台海兩岸頂尖女子桌球運動員比賽三段技術分析比較

－以黃怡樺、張怡寧為例－

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摘要

　　本研究是以我國女子桌球國手黃怡樺與中國女子桌球國手張怡寧做為研究對象，收集兩位選手國際賽，各六場比賽的技戰術資料，將桌球技術分為發球搶攻、接發球搶攻、相持三段的技術，所得資料以描述統計探討兩位選手在比賽中三段技術攻防表現，並使用強迫性多元迴歸（enter regression）分析法考驗兩位選手在比賽中各變項得分率對成績表現的影響，再以獨立樣本 t 考驗檢定兩位選手比賽各段攻防技術的關係。其結果如下：黃怡樺在比賽三段技術指標評估經驗模式表的評估中發現比賽主要得分技術在發球搶攻段，平均得分率為 64％是為及格指標，而在接發球搶攻段平均得分率為 37％是為不及格指標，在比賽技術中為較弱的一環，在相持段平均得分率為持平，48％是為及格指標；而在張怡寧部分三段技術均達優秀指標，顯示張怡寧技術全面。再透過強迫性多元迴歸分析法探討兩位選手三段技術表現與勝率的關係，結果顯示三段技術的得分率與比賽勝率均呈現正相關，其中在相持段關係值更高達 0.892 是比勝負的關鍵，由此可知相持段是黃怡樺在比賽中主要的技術特色，經考驗後建立三段技術得分率對比賽勝率之迴歸方程式為：$Y = -0.035 + 0.508x_3 + 0.286 x_1 + 0.226 x_2$。另在 t 檢定統計中發現兩人在三段技術各段技術的比較並無差異 P＞.05，其原因，可能為兩人打法極為相似以及兩人對戰對手實力水準差異有關。為幫助黃怡樺有更詳細的資料做為日後訓練的參考，另再收集一場 2008 年奧運會資格賽兩人交戰紀錄，分析兩人在比賽中技戰術之差異，結果發現兩位選手最大差異在接發球搶攻段，黃怡樺在被攻時或被攻後進入相持的失分率高達 91％，可說只要張怡寧

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主動搶攻便能得分，顯示了黃怡樺在接發球控制與反控制能力及防守能力上的不足，因此建議黃怡樺在技術訓練時應加強接發球的防禦及短球控制與反控制的能力。

關鍵詞：桌球、三段技術、運動員、張怡寧、黃怡樺

The Three Technology Analysis and Comparison of Top Female Table Tennis Athletes between Taiwan and Mainland China

－As an Example to Huang Yihua and Zhang Yining－

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Abstract

It selected the women's table tennis national representative --Huang YiHua and the Chinese women's table tennis national representative Zhang Yining as the research object, and collected Hung and Zhang's technical and tactical information of six competitions, based on the basic technical characteristics of table tennis would be divided into three technical strategies as Serve and Attack stage, Receive and Attack stage, and Rally stage. The description of information statistics Huang and Zhang's three technical strategies and performance of each strategy in attack and defense during the competitions, and used enter regression analysis to test the impact of Huang and Zhang's variable scoring rate on the performance in the game. Also tested the match relationship of Hung and Zhang's each strategy in attack and defense during the competition by separate sample t and paired t test show that：It used the form race three technical indicators to evaluate the empirical models to assess and found Huang's main scoring technology was in the Serve and Attack stage, the score average was 64% for passing indicators. In Receive and Attack stage, the score average was 37% for failed indicators which is the weak part in strategies, and in the Rally stage, the average is flat rate and 48% was passing indicators; Zhang was outstanding in each three technology strategies, all-round display Zhang. Through stepwise regression analysis to discuss table tennis in three technology strategies performance and the relationship between the winning percentage ,and the results showed that the rate of serve and attack stage , and scoring rate of receive and attack stage, scoring rate of Rally in a stalemate with the game winning percentage showed a positive correlation. Particularly in the rally scoring rate above the value of 0.892 is more than up to the outcome of the key to a stalemate can be seen Huang's characteristics of the competition. After test to establish the regression equation for the rate of three technology strategies to winning percentage resulted in equation of:
$Y = -0.035 + 0.508_{X3} + 0.286_{X1} + 0.226_{X2}$ Using t-test to assess the difference between these two players in the three technology strategies and the result displayed that there's no difference in this comparison of each stage technology P> 0.5 The reason for this result might be likely to play two very similar or the collection of the two

matches against opponents of the difference in strength level. In order to help Huang has more detailed information for reference and training in the future, and the other collection of the 2008 Beijing Olympic Games qualifying tournament in the recent match records, detailed analysis the differences between their strategies. And found the largest difference between two player was in the Receive and Attack stage. After Zhange took the initiative to attack defensive board, Huang's first error ratio was high as 70% above, Huang was still missing points at the rate of loss is as high as 91 percent when she was entering Rally stage after defend, in the other hand, Zhang Yining would be able to take the initiative to attack as long as the score shown the return of serve in Huang's control and anti-control capability and the lack of defensive ability, so Huang in technical training should serve to strengthen the defense and then a short ball control and the ability of anti-control.

Key words: table tennis, three technology, athletes, Zhang Yining, Huang YiHua