

VIDEO ANALYSIS OF  
THE BACKHAND GROUNDSTROKE

BY: BONNIE CUTHBERT

INSTRUCTOR: MR. HOPPER  
PE 117: TENNIS (F01)

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# THE BACKHAND GROUNDSTROKE

The Backhand stroke is viewed quite differently by different people. People such as Maurice McLoughlin, a contemporary champion in 1915, wrote “‘Strokes on the left-hand side of a right-handed player, and vice versa, are taken in what might be called the most ‘unnatural’ position in tennis. The backswing is much more hampered than in any other stroke. The strength of the wrist is much more demanding...all these things make the ordinary backhand stroke an awkward one...’ J. Parmlly Paret wrote in 1927 ‘The backhand stroke is one of the greatest stumbling blocks for every beginner...if you’re like the average player, you’re pretty relaxed on the forehand, but when you see a ball coming to your backhand you cringe, ‘Dear God, it’s a backhand’ (cited in Tabak, 1991, p. 60)!” Nevertheless, many authors profess that the backhand is more natural, or even easier! According to Braden, the ideal forehand and backhand have the same stroke patterns and identical basic body movements (1980, pp. 209). The backhand seems to be more natural because of the style of the swing – the body is naturally out of the way of the arm action, whereas with the forearm, the body must first be turned out of the way (Murphy, 1975, p. 10). Nevertheless, many are unaccustomed to reaching across their body (as while doing the backswing phase of the stroke). Whatever your views, the backhand does present new challenges.

## Objective of the Backhand

The objective of the backhand is to hit the ball on the left-hand side of a right-handed player or the right-hand side of a left-handed player, so that the ball successfully travels over the net and lands in the adjacent court. Continuously successful backhand requires the skills of power and spin.

## Two-Handed Backhand

One common argument against the using two hands is that it reduces the reach a player has. This is true, it reduces the reach by half the width of the body but if the player moves fast on his or her feet, he/she should be able to retrieve most of the opponent’s shots. The reduced reach is more than compensated for by the fact that a player has two forehands. It gives the player a better opportunity to topspin off both sides because the player has a second longer to contact the ball on the backhand side (Braden, 1977, pp. 104-105). Moreover, the two handed grip restricts the length of the swing and allows a more controlled stroke. The feel of the two-handed backhand should be swinging up and through the ball - a compact, solid stroke. Most two hand hitters use a great deal of body rotation to offset the limitation in power imposed by the shortened swing. Other players use couple effects in which the hands are made to work against one another (the right hand pushing against the butt end of the handle to temporally ‘fix’ it in place, while the left causes the rest of the racket to rotate around it). The opposing forces applied in different directions on the handle results in increased speed of the racket face. The pros and cons of the two-handed backhand are: more power and leverage than the one hander, easier to hit high, loopy balls by moving forward and taking them at chest height, less reach than one hander, requires quicker footwork and harder to chip or slice (Murphy, 1975, p. 14-15).

### **Grip**

The most common grip for a two-handed backhand is holding an Eastern forehand grip (see Appendix 1, Figure 3) with the left hand, but there are two optional grips for the regular hitting hand. If the player is fairly talented, continue to hold a regular Eastern forehand grip which doesn't require the player to switch grips between strokes – this grip is actually a two-handed left-handed forehand on the backhand side. The reference points for this grip are that the V of the right hand falls between line one and eight or V of left hand is on line one. If the player doesn't feel comfortable hitting from the left side he/she should revert to an Eastern backhand because he/she will probably, eventually become a one-handed backhander (Braden, 1977, pp. 104-105).

## Phases of the Backhand

The backhand has four distinct phases. A phase is a connected group of movements that can stand on their own and once connecting the phases together, results in the total skill performance. The four phases are (1) Preparatory movements and Mental Set, (2) Wind-up or Backswing, (3) Force-Producing Movements or Forward Swing and (4) Follow-Through or Recovery (Carr, 1997 p. 136).

## Skilful Performances: Stroke

### ***Preparatory Movement and Mental State*** **(See Appendix 2/3, Figure 1.)**

A closed stance or the square stance is seen as better positions than the open stance for backhand. The slightly closed stance is when the right foot is closer to the sideline than is the left foot; this allows the body to get out of the way of the arm and permits a full, free sideline. A full closed stance is not as recommended because the right foot is far over toward the sideline which does not allow shift of weight into the shot. Nevertheless, it is the position that a player will use to reach a wide ball (Murphy, 1975, p. 11). Davenport is in a slightly closed stance with her knees bent ready to move toward the ball. The moment that Davenport sees that the ball is heading for her backhand, she turns her hitting arm shoulder and her racket back simultaneously so that the arm doesn't make an isolated movement. This places her body perpendicular to the net and enables her body and racket to move at the same time (Braden, 1977, pp. 85). Early preparation gives Davenport time to meet the ball properly and generally prevents negative effects of deceleration-acceleration (Braden, 1980, pp. 216).

### ***Wind-up Phase, Backswing*** **(See Appendix 2/3, Figure 2.)**

The backswing is the movement that stretches a tennis player's muscles and establishes a position from which the player can apply force over a long distance or time frame (Carr, 1997, p. 38). Davenport brings her racket back at eye level or slightly higher and out away from the body (if doing a single arm backswing, hold the throat of the racket with the non-hitting hand as a player turns back, this will help both shoulders rotate as a unit and will keep the racket head up on the backswing, only release when the forward swing begins or when the right-hand grip is secure) while maintaining a rigid, straight hitting arm and a fixed wrist. Her left elbow is leading as her arm is goes back (as long as the elbow doesn't drop) helping to keep the racket facing the ball. The racket face should be slightly turned down, facing the court, at the lowest point of the backswing. She moves the racket back until it is pointing to the back fence (perpendicular) or slightly beyond. Having the racket go beyond an angle perpendicular to the fence will allow a player to conceal the shot or apply excessive brush topspin, but a

player should only do this if he/she has a good turn in their upper body. A short, controlled backswing is desired (Braden, 1977, pp. 85-87). Davenport rotated her torso back during the backswing allowing her shoulders to be perpendicular to the net and her racket, arms and hands back while still maintaining in a stable position with her center of gravity in the middle. In this way she has accumulated a great amount of elastic energy in her back and hip (Latissimis Dorsi muscle, Pectoralis muscle, Deltoid muscle, Semitendinosus muscle, Semimembranosus muscle, Gluteus medius muscle, etc.) which will be released during the forward swing phase.

***Force Generation Phase or Forward Swing***  
**(See Appendix 2/3, Figure 3.)**

There appears to be a natural hand movement during the backswing that affects the racket position at the start of the forward swing. The hitting hand almost automatically turns counterclockwise so the racket face begins to slant skyward. A slight clockwise movement of the hand brings the racket face perpendicular again at contact. The racket begins its forward motion from a point close to the body (Murphy, 1975, p. 13). Davenport's body weight shifts from the rear foot to the front foot as she steps into the shot. Ground-reaction force takes place as her back foot pushes off the ground as the weight transfer occurs. She releases the stored up elastic energy as her hips followed by her upper torso unravel. Davenport's hips and shoulders turn with the arm swing; with fixed wrist and hitting hand approximately 12 inches below the intended point of contact. This allows a low to high forward motion as Davenport shifts her weight into the ball. For a successful groundstroke a player must bend their knees and lower the throat of the racket so it should almost brush the back thigh to help insure a natural lifting motion. The lower a player gets, the easier it is to stay in line with the target: it allows a natural pendulum movement. Once Davenport lets the racket fall, she keeps the swing continuous because the fall is what produces significant amount of kinetic energy. If a player drops the racket too soon, the power and rhythm of the racket and body moving together into the ball will be hindered. The arm is swung from the shoulder, and the arm straightens just before contact. The point of contact should be just off the front hip with the optimum contact height just above knee level to just above the navel – the closer to the body generally makes for a more controlled shot. Davenport contacts the ball about 12 to 18 inches out in front of her body when her hitting elbow about 6 inches away from the body because the hitting shoulder is closer to the net. This enables her hips to pull through on an inside-out axis while gaining the greatest amount of power from the thighs and rear end. She makes contact with the hitting arm fully extended and the racket face vertical. As she makes contact she coxes her wrist (short lever) which creates top spin because she hits beneath, around, then over top of the ball. Davenport keeps the racket running parallel to the net as long as possible triggering the impulse effect – the transfer of angular momentum in a linear direction. This allows a longer length of time for force to be applied resulting in a better stroke (Braden, 1977, pp. 97-98). If a player can bend their knees and get their racket low, then the rising motion of the body will supply all the power needed – the arm's only real job should be to hold the racket steady in a proper position throughout the stroke, while the body does the work and supplies the power. It is important that the player's body comes up as the player hits. It is also important that when the player raises their body, their racket should be moving forward and up together (Braden, 1977, pp. 85-94) – Davenport shows this brilliantly.

The knuckles of the hitting hand help dictate the success of the backhand because they move in tandem with the racket face. Therefore the knuckles must be kept in line with the target as the racket comes in contact with the ball (Braden, 1980, pp. 215).

### ***Follow-Through***

**(See Appendix 2/3, Figure 4.)**

The swing will be more efficient if the racket is made to move along the intended line of the ball as it passes through the contact area. By attempting to follow through along that line, a hitter increases his/her chances of contacting the racket to the ball along that line. To follow through, a hitter must delay his body rotation so that it is somewhat slower than the forehand. Davenport's body faces sideways at contact and does not begin to face the net until after the ball has been hit. Turning the hips and shoulders prematurely will cause a player to pull the racket across the line of the ball – less efficient swing. The amount of force applied in the swing determines whether the finish is long or short (Murphy, 1975, p. 13-14). Davenport extends her hitting arm upwards after she contacts the ball until it is pointed toward the sky, not the side of the court. She does not hold the arm back – she lets the inertia and momentum carry it up. Attempt to carry knuckles out toward the target area and upward, even after contact, then position knuckles pointing towards the sky. After Davenport hits through the ball she goes all the way up lifting with her thighs and she lets the momentum carry her body forward towards the net getting ready to receive the next shot. She keeps her head steady and eyes down remaining focused on the point of impact until her hitting arm is extended upward –this helps insure the ball hits near the center of the strings (Braden, 1980, pp. 220).

### ***Own Performances Stroke***

#### ***Preparatory Movement and Mental State***

**(See Appendix 4, Figure 1.)**

I had a slightly closed stance since my right foot is somewhat closer to the sideline than my left foot. I was in a good base position with my weight on the balls of my feet ready to move towards the ball. I have a wide base and correctly positioned center of gravity allowing myself a good level of stability so I can move quickly in any direction. I was looking directly at the ball and once I saw that it was going to my backhand side, I immediately positioned my body to correctly intercept the ball.

#### ***Wind-up Phase, Backswing***

**(See Appendix 4, Figure 2.)**

Once I was in position, I turned my body, but I was not completely perpendicular to the net therefore my shoulder of the hitting arm and their racket back didn't move as simultaneously as they should have. I had brought my racket back while maintaining a rigid and straight hitting arm while having a fixed wrist. My leading left elbow going back dropped a little – it was not as high as it should have been – therefore my racket was not facing the ball the entire time. My racket face should be slightly turned down, facing the court, at the lowest point of the backswing but it was not – it was pointing slightly up and out. During some shots, I brought my racket too far back past the back fence and this threw off the entire rhythm of my shot, while other times I didn't bring my racket back far enough – I need to find a happy medium! Nevertheless, I had a smooth and consistent backswing on all my shots. My accumulating elastic energy (recruiting the correct muscles) seemed appropriate.

### ***Force Generation Phase or Forward Swing***

**(See Appendix 4, Figure 3.)**

As my racket begins the forward motion it starts from a point close to the body. My body weight is going to the side instead of going forward. I also transfer my weight from my rear foot to my front foot too soon (before I contact the ball) this is undesirable because I cannot adjust my position. As I step into the shot my hips and shoulders rotate releasing the elastic energy – allowing me to apply more leverage and more torque (I have good hip rotation action). My wrist is fixed and my hitting hand is at the right position - 12 inches below the intended point of contact. I have good low to high forward motion as I shift my weight into the ball because I bend my knees and get their racket low, then the rising motion of the body will supply all the power needed – although, in some cases I get too low! I use all the muscles I can (leg, trunk, chest and arm muscles) allowing myself to perform at an optimal level. I try and apply force with the muscles in the correct sequence – I first use my legs (big muscles) to accelerate my body, then my trunk (massive body segment) and finishing with my arms and hands (high speed movement of smaller, less massive body parts) (Carr, 1997 p. 150). I make contact with the ball with my racket face vertical but I do not have my hitting arm fully extended – it is bent slightly. Because I don't transfer my weight more forward, I don't contact the ball over the knee which causes the ball to 'pop up'. Nevertheless, I am good at keep the racket facing parallel to the net as long as possible to achieve the best shot possible. I normally have a continuous swing but sometimes I apply force over too great a range of movement which normally has negative effects.

### ***Follow-Through***

**(See Appendix 4, Figure 4.)**

After I make contact with the ball, I hit through the ball and go all the way up lifting my thighs. I extend my hitting arm upwards until it is pointed toward the sky and then I bend my elbows so that the racket can end up behind my back. But, I do not carry out the momentum with the rest of my body because instead of moving forward, I lock my front knee and use ground-reaction force with that leg to move my body backwards.

## **Changes to Personal Stroke**

I have noticed a few problems with my double-handed backhand stroke. Firstly, I must concentrate on moving the force and momentum of my shot forwards not to the side or not to the back. In the recovery phase, I must continue the momentum of the shot by pushing off my front foot (ground-reaction force) forwards and moving towards the net, split stepping and getting ready for the volley. Secondly, my center of gravity is not in the middle on my wind-up and force generation phase so I need to 'sit back'. Changing my center of gravity would also help my weight transfer problem – I must only shift my weight from my back leg to my front leg after I make contact with the ball. A good game that will help me time the weight transfer is the Bounce-Hit Game. In the Bounce-Hit Game I must verbally say out loud when the ball bounces and when I hit it, this will force

me not to come in and make contact with the ball too early and it will re-reinforce the correct hitting zone. The correct center of gravity would also allow me the ability to adjust my position and hit slightly more in front. Thirdly, sometimes (but not in all circumstances) I have too long of a swing because in my logic it would give my stroke more power. But controversy, it is a short backswing that allows a hit to be efficient and powerful. When I increase the length of my stroke, I do not correspondingly increase my trunk rotation. In my research, I found that the longer arm movement going back, the more difficult it is to synchronize the actions of the arm and racket with the rotating body. It also increases the possibility of a wrist layback which further increases my problem (Braden, 1980, pp. 222-223). When my hitting hand is back too far, this pinches the racket up against my body and I have to flick my wrist to compensate (Braden, 1977, pp. 104-105). In addition, the front shoulder is a radial point and the farther the hitting arm goes back without sufficient body rotation, the higher the racket tends to rise above the approaching ball. Therefore, when I am practicing my backhands, I must concentrate on increasing my trunk turn and not lengthening the arm swing. Fourthly, the video clips show that I have my racket vertical at impact, nevertheless some of my shots went past the baseline. I must work on my upward angle of my low-to-high forward swing motion which produces a greater topspin which in turn will bring the ball down sooner. In other instances, the video clip shows my backhand shot hitting the balls into the net but my racket face is still vertical at compact. For this I must practice getting my racket lower on the backswing and use more of a body lifting motion. I must remember that my racket face is moving forward and upward together at the same angle (Braden, 1980, pp. 222-223). The final major error that I could see in respect to my double-handed backhand stroke was in some occasions I would bend the elbow of my hitting arm instead of maintaining an extended arm. I saw this on the video clip and once I tried to imitate it, I found that my wrist had a tendency to go loose and my racket face would point to the sky. I then have to straighten my elbow and use a lot of wrist action in order to get my racket in the right position to hit the ball. As a result a “sky ball” occurs (Braden, 1977, pp. 87-88). When hitting a backhand I must also concentrate on keeping my elbow straight. The best way for me to practice improving on these problems is to be given a series of ball on my left-side (the backhand progression game) and concentrate on what I need to improve upon. In addition, I think it would also be very important to have someone watch me and tell me other things which I could improve upon.

## Bibliography

Braden, V., Bruns, B. (1977). *Vic Braden's Tennis for the Future*. Boston: Little, Brown and Company.

Braden, V., Bruns, B. (1980). *Teaching Children Tennis the Vic Braden Way*. Boston: Little, Brown and Company.

Carr, G. (1997). *Mechanics of sport*. Windsor: Human Kinetics.

Murphy, B., & Murphy, C. (1975). *Tennis for the Player, Teaching and Coach*. Philadelphia: W. B. Saunders Company.



Tabak, L. (1975). *Teaching Tennis – The USTA Way*. Dubuque: Wm. C. Brown Publishers.

**Appendix 1**  
**BACKHAND – DOUBLE-HANDED –**

**Figure 1.**  
**Eastern Backhand Grip**



**Figure 2.**  
**Continental Grip**



**Figure 3.**

**Right-Hand Double-Handed Grip**



**Left-Hand Double-Handed Grip**

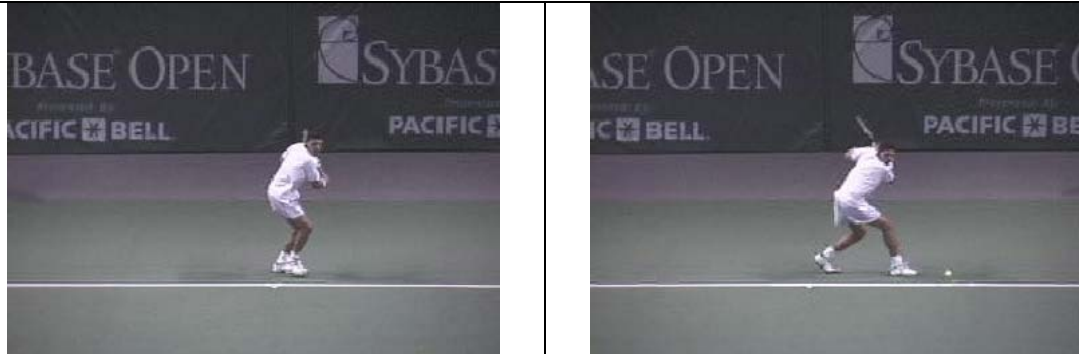


**Appendix 2**  
**BACKHAND – SINGLE-HANDED – Mark Philippoussis**

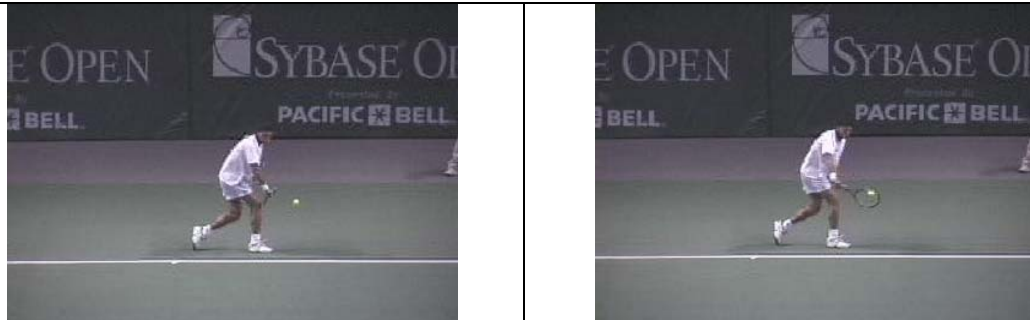
**Figure 1.**  
PREPARATORY PHASE



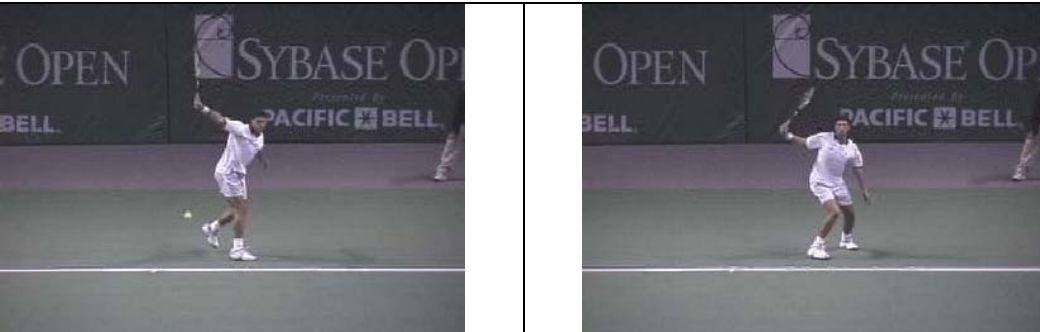
**Figure 2.**  
WIND-UP PHASE



**Figure 3.**  
FORCE GENERATION PHASE



**Figure 4.**  
RECOVERY PHASE



**Appendix 3**  
**BACKHAND – DOUBLE-HANDED GRIP – Venus Williams**

**Figure 1.**  
**PREPARATORY PHASE**



**Figure 2.**  
**WIND-UP PHASE**



**Figure 3.**  
**FORCE GENERATION PHASE**



**Figure 4.**  
**RECOVERY PHASE**



**Appendix 4**  
**BACKHAND – DOUBLE-HANDED – Bonnie Cuthbert**

**Figure 1.**  
**PREPARATORY PHASE**

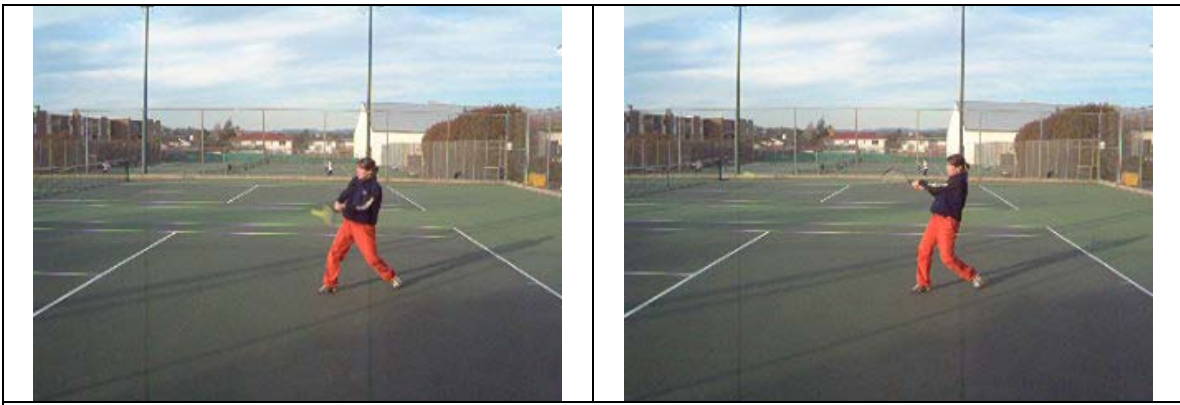


**Figure 2.**  
**WIND-UP PHASE**



**Figure 3.**  
**FORCE GENERATION PHASE**





**Figure 4.**  
**RECOVERY PHASE**



## Appendix 5

### Single-handed Backhand Grip

The recommended grip for the backhand is the Eastern backhand (see Appendix 1, Figure 1). As the player moves into hitting position he/she should switch to an Eastern backhand from an Eastern grip which requires a quarter-turn (90 degrees) of the hand on the racket. This moves the palm to the top of the racket, the knuckle of the index finger riding the top of the ridge and the thumb placed at a downward angle behind the racket handle to provide a brace-like stability when the ball is contacted. Others place their thumb under the racket allowing more strength to hold the racket steady at impact. The V formed by the thumb and forefinger should be pointing towards the player. If the player is right-handed, turn the racket to a “1 o’clock” position or if the player is left-handed, turn the racket to the “11 o’clock” position. This grip position provides the most stability and requires the least amount of wrist adjustment in order to produce a vertical racket at impact. Nevertheless, initially, many find this grip uncomfortable because they feel like the racket is pointing downwards. The Continental (see Appendix 1, Figure 2) is the most common alternative to the Eastern backhand and is often used for a single handed backhand grip. This grip is halfway between an Eastern forehand and an Eastern backhand with the racket turned away from the body (Braden, 1977, pp. 84). The Continental demands greater coordination and better timing if the player plans to hit successfully with a top spin. The Continental is good for hitting under-spin on the backhand; nevertheless it requires a strong wrist and a roll of the wrist when imparting topspin (Braden, 1980, pp. 213).