

輪椅網球比賽中技術因素之比較與關聯性研究 To Compare the Skill Factors and Correlations in wheel-chair Tennis Competitions

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摘要

本研究以參加 2007 年 IWTC 男子組團體賽選手為對象，擬研究比較輪椅網球比賽中勝盤與負盤間技術因素之差異與勝方與負方間技術因素之差異，並期能得知輪椅網球比賽中各項技術因素對勝率之預測情形及其迴歸方程式。經記錄、統計、分析、結果討論後，本研究獲得以下結論：一、輪椅網球比賽中勝盤與負盤間技術因素之比較結果，Ace 球、非受迫性失誤、上網成功率等三項達顯著差異($P<0.05$)，且其中以負盤之非受迫性失誤顯著多於勝盤，其他為勝盤多於負盤；一發得分數、二發得分數、致勝球數、一發得分率、二發得分率等五項達極顯著差異($P<0.01$)，以勝盤多於負盤；其他技術因素則未達顯著差異。輪椅網球比賽中勝場選手與負場選手間技術因素之差異比較，Ace 球、致勝球數、非受迫性失誤等三項技術因素差異達顯著水準($P<0.05$ (上標 *))；一發得分數、二發得分數、一發得分率、二發得分率等四項技術因素差異比較達顯著水準($P<0.01$ (上標 **))，顯示一般網球單打比賽與輪椅網球單打比賽，在相同的規則規範及相似的技術內涵下，比賽的技術因素之比較結果類同，但仍不可直接論斷兩者之技術使用內容一致，而是應更進一步深入研究。二、輪椅網球比賽中各項技術因素對勝率之迴歸預測結果與分析中發現，一發得分率、二發得分率及 Ace 球等三項技術因素，達極顯著水準($P<0.01$ (上標 **))；且說各項的解釋量而言，以一發得分率的預測力最佳，其解釋量為 52.0%，二發得分率之解釋量為 18.9%次之，ACE 球之解釋量為 4.8%，合計之聯合預測力達 75.5%，且多元相關係數為.870。標準化迴歸方程式為： $\text{勝率} = 0.540 \times (\text{一發得分率}) + 0.392 \times (\text{二發得分率}) + 0.233 \times (\text{ACE 球})$ 。

Abstract

The purpose of this study was to compare the skill factors between won and lost sets and between winners and losers in IWTC (International Wheelchair Tennis Federation) men's team competition. in 2007 and expected to understand the prediction and the regression equation of lead to win by individual skill factors. After recording, statistics analyzing, and discussing the conclusions were: 1.To compare the variation of thirteen skill factors between won and lost sets, there was significant difference ($p<0.05$) in Aces, unforced error, and successful rate of volley. There were more unforced errors in lost sets than won sets but the other two skill factors were otherwise. There was extreme significant difference ($p<0.01$) in 1st serve points won, 2nd serve points won, scoring winner, 1st serve winning percentage, and 2nd serve winning percentage which were more in won sets than in lost sets but other skill factors didn't reach significant difference. To compare the

variation of skill factors between winners and losers in wheel chair tennis, Ace, scoring winner, and unforced error reached significant difference ($p < 0.05$) and there were extreme significant difference ($p < 0.01$) in 1st serve points won, 2nd serve points won, 1st serve point percentage, and 2nd serve point percentage. But we still can't implicate which the skill factors were suitable for use between two games, we need to confirm in further study. 2. According to the prediction between lead to win and all skill factors by using the method of stepwise multiple regression in wheel-chair tennis competition, 1st serve winning percentage, 2nd serve winning percentage and Aces reached extreme significant level ($p < 0.01$). The predicative validity of 1st serve winning percentage was the best one which explained variable was 52.0%, and 2nd serve point percentage was 18.9% that implicated the combination of predictive validity reaching to 75.5% and the correlation coefficient is 0.87. The standard regression equation was: lead to win = $0.540 \times (\text{1st serve winning percentage}) + 0.392 \times (\text{2nd serve point percentage}) + 0.233 \times (\text{Aces})$.