

Introduction

ASE card tennis is designed to be a game that provides a reasonably comprehensive simulation of lawn tennis without too much playing complexity. All player shots are simply made by selecting **Rally Cards** from a hand which is then replenished back to its starting size, and movements around the court are made by player choice. Probabilities for player errors and degree of difficulty of shots are incorporated. Those probabilities, and those for the type of shots that may be played, have been gathered from a detailed analysis of professional tennis matches.

To avoid having to introduce a further level of complication that would add to the realism but compromise the playability, the match is played between two right-handed players. The level of detail is such that every shot and move in the match is explicitly made by player choice, so the length of a game can mirror that of a real tennis match.

The game comes with a small board that shows a tennis court, with pawns for the two players. The board is used to show the position of each player as they move around the court. This is important as the shots that may be played, and their effectiveness, depends on where each player is on court.

It is assumed that players have a basic understanding of the game of lawn tennis. Those that do will soon be able to determine which shots are valid without looking the information up. The organization of the match (how many games or sets, etc) is left to the players. Most players are unlikely to want to play a whole tournament of full games, but tournaments may be organized by playing shorter matches such as the best of 3 tiebreaks.

Contents

1. 1 x Tennis Court board
2. 2 x Tennis player pawns
3. 1 Scoreboard
4. 54 x **Service cards**
5. 162 x **Rally Cards**
6. 4 x **Hawkeye cards**.
7. 1 set of **Percentage dice**.

Basic principles

Cards are used to determine every shot in simulating a tennis match between two players. There are two types of cards in the game: **Service cards** and **Rally Cards**. **Service cards** are essentially special **Rally Cards** – they are just used to start a point. The service return and all subsequent shots in the rally are played with **Rally Cards**. **Percentage dice** are used to help determine the success or failure of shots.

If you carefully watch players on the tennis court, you will see that movement around the court comes in two distinct phases. First of all, the player reacts to where he is on the court and the shot that he has just played. This instinctive movement is often an integral part of each shot that he plays, and is typically a movement back towards the centre of the court, at the same depth, so that he is in the best position to respond to whatever shot the other player makes. However, sometimes the player may make other movements such as rushing towards the net to be in a position to volley, or, when he is too close to it, backing away from the net. The second phase of movement comes after his opponent has played the ball, and is a reaction to get him into a position where he can play the next shot.

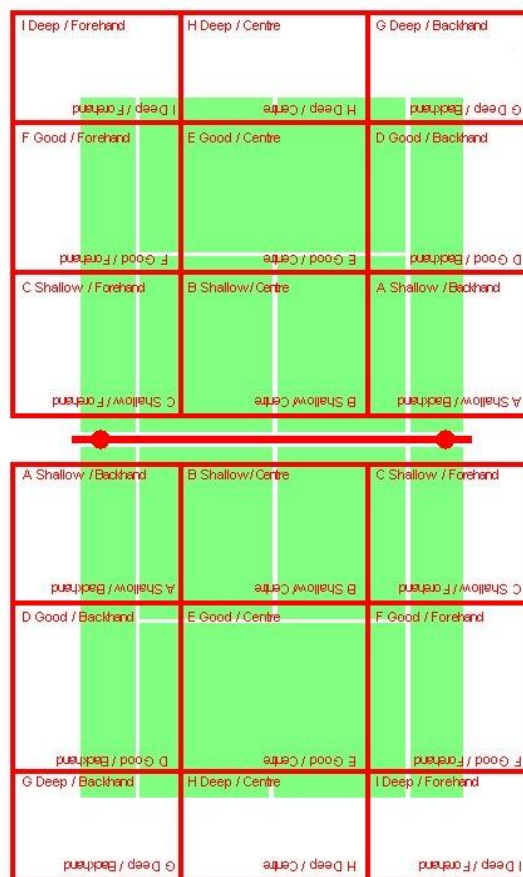
ASE card tennis simulates this movement on the court. After he has played a **Service card** or **Rally Card**, a player **MUST** also declare how he wishes to move after the shot – although that ‘movement’ may be to stay in the same court sector. With the exception of the serve and the

return (the first shot from the player receiving serve), where the players are known to be in ‘the right place’, a player may optionally move before he plays his **Rally Card**. These extra movements make it more likely that his shot will be a fault, but may be necessary if the player cannot, or does not wish to, play a shot from the sector of the court he is currently in.

Probability numbers on the cards and dice determine whether shots are faults or result in the ball being in play. Rallies continue until either player loses the point by playing a fault, or until a player is unable to play a legal **Rally Card**, in which case the previous shot from his opponent is deemed to have been a winner.

Description of the Components

The Court Board



The court board is a diagram of a tennis court with an overlay of **Court sectors** where the players could be. The tennis court itself is not directly used in the game. The positioning of the **Court sectors** over the court should be assumed to be approximate – in practice, the **Court sectors** would probably overlap a little, and would vary in position from player to player and also vary depending on the court conditions.

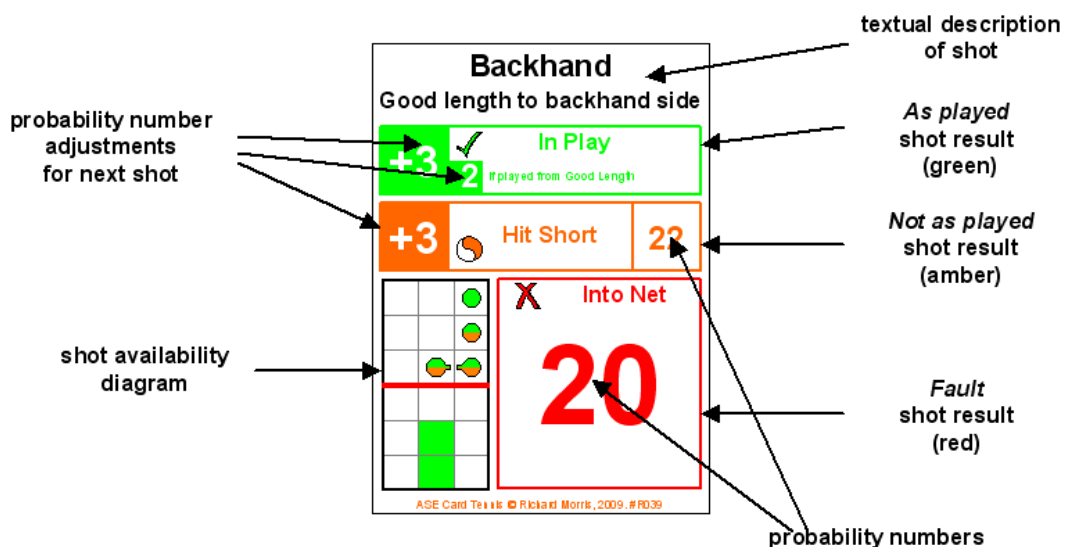
Each player is always positioned in one of the nine **Court sectors** that are on his side of the court. Those nine **Court sectors** cover all combinations of three depths (shallow, good length, deep) and three sides (forehand, centre and backhand). The shots that are available to be played vary according to the **Court sector** that the player is in. Information about the shots that may be

played from a **Court sector**, and the **Court sectors** that the other player may return the shot from, is given in the **Shot availability diagram** on each **Service Card** and **Rally Card**.

Rally Cards

Rally Cards contain a number of sections of information, which are described in more detail below:

- i) A textual description of the shot
- ii) A number of shot result sections, of three types:
 - a) *As played* result, in green.
 - b) *Not as played* result in amber.
 - c) *Fault* result in red.
- iii) A **Shot availability diagram** which gives a pictorial representation of the court board, showing where the shot may be played from, and which **Court sectors** the other player is able to play the next shot from.



An Example **Rally Card**

The textual description

The textual description of the shot provides a description of the shot, including the hand, depth, slice/spin, etc. Experienced players will quickly be able to judge where such a shot will go and where the opponent may play it, but this information is given in detail in the **shot availability diagram**.

The shot availability diagram

The **shot availability diagram** is split into two halves by the red line (which represents the net). Below the red line is a pictorial representation of the 9 **Court sectors** on the shot player's side of the court. Above the red line is a pictorial representation of the 9 **Court sectors** on the shot receiver's side of the court.

On **Rally Cards**, **Court sectors** from which the shot may be played are coloured in green. When playing a shot, the selected **Rally Card** should be one that can be played from the **Court sector** where the shot maker is currently positioned, which must also be a **Court sector** where the ball is available to be played, as shown on the previous card. If appropriate, the shot must use the correct hand. In the example shown above, the shot can only be played from the deep/centre or

Good length/centre **Court sectors**.

Above the red line of the **shot availability diagram** is a pictorial representation of the 9 **Court sectors** on the shot receiver's side of the court. Coloured circles show the **Court sectors** where the ball may be played – these are the **Court sectors** that the ball travels through at a height where a regular shot may be played. In general, most shots may be returned from shallow **Court sectors** by volleys. Short and good length shots may be returned from good length **Court sectors**. Deep shots may not be returned from good length **Court sectors**, as the ball does not pass through at a playable height, but may be returned from deep **Court sectors**. Good length shots may be returned from Deep **Court sectors** but short shots will not reach those **Court sectors**.

Some shots, such as volleys and service returns may only be played on one side of the body – either a backhand or a forehand. Which side is allowed is indicated with a short bar. In the example shown, a player in the shallow / centre **Court sector** can only play a backhand, and a player in the shallow / backhand **Court sector** can only play a forehand. A player in the Deep / backhand or good length/backhand **Court sectors** can play a forehand or a backhand.

If the **Rally Card** has a *Not as played* result, the circles in **Court sectors** where a *Not as played* result may be returned from are coloured amber. In most cases, these **Court sectors** will also be **Court sectors** where an *As played* result may be returned, so the circle will have both green and amber colours. In the example shown, a shot from a *Not as played* result can be played in the shallow / backhand, shallow / centre or good length/backhand **Court sectors**, but not from the deep / backhand **Court sector**.

Shot result sections

The shot result sections show the potential results of the shot. The actual result will be resolved through the use of probability dice as explained under [Player Game Turn Actions](#). All **Rally Cards** have a single *As played* result, and one or more *Fault results*. *Not as played* results are optional, but most **Rally Cards** and some **Service cards** have one or more.

- a) *As played* result, where the result of the shot is that it is in play, and as played. This type of section has green text, and a green tick symbol. On the left of the section is a large number that is the **probability number adjustment** to apply to the next (returning) shot. In some cases there is an additional small **probability number adjustment** to apply to the next (returning) shot which is used instead of the large number when the stated condition (typically a court position where the shot is played from) is met.
- b) *Not as played* result, where the result of the shot is that it is in play, but not as played. This may be the result of events such as a let, or the player miss-hitting the length of the shot. This type of section has amber text, and an amber ying/yang symbol. It also has a **probability number adjustment** on the left, and a **probability number** on the right.
- c) *Fault* result, where the result of the shot is a fault. This type of section has red text, a red cross symbol, and a **probability number**.

In some cases in *Not as played* or *Fault* result sections there is an additional small **probability number** which is used instead of the large number when the stated condition (typically a court position where the shot is played from) is met. In such cases, the **probability numbers** for other shot results higher up the card are not absolute, but adjustments to the appropriate **probability number** from the main (bottom) fault.

Probability number adjustments

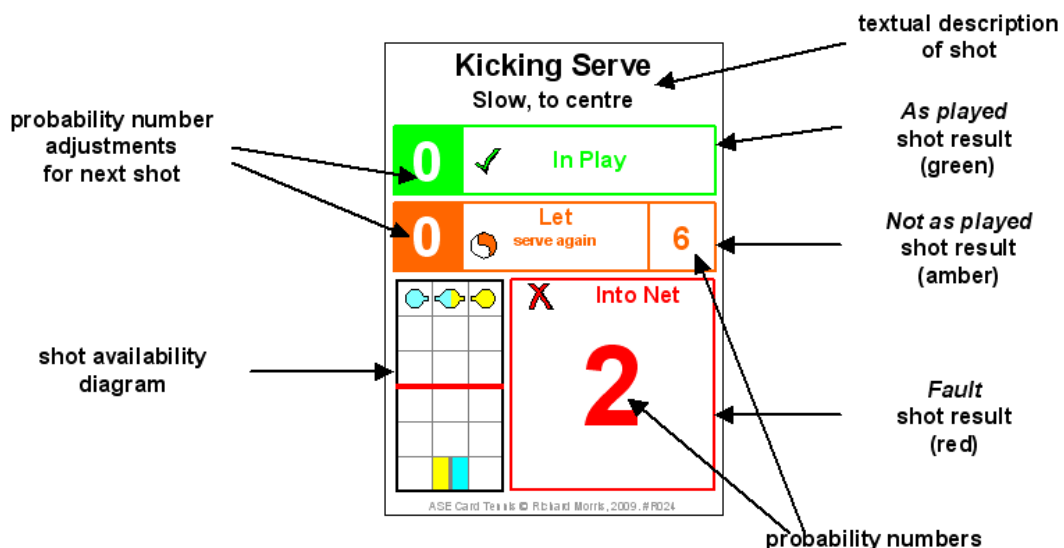
Shots such as those that are played close to lines or struck harder than normal ('attempted winners') are intrinsically more difficult to return than average. Other shots, such as after a let that 'sits up', may be easier to return than average. Such shots need adjustments to the probabilities

for the receiver. This is achieved through **Probability number adjustments**. The size of any such adjustment is shown in the *As played* result or *Not as played* result sections. A positive adjustment makes the next shot more likely to succeed, and a negative adjustment makes the next shot less likely to succeed. Note that these may be different – the *Not as played* result may make the next shot significantly easier or significantly more difficult than the *As played* result. Also note that otherwise identical **Rally Cards** may have different **probability numbers**, and require different **Probability number adjustments**.

Service cards

Service cards are essentially special **Rally Cards** used to start points. The cards are very similar to **Rally Cards**, with the same sections of information:

- i) A textual description of the serve
- ii) A number of shot result sections, of three types:
 - a) *As played* result, in green.
 - b) *Not as played* result in amber.
 - c) *Fault* result in red.
- iii) A **Shot availability diagram** which gives a pictorial representation of the court board, showing where the shot may be played from, and which **Court sectors** the other player is able to play the next shot from.



An Example **Service Card**

The information in these sections is the same as in the **Rally Cards**, except for the shot availability diagram. Services may be from the deuce (right) side or the advantage (left) side, and colour coding is used to identify the information, with blue used for the deuce side, and yellow for the advantage side. In the example **Service card** shown, a service from the deuce side can be returned with a backhand from the Deep / Forehand **Court sector**, and a forehand from the Deep / Centre **Court sector**. If the service is from the advantage side, it can be returned with a backhand from the Deep / Centre **Court sector**, and a forehand from the Deep / Backhand **Court sector**.

Probability Numbers

One **Probability Number** is shown in each *Not as played* and *Fault* shot result section on all **Shot** and **Service cards**. They are used to determine the success of a shot. The likelihood of a particular type of shot failing has been determined by a detailed analysis of actual matches.

A **Number** from the **Probability dice** is compared with the **Probability Numbers** on the **Shot** or **Service card**. The lower the **Probability Number** on a **Shot** or **Service card**, the more likely the shot is to succeed. The lower the **Probability Number** rolled on the **Probability dice**, the more likely the shot is to fail.

Set Up for the Basic Game

Decide the format of the match (3 sets, 1 set, best of 3 tiebreakers, etc). Place the **court board** between the players, allowing space in front of each player for the cards that are 'in play'. Toss a coin or use some other mechanism to decide which player will serve first. Place a **pawn** for each player on the **court board**, one at each end. The **pawns** should be in the appropriate deep/centre court sector, on the Deuce (right) side. Set the **scoreboard** to love all.

Remove the Hawkeye cards and put them to one side – these are not used in the basic game. Shuffle the **Service cards** and deal 6 face-down to the player who will serve first, placing the remainder face-down as a **Serve stock**. Leave space for a **discard pile** next to the **Serve stock**. Shuffle the **Rally Cards** and deal 8 face-down to each player, placing the remainder face-down as a **Shot stock**, again with space a for a **discard pile**.

You are now ready to start play with the first serve of the match.

The Play

Play starts with the first player serving the first point, and continues using tennis scoring until the tennis match is over. After each tennis game is completed, the previous server should return all unused **Service cards**, and the **Service cards** should be shuffled to form a new **stock**, with the new server drawing 6 **Service cards**. **Rally Cards** should be retained between games. If a tiebreak is played, both players should draw 6 **Service cards** at the start of the tiebreak, and retain their **Service cards** between changes of service until the tiebreak is completed.

If at any time during play any of the card stocks become exhausted, the discard pile should be shuffled and used to reform the stock. Players may reshuffle the discard piles into the stocks at any time.

A player's game turn consists of a number of actions, with slight variations for services, returns (the shot after a serve) and other shots in rallies.

Player Game Turn Actions

(1) Prepare for Service

[This action only applies for Services.](#)

The pawns for the players are moved to the Deep / Centre court sector, on the appropriate side of the court centre mark. For even numbered points in the game (e.g. 0-0, 30-0, 40-15, deuce) this will be from the deuce (right) side, shown in blue on the **Service cards**. For odd numbered points in the game (e.g. 15-0, 30-15, 40-30, advantage) this will be from the advantage (left) side, shown in yellow on the **Service cards**.

(2) Make additional pre-shot movements

[This action only applies to normal shots in rallies \(i.e. not Services or Returns\).](#)

The shot maker may optionally make a movement from one **Court sector** to another, before he plays his shot. These extra movements make it more likely that his shot will be a fault (by adding negative **Probability number adjustments**), but may be necessary if the player cannot, or does not wish to, play a shot from the **Court sector** he is currently in. When a shot maker moves in this action, further **Probability number adjustments** are applied to the shot as follows:

- a) A **Probability number adjustment** of -5 for moving one **Court sector** (e.g. from Deep / Centre to Good / Centre).

- b) A **Probability number adjustment** of **-10** for moving two **Court sectors** such that the net effect is one court sector 'along a diagonal' (e.g. from Deep / Centre to Good / Forehand).
- c) A **Probability number adjustment** of **-15** for moving two **Court sectors** 'straight' (e.g. from Deep / Centre to Shallow / Centre).
- d) A **Probability number adjustment** of **-20** for moving three **Court sectors** (e.g. from Deep / Backhand to Shallow / Centre).

It takes time to make these additional movements, and the amount of time available to the player depends on how far the ball has to travel. **The maximum number of Court sectors that a player is allowed to move is one fewer than the number of Court sectors that the ball will travel from the Court sector where it was hit to the Court sector where the receiver wishes to play it.** Thus, for example:

- a) 0 **Court sectors** (that is, no additional movement is allowed) when the previous shot was played from the Shallow / Centre **Court sector** to the Shallow / Centre **Court sector**
- b) 2 **Court sectors** when the previous shot was played from the Deep / Centre **Court sector** to the Shallow / Centre **Court sector**.

(3) Play a shot

The Shot maker selects a **Service card** (if the shot is a service) or a **Rally Card** (for a return or normal shot in a rally) from his hand, places it face up in his 'in play' area, and announces it to the other player. He then replaces it in his hand with the top card of the appropriate **stock**.

- 3a) If the shot is a Service. The selected **Service card** should be one that can be played from the appropriate side. For even numbered points in the game (e.g. 0-0, 30-0, 40-15, deuce) this will be from the deuce (right) side, shown in blue on the **Service cards**. For odd numbered points in the game (e.g. 15-0, 30-15, 40-30, advantage) this will be from the advantage (left) side, shown in yellow on the **Service cards**. If the selected **Service card** does not meet these criteria, then the service is a fault.
- 3b) If the shot is a service return. The selected **Rally Card** should be one that can be played from a **Court sector** where the ball has been played by the server, and must use the correct hand. Valid **Court sectors** and hands to return the serve are shown in the **shot availability diagram** for the **Service card**. If the selected **Rally Card** does not meet these criteria, then the shot is a fault, and the shot maker loses the point. Note that no 'movement' is required – the returner is assumed to be in the correct **Court sector** since he prepares to receive serve around the border between the two **Court sectors** the server may serve into.
- 3c) If the shot is a normal shot in a rally. The selected **Rally Card** should be one that can be played from the **Court sector** where the shot maker is currently positioned, which must also be a **Court sector** where the ball is available to be played. If appropriate, the shot must use the correct hand. Valid **Court sectors** to play the shot from and hands to play the shot are shown in the **shot availability diagram** for the **Rally Card** used by the other player. If the selected **Rally Card** does not meet these criteria, then the shot is a fault, and the shot maker loses the point.

(4) Check for shot result

The **Probability Dice** are rolled, and the number from them is adjusted by all the **Probability number adjustments** from the previous card or player movements, to form a **Net Probability Number**. The players compare the **Net Probability Number** with the **Probability Numbers** on the **Service card** or **Rally Card**. The comparison is always performed 'bottoms up' from the main (lowest if there are several) **Fault** and **Not as played** result sections. If the **Net Probability Number** is lower than or equal to the **Probability Number** in the result section, then that result section applies, otherwise, the next higher **Fault** and **Not as played** result sections is checked. If none of the numbered result sections apply, then the **As played** result section applies. The shot result can be read from the result section (the type of **Fault** or **Not as played** result has no bearing on the game, and can be ignored, but does add some realism). If the shot was a **Fault** then if it was a first service, then the server will make a second service,

otherwise the shot maker has lost the point. If the shot was not a *Fault* then the ball is in play.

(5) Post-shot movement

The shot maker announces his post-shot movement. This may be to stay in the current **Court sector** (for a return the current **Court sector** is dictated by the **Rally Card** played) or may be to move to any adjacent sector, moving left or right or forwards or backwards. There are, however, some restrictions on the movements that are allowed:

- a) If the serve or shot being returned was *wide*, the shot maker does not have the time to return to the centre of the court, and must stay in the **Court sector** where the shot was played. (Unless he was already in the sector??)
- b) If the shot was a Return of Serve, the shot maker can only move forwards if the service being returned was *slow*.
- c) If the shot being returned was *deep*, the shot maker cannot move forwards.

The shot maker moves his pawn to the appropriate sector on the **court board**.

(6) The players return any used **Service cards** and **Rally cards** to their discard piles.

Dropshots, Lobs and Smashes

Lobs and dropshots are normal shots that can lead to situations where *situational shots* can or must be played. Although lobs and dropshots are played fairly frequently, there are so many combinations of hands used and **Court sectors** involved that no specific lobs or dropshots occur frequently enough to warrant an individual **Rally Card**. So lobs and dropshots **Rally Cards** are generic, with the shot maker stating the target **Court sector** for the shot when the card is played. On these cards, some of the *Not as played* results cause the shot to drift from the intended target **Court sector**. This may mean that the shot actually lands out of play, and thus is a fault.

Although a lobe can be an attacking play when the other player is at the net, most lobs are defensive plays. They are intended to give the shot maker enough time to regain good court position. When a lobe is played, the shot maker can make two (instead of the usual one) post shot **Court sector** movements (or one **Court sector** movement if the previous shot was *wide*). If the receiver chooses to let the lobe bounce, then the shot maker can make a further post shot movement.

In **ASE Card Tennis**, a Smash is a *situational shot* that can only be played when the previous shot was a lobe. As with lobs and dropshots, the shot maker must choose the target **Court sector** for the smash. Some of the *Not as played* results cause the shot to drift from the intended target **Court sector**. This may mean that the shot actually lands out of play, and thus is a fault. The shot maker must declare whether the smash is played on the full (which is harder to return, but more likely to be a fault) or after the ball has bounced.

Shots around the net

Shots played close to the net (i.e. in shallow **Court sectors**) are usually *situational shots* that can only be played in those sectors. Most often they will be volleys. Individual volley shots, like lobs and dropshots, do not occur frequently enough to warrant Rally Cards, and so are generic in a similar way to lobs and dropshots. Volleys are the only shots that may be played in shallow sectors to shots that are *good length* or *deep*.

Dinks are shots that are played close to the net, but only when the previous shot was very short indeed. An *As Played* dropshot or a dink can only be returned with a dropshot, dink, or a lobe. Note that some dropshots and dinks can have a *Not as Played* result of 'Sits up'. Such shots can be played in a shallow **Court Sector** with any shot that is playable from the 'next **Court Sector** out' – the good length **Court Sector**.

Optional / advanced rules

Hawkeye

Hawkeye is an electronic method for resolving close line calls. Players have an allowance of wrong challenges that they may make (three per set, plus one extra for a tiebreak), with any number of correct challenges allowed. If you are playing a non-standard tennis match, you should mutually agree the number of challenges to allow before the game starts.

In **ASE Card Tennis**, either player may challenge the result of a shot when the description of the shot in the shot result section is “just in” or “just wide” or “just long”. Other shot results may not be challenged. The challenge is resolved by drawing a Hawkeye Card that gives the result of the shot. If this result is ‘out’, the point or serve ends. If this result is ‘in’, the point or serve is replayed.

Seeding / handicapping / player design

Since **ASE Card Tennis** is a game based on statistics and probabilities, it is easy to introduce mechanisms to support the two players in the match having different characteristics. These differences can then be used to support handicapping, player design and tournament seeding.

Handicapping

When playing against a young or inexperienced player, you may wish to handicap yourself, to provide for a more balanced game. The simplest way to do this is to play with a smaller hand of cards. This has no visible effect on the game (so, if you wish, your opponent need not even realise that you are handicapping yourself), but will reduce your choices, and thus handicap your performance.

Player Design and seeding

Some players are intrinsically better than others, and players usually have some parts of their game which is stronger than other parts. We could rate each player on characteristics such as service, return of service, movement, speed, stamina, strength, and so on. The shot frequencies and probabilities in **ASE Card Tennis** are based on the analysis of multiple matches between different players on different surfaces. They are thus based on overall averages which do not reflect the strengths and weaknesses of individual players. So, without any form of player design, the two players in the match are essentially the same.

The player design optional rules allow each game player to ‘design’ the characteristics of their player, within strict limits. The changed characteristics create positive or negative **Probability number adjustments** that apply to certain types of shot or movement. For a ‘fair’ game, each player must make a set of player characteristic changes that balances out so that positive changes for some characteristics for the player are combined with negative changes for other characteristics for the player. Where the intention is to allow game players to play as specific real players, with the strengths and weaknesses of that player reflected in the characteristics, this does not need to be the case.

Tournaments may be arranged where game players play as real tennis players, and the allowed characteristics adjustments could be made to reflect real world-based seedings.

<<Details of the design of these adjustments is very much in progress >>

Time limit on moves

Deliberate leave