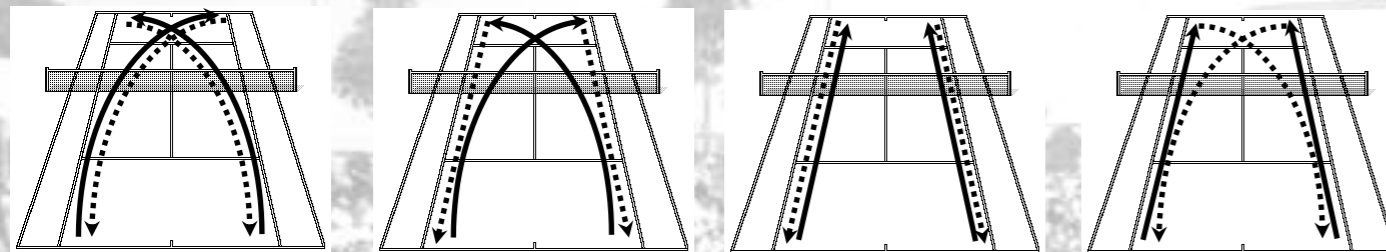


### Introduction & Background

The study investigated the connection between outcome type, percentage of point outcomes and gender. The intended use of this study is to establish if tennis is played differently on the ATP and WTA Tour and assist in the tactical development of junior tennis players.

There are essentially two shot directions you can hit in tennis – Cross-Court (X) and Down-the-Line (DTL). These two choices result in four possible shot combinations.



Rule 1

X – X

Rule 2

DTL – X

Rule 3

DTL – DTL

Rule 4

X – DTL

The first shot (first symbol) is considered player A's shot (dotted line) and the subsequent shot is considered the point ending shot (solid line) by player B. E.g. Rule 2: Player A hits Down-the-Line (DTL) then player B responds with a Cross-Court (X) shot.

### Methodology

- The study was conducted at the US Open (Hard Court – Deco Turf) in 2008 on the ATP Tour and US Open (Hard Court – Deco Turf) in 2007 on the WTA Tour.
- Six ATP Main Draw matches, (19 sets, 186 games and 688 points) and 11 WTA Main Draw matches (26 sets, 228 games, 1,016 points) were selected at random. Table 1.1 outlines sample size collected for each Tour.
- The last two shots of each point were recorded to identify the point outcome rule.
- Each point outcome rule was also classified by outcome type – Winner (W), Unforced Error (Ufe) and Forced Error (Fe).

### Conclusions

1. Grand Slam level tennis is a game of unforced errors. Regardless of point outcome, unforced errors remained the highest outcome type irrespective of Tour type. This held true for all point outcomes except WTA Tour Rule 3. (Figures 1.1-1.2 & Figures 2.1-2.4).
2. Table 1.2 demonstrates there is no significant difference in the percentage of Hard Court point outcomes between the ATP and WTA Tour. Therefore, point outcome is not Tour dependent.
3. **Rule 1:** The highest number of unforced errors and lowest number of winners for all rules were committed by both Tours. WTA (64 / 22%) and ATP (56 / 26%).
4. **Rule 2:** WTA Tour end the point with 10% more winners at the expense of unforced errors compared to ATP Tour.
5. **Rule 3:** Was by far the lowest used point outcome of all rules. Both Tours create the highest forced errors (24%). WTA Tour hit more winners at the expense of unforced errors.
6. **Rule 4:** The highest point outcome of all rules. ATP Tour hit more winners at the expense of unforced errors.
7. Tour type does not dictate the point outcome used on Hard Court at the Grand Slam level.

### Glossary

- **Tour Type:** ATP and WTA Tour.
- **Point Outcome:** The final two shots of a point as classified by one of the four rules.
- **Outcome Type:** The way in which the point is concluded as classified by one of the three categories.
  - **Winner (W):**
    - (i) **Clean Winner:** A point won where no touch of the ball is made by opposing player's racquet.
    - (ii) **Effective Winner:** A point won where a touch of the ball is made by opposing player's racquet, but no competent attempt to return the ball was possible.
  - **Unforced Error (Ufe):** A mistake made from a competent attempt where the player is not under significant pressure and is in relative control of the ball.
  - **Forced Error (Fe):** A mistake made from a competent attempt where the player is under significant pressure and is not in relative control of the ball.

### Discussion: ATP vs. WTA Tour Comparison

1. **Rule 1:** Figure 2.1 illustrates WTA Tour made on average 8% more unforced errors. ATP Tour hit 4% more winners and created 4% more forced errors. The highest outcome type of was unforced errors.
2. **Rule 2:** Figure 2.2 illustrates WTA Tour hit 10% more winners than ATP at the expense of unforced errors. ATP Tour committed 7% more unforced errors and create 3% more forced errors. The most number of winners hit for any rule (42%) was achieved by WTA Tour.
3. **Rule 3:** Both ATP and WTA Tour created 24% forced errors, the highest value for any rule. There was a 6% swing towards unforced errors at the expense of winners for ATP Tour. WTA Tour hit 6% more winners as illustrated by Figure 2.3.
4. **Rule 4:** Only a 1% difference separate ATP and WTA Tour in the number of forced errors created. WTA Tour committed 7% more unforced errors at the expense of winners. ATP Tour hit 6% more winners. (Figure 2.4).

2008 TAP Tour Research Team – Peter McCraw, Andrew Burgess, Mat Obrien, Adrian Muscillo, Chris Johnson, Kevin Woolcott, Nathan Lundy, Michael Tucci, Aviran Reuven.

### Results & Graphs

Table 1.1 – Sample Size Comparison

US Open	ATP Tour	WTA Tour
# Matches	6	11
# Sets	19	26
# Games	186	228
# Points	688	1016

Table 1.2 – Percentage Point Outcomes for Australian Open 2008

US Open	Rule 1	Rule 2	Rule 3	Rule 4
ATP Tour	28.0	22.0	13.0	37.0
WTA Tour	28.5	23.2	12.3	36.0

\* Values in percent (%)

### Coaching Applications

- Coaches should train the same point outcome combinations (four rules) for boys and girls on Hard Court, independent of the player's style or specific match strategy or tactic.
- Coaches should prioritise the following when training boys and girls:
  - Rule 1** – Both boys and girls should learn to reduce unforced errors when rallying cross court. This should be reflected in the structure of drills and practice in both their purpose and the time spent hitting cross-court in relation to down-the-line directions for both rallying and point ending situations.
  - Rule 2** – Girls should develop ability to hit winners at the expense of unforced errors and boys learn to reduce unforced errors on a Hard Court.
  - Rule 3** - Increased awareness of opportunities to create forced errors and hit winners.
  - Rule 4** – Train decision making of 'right shot at right time' and train hitting down-the-line in the context of this 'change of direction' combination.
- Players should focus on creating forced error outcomes at the expense of unforced errors and not focus on hitting winners at the expense of increased unforced errors.
- An understanding of the four point outcome rules and three outcome types (unforced error, forced error and winner) can serve as a tactical foundation for players through all stages of development.

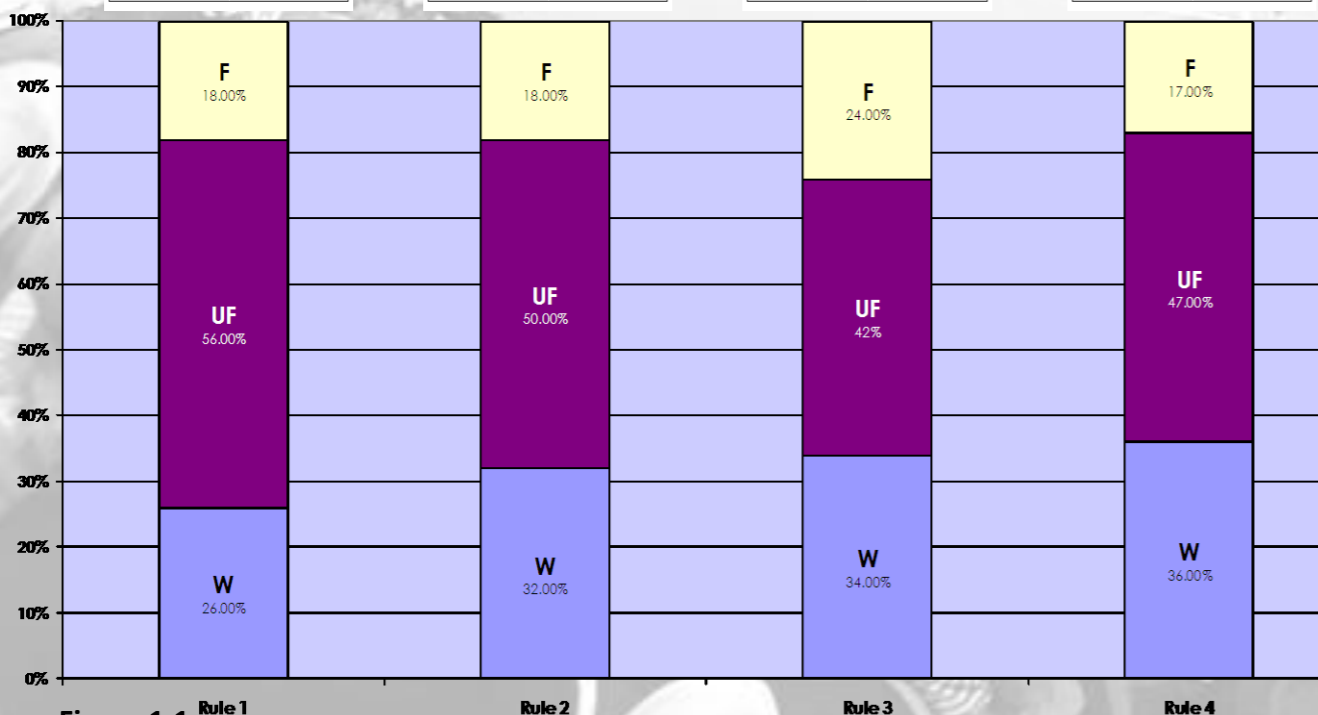
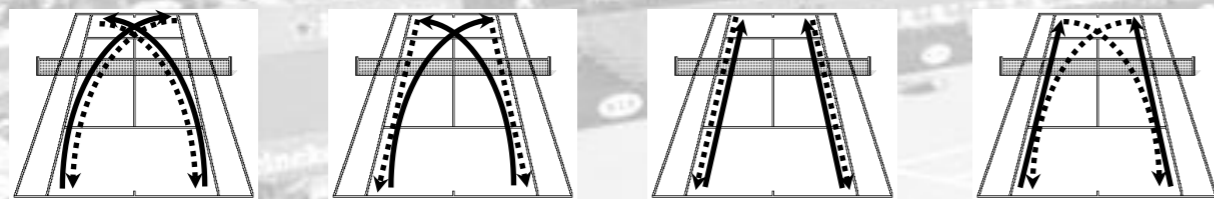


Figure 1.1 Rule 1

ATP Tour 2008 (Australian Open)

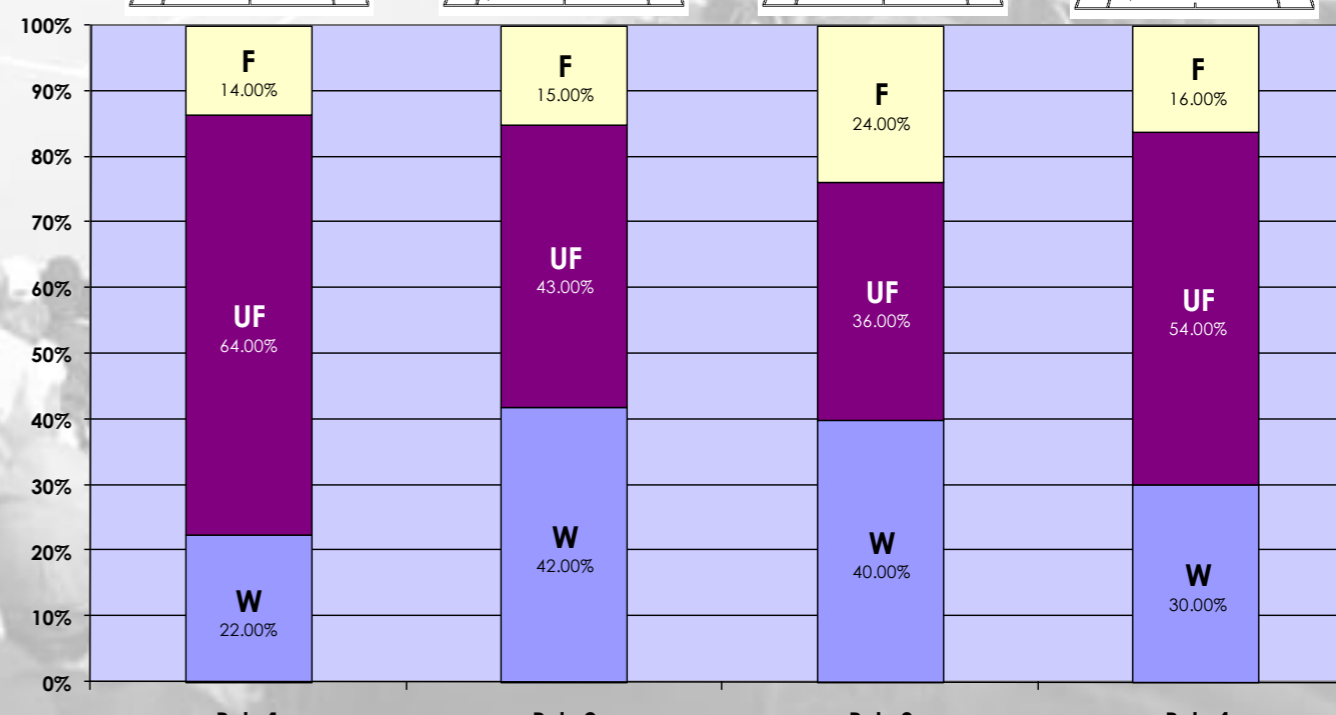
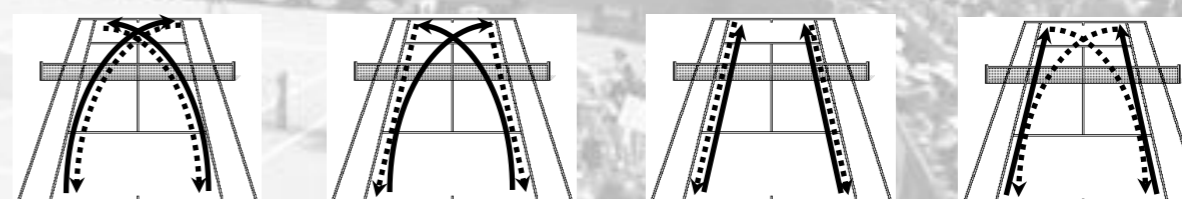


Figure 1.2 Rule 1

WTA Tour 2007 (Australian Open)

### Rule 1 (X – X) Results & Graphs (b)

