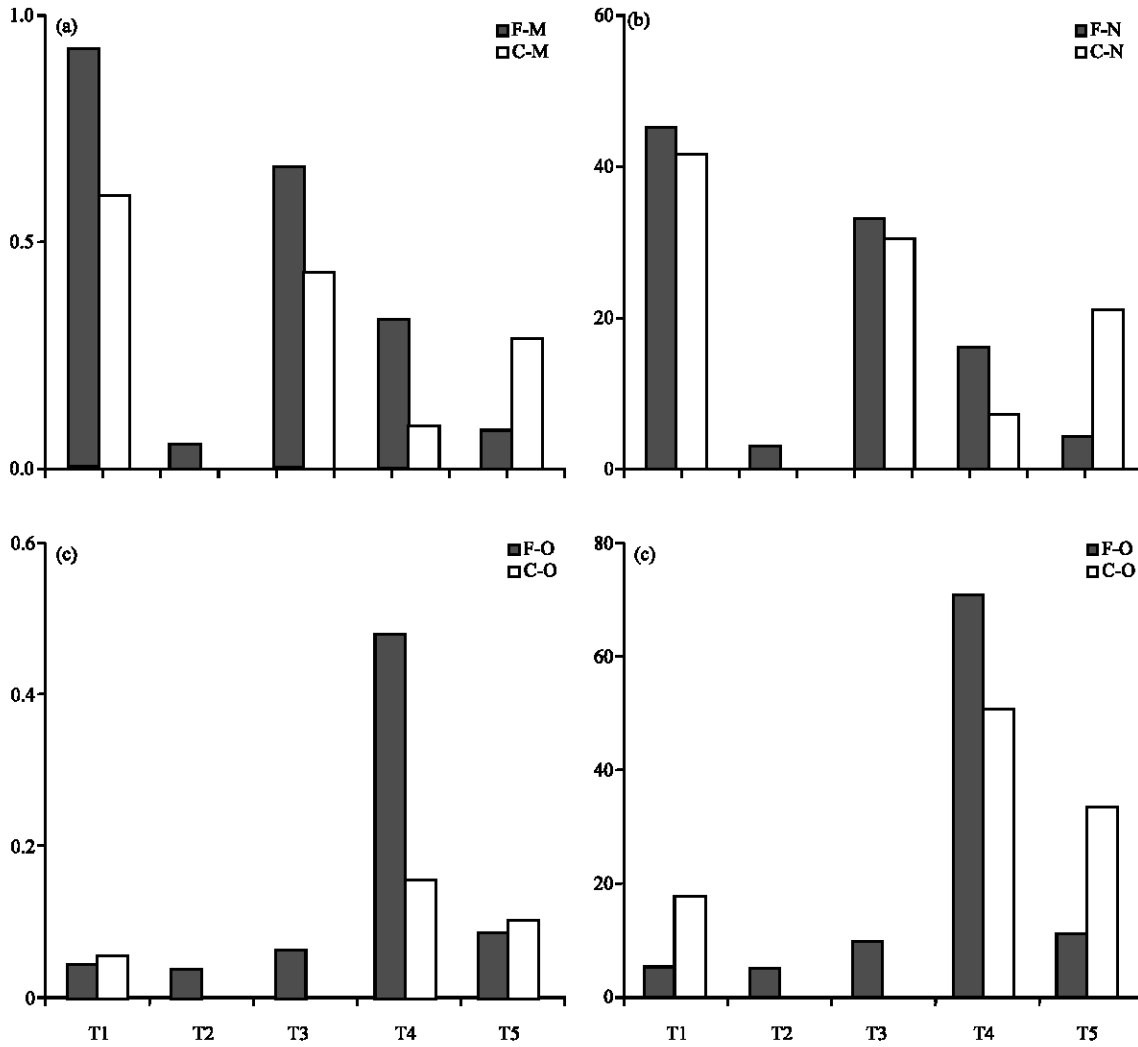


Fig. 5(a-d): Data comparison of the double portfolio technologies in offensive process for Sanda athletes at home and abroad

Figure 4 shows that the application of wrestling technologies in individual technique of the counterattack score is greater than the application of leg technique; the applications of leg technique is greater than the application of the boxing technique; in personal counterattack and reacting counterattacks the quality of the domestic players is significantly higher than that of abroad athletes; in counterattack score, in addition to punch-boxing and hook-boxing techniques the domestic players are better than foreign athletes; the overall counterattack score ability of domestic players are significantly higher than the foreign players.

Data comparison list of the double portfolio technologies for Sanda athletes at home and abroad:

The double portfolio technologies of Sanda has fist-fist combination, leg-leg combination, fist-leg combination, fist-wrestling combination, leg-wrestling combination a total of five kinds of plays; the following is the comparative data analysis on the application situation of the five types of double portfolio technologies for Sanda athletes at home and abroad, the data comparison is shown in Table 3 below.

From the data in Table 3 the visual data comparison diagram of two portfolio technologies in offensive process for Sanda Athletes at home and abroad can be obtained, as shown in Fig. 5.

Table 3: Data comparison list of the double portfolio technologies in offensive and counterattack process for Sanda athletes at home and abroad

	F-M	C-M	F-N	C-N	F-O	C-O	F-P	C-P
Data comparison of offensive technique								
T1	0.92	0.60	44.79	41.38	0.04	0.05	5.56	16.67
T2	0.05	0.00	2.45	0.00	0.03	0.00	3.70	0.00
T3	0.67	0.45	32.52	31.03	0.06	0.00	9.26	0.00
T4	0.33	0.10	15.95	6.90	0.48	0.15	70.37	50.00
T5	0.09	0.30	4.29	20.69	0.08	0.10	11.11	33.33
Total	2.06	1.45	100.00	100.00	0.69	0.30	100.00	100.00
Data comparison of counterattack technique								
T1	0.87	0.40	71.13	25.81	0.06	0.05	15.64	4.35
T2	0.01	0.00	1.04	0.00	0.00	0.00	0.00	0.00
T3	1.33	0.65	12.37	41.94	0.08	0.35	18.75	30.43
T4	1.33	0.45	12.37	29.03	0.27	0.60	65.63	52.17
T5	0.04	0.05	3.09	3.23	0.01	0.15	3.13	13.05
Total	1.23	1.55	100.00	100.00	0.41	1.15	100.00	100.00

F: Foreign athletes, C: Chinese athletes, M: Technology using times, N: Technical usage rate%, O: Score when technique is used, P: The contribution rate of technological score%. T1: Fist-fist combinations, T2: Leg-leg combinations, T3: Fist-leg combinations, T4: Fist-wrestling combinations, T5: Leg-wrestling combinations

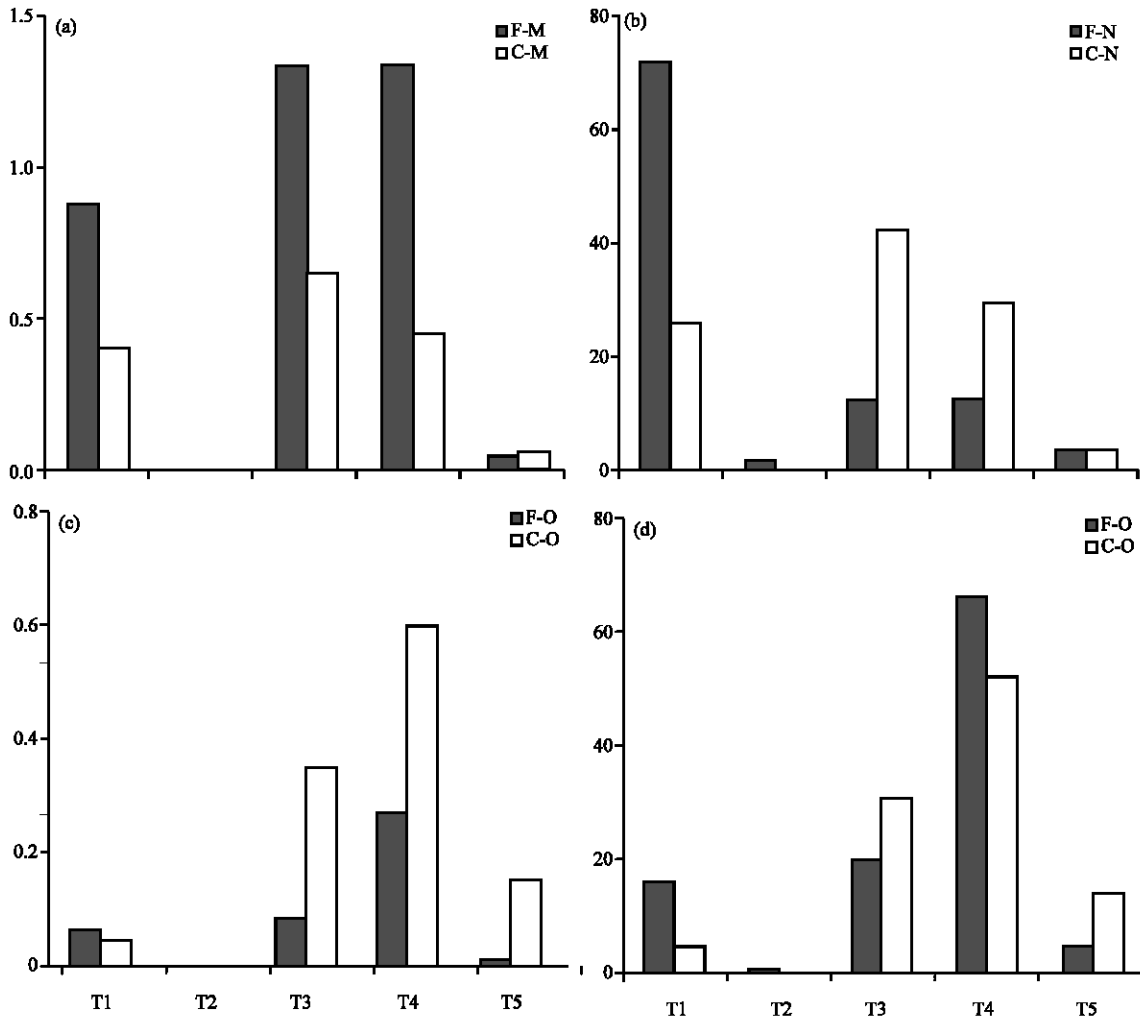


Fig. 6(a-d): Data comparison of the double portfolio technologies in counterattack process for Sanda athletes at home and abroad

Figure 6 shows that the best scoring effect of offensive is the application of fist-wrestling combination and leg-wrestling technologies; wherein foreign players is superior to domestic athletes in aspect of fist-wrestling

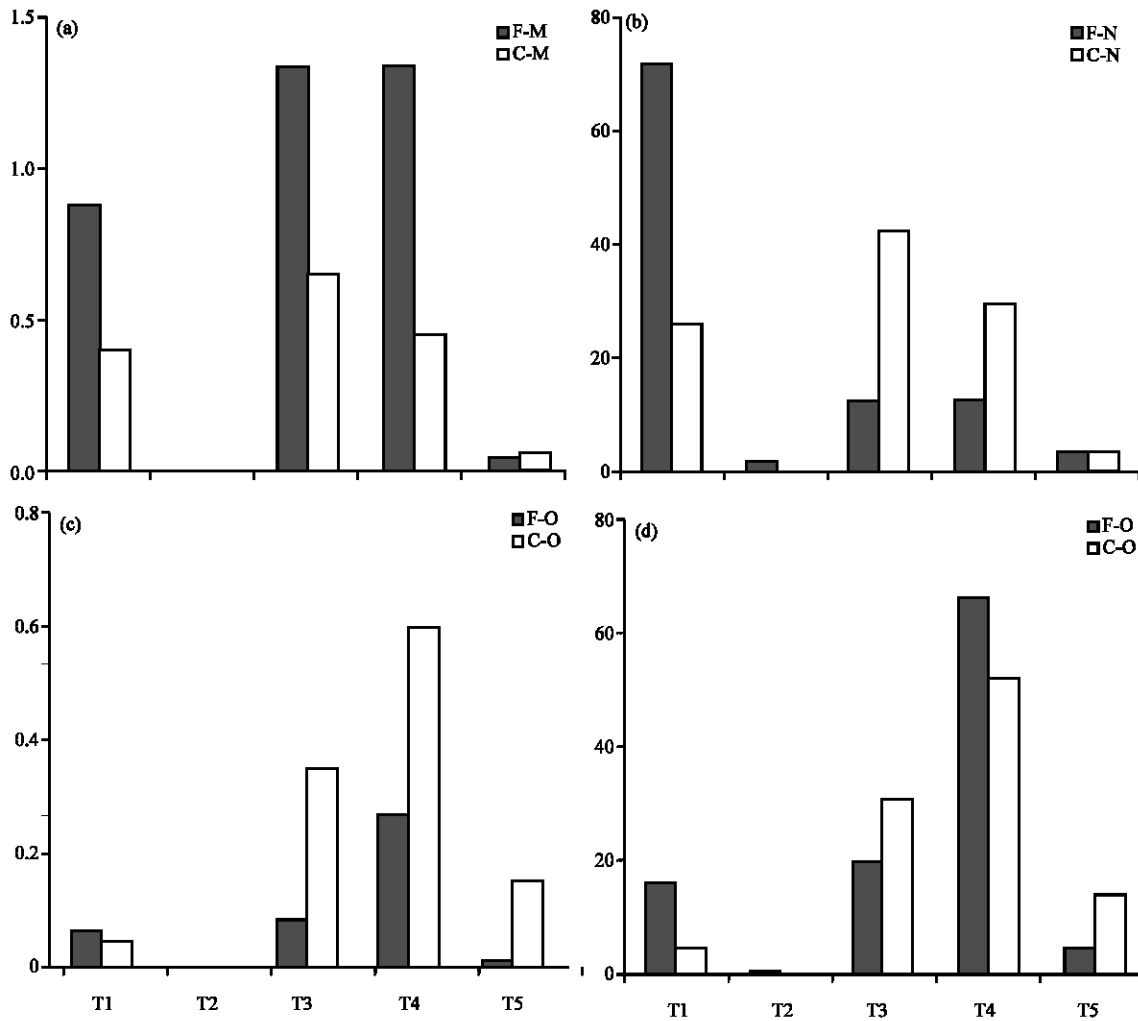


Fig. 7(a-d): Data comparison of the three portfolio technologies in offensive process for Sanda athletes at home and abroad

combination technique; while domestic players are higher than the foreign players in aspect of contribution rate; in the frequency of technology using domestic players are higher than foreign players in addition to leg-wrestling combination.

From the data in Table 3 the visual data comparison diagram of two portfolio technologies in counterattack process for Sanda Athletes at home and abroad can be obtained, as shown in Fig. 6.

Figure 6 shows that the best results of counterattack score is a combination of fist-leg and fist-wrestling technologies; for these above two techniques foreign players are superior to domestic players; for the frequency of using technique foreign players' combination techniques is higher than the domestic players in the counterattack.

Data comparison of the three portfolio technologies for Sanda:

The three portfolio technologies in Sanda have the fist-fist-leg combination, fist-fist-fist combination, leg-fist-fist combination, fist-fist-wrestling combination, fist-leg-fist combination, leg-fist-leg combination, fist-leg-wrestling combinations and a total of seven plays; the following is the comparative data analysis on the application situation of the seven types of three portfolio technologies for Sanda athletes at home and abroad, the data comparison is shown in Table 4 below.

From the data in Table 4 the visual data comparison diagram of three portfolio technologies in offensive process for Sanda Athletes at home and abroad can be obtained, as shown in Fig. 7.

Figure 7 shows that the application level of fist-fist-leg combination of domestic players is significantly stronger than the foreign athletes; foreign players

are significantly better than the domestic players in the use of fist-fist-wrestling combination technology; the domestic players use leg-fist-fist combination technology more often than foreign athletes, while the score effect is basically unchanged with foreign players.

From the data in Table 4 the visual data comparison diagram of three portfolio technologies in counterattack process for Sanda Athletes at home and abroad can be obtained, as shown in Fig. 8.

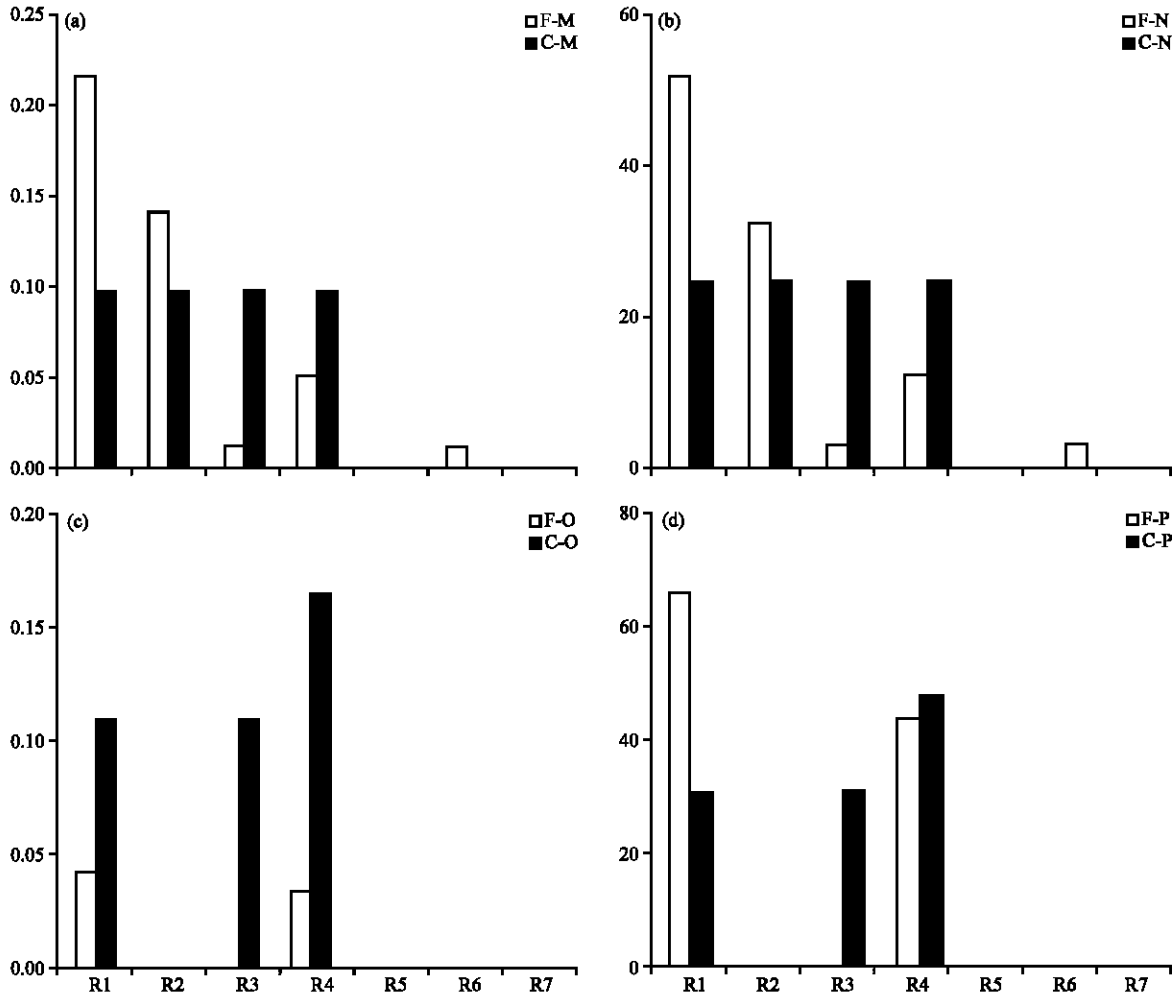


Fig. 8(a-d): Data comparison of the three portfolio technologies in counterattack process for Sanda athletes at home and abroad

Table 4: Data comparison list of the three portfolio technologies in offensive and counterattack process for Sanda athletes at home and abroad

	F-M	C-M	F-N	C-N	F-O	C-O	F-P	C-P
Data comparison of offensive technique								
R1	0.41	0.35	41.03	46.67	0.11	0.25	37.50	71.43
R2	0.19	0.00	19.23	0.00	0.04	0.00	12.50	0.00
R3	0.21	0.30	21.79	40.0	0.04	0.05	12.50	14.29
R4	0.09	0.05	8.97	6.67	0.10	0.00	33.34	0.00
R5	0.04	0.00	3.85	0.00	0.00	0.00	0.00	0.00
R6	0.04	0.05	3.85	6.67	0.01	0.05	4.17	14.29
R7	0.01	0.00	1.28	0.00	0.00	0.00	0.00	0.00
Total	0.99	0.75	100.00	100.00	0.30	0.35	100.00	100.00
Data comparison of counterattack technique								
R1	0.22	0.10	50.00	25.00	0.04	0.10	60.00	28.57
R2	0.14	0.10	32.35	25.00	0.00	0.00	0.00	0.00

Table 4: Countinue

	F-M	C-M	F-N	C-N	F-O	C-O	F-P	C-P
R3	0.01	0.10	2.94	25.00	0.00	0.10	0.00	28.57
R4	0.05	0.10	11.76	25.00	0.03	0.15	40.00	42.86
R5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
R6	0.01	0.00	2.94	0.00	0.00	0.00	0.00	0.00
R7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.43	0.40	100.00	100.00	0.06	0.35	100.00	100.00

F: Foreign athletes, C: Chinese athletes, M: Technology using times, N: Technical usage rate%, O: Score when technique is used, P: The contribution rate of technological score%, R1: Fist-fist-leg combinations, R2: Fist-fist-fist combinations, R3: Leg-fist-fist combinations, R4: Fist-fist-wrestling combinations, R5: Fist-leg-fist combinations, R6: Leg-fist-leg combinations, R7: Fist-leg-wrestling combinations

Figure 8 shows that the domestic players' counterattack ability to score is higher than the foreign players; the domestic players' use of fist-fist-leg combinations, leg-fist-fist combinations and fist-fist-wrestling combinations is excellent; while Sanda players both at home and abroad rarely use fist-leg-fist combination, leg-fist-leg combinations and fist-leg combination.

CONCLUSIONS

In an active offense, the foreign athletes are better than the domestic players, while domestic players are higher than foreign athletes in counterattack scoring capacity, on the use frequency whether athletes domestic or foreign athletes they all take the individual technology as basis and take the double portfolio combinations technologies and three portfolio combinations technologies as supplementation; in the applications of single technology, the use frequency of the technology is basically consistent for domestic players and foreign players but foreign players are better than domestic players on offense, while domestic players are better than foreign athletes in the counterattack scoring ability; equally also in the applications of two portfolio combinations technologies domestic players are higher than the foreign players in counterattack scoring ability, foreign players are higher than domestic athletes in offensive scoring ability; in the applications of three combinations technologies domestic players are better than foreign Sanda athletes in the offensive capability and counterattack scoring; from the data analysis the domestic players' ability to score in the counterattack process are higher than the offensive process, reflecting the domestic athletes tend latter sparring characteristics, in line with the essence of Chinese martial

arts "latecomer"; the domestic players' offensive and counterattacking skills are more balanced, it should get to play and they should also improve their shortcoming of offensive capabilities.

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