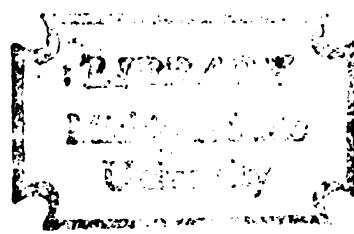


A COMPARISON OF THE EFFECTS OF TWO  
DIFFERENT SERVING STANCES ON THE SPEED AND  
ACCURACY OF THE SERVICE DELIVERIES OF  
COLLEGE WOMEN BEGINNING TENNIS PLAYERS

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## ABSTRACT

### A COMPARISON OF THE EFFECTS OF TWO DIFFERENT SERVING STANCES ON THE SPEED AND ACCURACY OF THE SERVICE DELIVERIES OF COLLEGE WOMEN BEGINNING TENNIS PLAYERS

By

Rebecca Jane Sankner

This study investigated the effectiveness of two different methods of serving on the accuracy and speed of the service deliveries of college women, beginning tennis players. The subjects were comprised of 18 normal college women between the ages of 18 and 23. All subjects were pre-tested on serving using the Hewitt Test for Service Placement and Speed. Two comparison groups of identical size, matched according to pre-test scores were used. One group was taught the "directional-foot" position method and the other was taught the "fixed-foot" position method. Instruction for both groups lasted 25 days. Both groups were post-tested after the instructional period using the same Hewitt test.

The results were analysed by using the correlation coefficients of the individual gain scores in each group



and the significance of the difference of the gain scores was determined by a t-test of independent samples.

### Conclusions

Based on the analysis of the data presented the following conclusions were established.

1. There was no significant difference in the accuracy in service deliveries yielded by the "directional-foot" position and the "fixed-foot" position.

2. There was a significant difference in the speed of service deliveries yielded by the "directional-foot" and "fixed-foot" positions.

3. The speed of service deliveries yielded by the "fixed-foot" position was significantly greater than that yielded by the "directional-foot" position.

### Recommendations

The following recommendations were submitted by the investigator as a result of this study:

1. A similar investigation could be made using a larger number of subjects.
2. Women who have an intense desire to learn to play tennis should be used for the study.
3. A third group should be used, this one employing the "fixed-foot" position method of tossing and the "directional-foot" method of foot-positioning.

4. If the experiment is given during a school term, the post-test should be given at a time other than final-exam time, if at all possible.

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By  
Rebecca Jane Sankner

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## TABLE OF CONTENTS

	Page
LIST OF TABLES . . . . .	iv
LIST OF FIGURES. . . . .	v
 Chapter	
I. INTRODUCTION. . . . .	1
Need for the Study. . . . .	4
Purpose of the Study. . . . .	4
Research Hypotheses . . . . .	4
Limitations . . . . .	5
Scope of the Study. . . . .	5
Significance of the Study . . . . .	6
Definition of Terms . . . . .	7
II. REVIEW OF RELATED LITERATURE. . . . .	9
Research on the Tennis Serve. . . . .	9
Research of Tests of Service. . . . .	10
Tests to Measure Speed and Accuracy . . . . .	10
Teaching Methods. . . . .	11
Directional-Foot Position . . . . .	12
Fixed-Foot Position . . . . .	13
Summary . . . . .	15
III. METHODOLOGY . . . . .	16
Introduction. . . . .	16
Selection of Subjects . . . . .	17
Research Design . . . . .	17
Teaching Method . . . . .	18
Service Stance. . . . .	19
Grip. . . . .	19
Toss. . . . .	19
Stroking Phases and Sequences . . . . .	21
Testing Procedures. . . . .	22
Instruments and Equipment . . . . .	24
Statistical Analysis. . . . .	26

Chapter	Page
IV. ANALYSIS AND PRESENTATION OF DATA . . . . .	27
Results of the Experimental Analysis. . . . .	27
Test Scores . . . . .	27
V. SUMMARY, CONCLUSIONS, RECOMMENDATIONS . . . . .	32
Summary . . . . .	32
Conclusions . . . . .	33
Recommendations . . . . .	33
BIBLIOGRAPHY . . . . .	34
APPENDICES . . . . .	39
A. Raw Data Group I. . . . .	40
B. Raw Data Group II . . . . .	42
C. Toss Area Record. . . . .	44
D. An Introduction to Tennis . . . . .	46



## LIST OF TABLES

Table	Page
I Average Gain Scores for Accuracy and Speed with Pearson Product Moment Correlation Coefficients and Critical Values at the .10 $\alpha$ Level. . . . .	29
II T-Tests for Accuracy and Speed . . . . .	30

## LIST OF FIGURES

Figure	Page
1. "Directional-foot" position . . . . .	20
2. "Fixed-foot" position . . . . .	20
3. Diagram of Hewitt Test. . . . .	23

## CHAPTER I

### INTRODUCTION

In tennis a powerful and accurate serve is a very significant offensive weapon. If a server is able to weaken his opponent's position by a strong, well-placed serve, he may be able to control the games in which he is serving. A weak server, on the other hand, may find that his success in playing tennis comes mainly from his ability to anticipate and respond to the battle plan of his opponent.

In six years of teaching beginning tennis to college women, the investigator has observed a problem which seems to occur with great regularity. That is, an inability to combine speed with accuracy while learning to serve. Many factors appear to contribute to this problem, including difficulties in timing, inaccuracy in tossing, inefficiency in swinging, improper body positioning, or a combination of these.

The investigator has frequently observed that a woman who has developed a fairly accurate toss and an orthodox swinging motion, as well as a coordination between

these two movements, still has difficulty when she attempts to serve the ball into the service area which is diagonally behind her as she is standing sideways to the baseline. This is the court in which the ball may be tossed out of its plane of direction as it is being served. It has been believed that the problem may be caused by the body position resulting from the initial stance and the subsequent point in the air to which the ball is tossed.

Many studies have been done relating to various aspects of tennis, particularly in the areas of skill and knowledge testing. Other research includes analysis of teaching methods for the strokes including the serve. Little has been done, however, to compare or identify specific serving methods and their effects on women beginning tennis players.

The researcher has studied the serving methods advocated by a number of tennis professionals including Lloyd Budge, Sarah Danzig, Jack Barnaby, "Pancho" Gonzalez, Helen Hull Jacobs, and Rod Laver, and have found two methods which seem quite popular. These methods have been categorized by the investigator according to the stance advocated for the serves and the area to which the ball is tossed. The two stances will be referred to by the investigator as the "directional-foot" position (Figure 1, page 20) and the "fixed-foot" position (Figure 2, page 20).

One of the advantages of the "directional-foot" position is that the player's shift of weight is to the direction the ball is to travel after it is hit. A second advantage of the "directional-foot" position is that the ball is tossed in the same plane as its intended flight. This may not be a clear advantage when one is serving into the court he is facing, but it becomes more advantageous when he is serving into the court diagonally behind him. In the "directional-foot" method, as the shoulders turn to allow the final, forward swing of the racquet, they are directly facing the target area, therefore making it unnecessary to reach out of the established directional plane to contact the ball.

The main disadvantage of the "directional-foot" method is that it does not provide a disguise of the intended flight of the ball. It therefore may provide the receiver the opportunity to anticipate the server's target.

A chief advantage of the "fixed-foot" position is that the intended flight of the ball is hidden until the ball has been hit. A second advantage of this method of serving is the consistency of the stance and the tossing motion. The server needs to develop only one tossing motion and one stance. A disadvantage of the "fixed-foot" method is that, when serving into the court diagonally



behind him, the player must frequently reach out of the plane the ball is to travel in order to hit it.

### Need for the Study

Tennis is presently enjoying an upsurge in popularity in the United States, due to an increase in leisure time. It therefore seems important that instructors teach prospective players the most efficient method of executing all strokes. Because the serve can be a very strong offensive weapon, a study which may aid in determining the most efficient methods of serving for beginning women tennis players is significant.

### Purpose of the Study

The purpose of this study was to compare the effects of the "directional-foot" and "fixed-foot" positions on the speed and accuracy of the service deliveries of college women beginning tennis players as they are serving into the court which is diagonally behind them as they are standing sideways behind the baseline.

### Research Hypotheses

The general research question asked if the placement of the feet in the serve could result in a more accurate and faster service delivery. From this question, the following hypotheses were drawn: (1) there is a

significant difference between the accuracy yielded by the "directional-foot" and "fixed-foot" positions in the service deliveries of college women, beginning tennis players, and (2) there is a significant difference between the speed yielded by the "directional-foot" and the "fixed-foot" positions in the service deliveries of college women beginning tennis players.

#### Limitations

1. The subjects of this study were comprised of 18 students from freshmen to senior levels who had registered for beginning tennis from 1:30 to 2:30, Monday through Friday afternoons at Principia College in Elmhurst, Illinois.
2. There were 50 class meetings, 25 of which were devoted to the serve.
3. The classes were 45 minutes long. On the days which were devoted to the serve, at least 35 minutes were spent on the serve.
4. A gymnasium with practice walls was used when inclement weather prohibited outdoor classes.

#### Scope of the Study

This study took the form of a quasi-experimental design with two comparison groups. The comparison groups were determined after a skills test had been administered to all subjects. Each group was randomly assigned to a

treatment. Group I learned the "directional-foot" position method of serving, and Group II learned the "fixed-foot" position method of serving. The beginning skill levels of the subjects, in relation to the serve, were determined by the Hewitt Test for Service Placement and Speed (24) which was administered during the second class meeting.

Both groups met at the same time with the same instructor for 50, 45-minute class periods. The serve was introduced at the 25th class session, after which 35 minutes of each class period was devoted to it.

At the end of ten weeks each group was again given the Hewitt Test for Service Placement and Speed. A gain score from each girl's pre-test and post-test scores was taken for both speed and accuracy. The gain scores of each girl in Group I was correlated with those of her match in Group II,  $\alpha$  was set at the .10 level. A t-test for independent samples was run on the gain scores to determine the significance of the difference of the scores. Conclusions were drawn from the resulting data.

#### Significance of the Study

This study was made to determine a more efficient technique of teaching the serve to college women, beginning tennis players. The results may apply only to a larger population of college women with similar characteristics.

### Definition of Terms

With the exception of "college woman," "court diagonally behind the server," "directional-foot" position, and "fixed-foot" position, which have been defined by the researcher specifically for use in this study, the following terms have been defined by the International Lawn Tennis Federation (44).

College Woman: A woman who is between 18 and 23 years of age who is a student at Principia College in Elsah, Illinois.

Continental Grip: "Used to maintain the same grip for forehand and backhand; sometimes called the 'service grip.'"

Court Diagonally Behind the Server: The service court to the left of a right-handed player, or to the right of a left-handed player as she stands in the middle of the base line, facing the net.

Directional-Foot Position: A serving method in which the positions of the feet are perpendicular to the flight of the ball and the direction of the toss is in line with the intended flight of the ball.

Fixed-Foot Position: A method of serving in which the foot nearer the baseline is at a 45 degree angle to it, while the foot farther away from the base line is parallel to the baseline. The tossing arm moves in a diagonal direction, to the front and slightly to the side of the server as the ball is released.

Foot-Fault: "An improper or illegal position or movement of the feet before or during the service."

Let: "A served ball that touches the net and yet goes into the proper court. It is then played over again without penalty. Also any stroke that does not count and is played over. Same as a 'net-chord stroke.'"

Serve: "To deliver the ball from the base line by throwing it into the air with the hand and knocking it into the opponent's service court; the opening stroke of each point; the act of putting the ball into play."



## CHAPTER II

### REVIEW OF RELATED LITERATURE

There is limited evidence of research which has focused on the positioning of the feet during the serve, consequently, instructional comments and the teaching experience of the researcher have provided the basis for the research hypotheses. Various tests have been reviewed to determine the most appropriate one for the study.

#### Research on the Tennis Serve

Several studies have been done relating to the tennis serve (37,27,15). The studies include the determination of velocities and the relationships of accuracy and speed in serves, analysis of advanced serves and a comparison of different methods of teaching the serve. The last study, by Cotten and Nixon (15), compared the teaching of subjects to serve from the service line with the teaching of subjects to serve from the baseline. No significant difference was found in the serving abilities of the subjects who learned to serve from the service line and those who learned to serve from the base line. In a study of service accuracy as it related to speed in

advanced serves, Johnson (27) found no significant relationship between speed and accuracy.

#### Research of Tests of Service

Among tests of the serve, two deal specifically with speed. One, a study by Owens and Lee (37), compares the velocity of the ball with its angle of projection. In this study, the investigators used a ballistics formula to program variables which would determine the trajectory of a tennis ball. They concluded that, at lower heights, the angle of projection should be maintained above or near a horizontal line, unless an extremely high velocity could be achieved. At greater heights they found the server had a large margin for error if a high velocity could be achieved.

A second test, developed by the editors of "Tennis" magazine (12) measures ball velocity in miles per hour with a high-speed sequence camera. The camera records the flight of the ball in relation to a series of planks which have been marked at one-foot intervals.

#### Tests to Measure Speed and Accuracy

Of tests designed to measure speed and accuracy, the Hewitt Test of Service Placement and Speed (24) is the oldest validated measure. Other tests, such as one developed by Talent-N-Timing Tennis Incorporated (42) are variations of the Hewitt Test. The Talent-N-Timing test,

in which the ball is served into three general areas of the service court, is very similar to the Hewitt test, although it is more specific in terms of speed and more general in terms of accuracy. No information has been obtained on the reliability and validity of this test.

Hewitt (24) found a validity coefficient of .72 and a reliability coefficient of .94 on the service placements of beginning tennis players. He found validity and reliability coefficients of .89 and .84 respectively on the speed of their serves. The investigator has chosen to use the Hewitt test for its validity, reliability, and the expediency with which it may be given.

### Teaching Methods

Although a number of methods of teaching the serve have been advocated by various tennis professionals and tennis coaches, the researcher has found only one study which specifically researched methods of teaching the serve. This study dealt only with the locations on the court from which players learned to serve (15), it did not compare the methods of teaching the phases of the serve.

Among several teaching methods which have been reviewed (30,25,2), D.D. Klotz advocated a simplified method which suggests that beginners should start the serve with the serving arm already flexed with the

racquet behind the back, thus eliminating the problem of coordinating the serving-arm motion with the tossing-arm motion.

In an informal interview at the Treasure Island Tennis Club on Treasure Island, Florida, December 27, 1975, Harry Hopman, the coach of the Australian Davis Cup team for 21 years, suggested that when teaching the serve to women, he often had them face the net, toss the ball up, and hit it in the manner which they found easiest (25).

#### Directional-Foot Position

In an informal interview at the Laver-Emerson Tennis Camp in Pinehurst, North Carolina on September 4, 1974, Mal Anderson, a former member of the Australian Davis Cup team who ranked number two in the world in 1957 and 1958, according to International Lawn Tennis Federation rankings (24), strongly advocated a directional method of teaching the serve to beginning tennis players (2).

Other proponents of the "directional-foot" position include: the staff of the United States Lawn Tennis Association (44), H.I. Driver (17), Fred Perry (40) and physical educators Katherine Ley and Donna Mae Miller (35).

Sarah Palfrey Danzig (38), who reached her peak as a player during the Thirties, feels that in the service

stance, a line drawn from the foot farther from the net, to the one nearer to the net should point in the direction to which one is serving. Lloyd Budge, the brother and teacher of Donald Budge, has also advocated the directional approach for beginners:

As the serve is made diagonally, the position of the body must be patterned after the direction in which the serve is to be made. For the first serve to the forehand court, the player will stand with his left leg slightly to the left side of his back leg. For the serve to the backhand court, the left leg will be placed slightly across the right leg. (11)

Wynn Mace, a teaching professional from California, has described the toss in the directional method by stating that, "The ball should be tossed in the path of the racquet" (33).

#### Fixed-Foot Position

An early proponent of the "fixed-foot" position method of serving was J. Parmly Paret (39). Helen Hull Jacobs, who ranked among the top ten women in the world from 1929 until 1939 (44), also advocated this method in the statement:

I take up a position on the baseline with my left foot two or three inches behind the line and at approximately a 45 degree angle to the net. I place my right foot about a pace behind my left with my heels on a line. My right foot is turned just a trifle, I am standing with my body sideways to the net and my shoulder turned in the direction I am going to serve. (26)

A contemporary of Miss Jacobs, Donald Budge (10), also advocated this method of positioning for the service.



A very notable advocate of the "fixed-foot" position is Richard "Pancho" Gonzalez (21), who has stated that the stance for each serve should be exactly the same, in order to increase deception.

Many coaches and physical educators who advocate this position, prefer a toss, which, when allowed to bounce, will land in front of the toe nearer the net. Of those who prefer this toss are Harry Leighton (32), and John Kentfield (29), who is the coach of the men's varsity tennis team at North Carolina State University (29).

Ed Faulkner (19), although suggesting a stance which would allow the player to be angled to the center of the court into which she is serving, recommends that the server toss the ball in line with her head and the service court. Among other tennis coaches and physical educators who have advocated the "fixed-foot" position are: John Barnaby (4), the coach of the Harvard tennis team, Marion Broer, and Gertrude Goss (22).

It may be noted that the "fixed-foot" position finds many of its advocates in players who have reached a high level of ability, such as "Pancho" Gonzalez, Donald Budge, and Helen Jacobs. Many of its advocates are coaches of highly-skilled players such as John Barnaby, John Kentfield, and Harry Leighton. The "directional-foot" method on the other hand, finds many of its advocates among players and instructors who are primarily

interested in teaching prospective players. These advocates are exemplified by Lloyd Budge, Sarah Danzig, H.I. Driver, and Katherine Ley and Donna Mae Miller.

### Summary

The number of studies relating to the tennis serve are limited. They include the comparison of service line instruction and baseline instruction, the relationship between the speed and accuracy of advanced serves, and the relationship between the height of the ball-toss and the speed of the ball on the serve.

Research which dealt with service testing indicated that, although several tests have been developed, the Hewitt Test for Service Placement and Speed is the oldest validated test. Others which have been developed are variations of the Hewitt test.

An investigation of teaching methods revealed that several high-ranking players, coaches, and teaching professionals have endorsed the methods defined by the investigator as the "directional-foot" position and the "fixed-foot" position. It appeared that the instructors who dealt primarily with beginning players tended to advocate the "directional-foot" position, while those who dealt with more advanced players tended to advocate the "fixed-foot" position method of teaching the serve.

## CHAPTER III

### METHODOLOGY

#### Introduction

In her experience as a tennis instructor, and through conversations with other instructors, the investigator has found that college women who are learning the skills of tennis often have difficulty combining speed with accuracy while learning to serve. Factors which contribute to this problem include difficulties in timing, inaccuracy in tossing, inefficiency in swinging, improper body positioning, or a combination of any of these. Since women frequently have difficulty after they have developed an orthodox swinging motion and an orthodox toss, the investigator has felt the problem could be caused by the stance and the subsequent tossing motion.

The purpose of this study was to compare the effects of two different stances, the "directional-foot" position and the "fixed-foot" position, and their respective tosses on the speed and accuracy of the ball in the service deliveries of college women, beginning tennis players.

### Selection of Subjects

This study consisted of 18 women between the ages of 18 to 23 years old who registered for class in beginning tennis, fifth hour, Monday through Friday, for the spring term at Principia College, in Elsah, Illinois. During the course of the study, the women continued their normal living routines. They were given the Hewitt test at the second class meeting in order to determine their serving skill levels. Any subject who received more than 12 points on the accuracy and speed portions of the test was not considered in the data collection. (According to Hewitt's scale (24), a score of 12 would be an average grade. The investigator felt that any score above this would indicate that the player was not a beginner.)

Accuracy scores from zero to 12 were listed; then each subject's name and speed score were placed beside her listed accuracy score. From this listing the subjects were matched into pairs of similar averages. Each group consisted of nine subjects.

### Research Design

This study took the form of a quasi-experimental design with two comparison groups to determine the effects of the "directional-foot" position and the "fixed-foot" position methods of serving on the speed and accuracy of the serves of college women, beginning tennis players.

Both groups were treatment groups and they both met for the same number of days, for the same length of time, at the same hour. Members of each group met for a total of 50 class sessions. During this period they spent one day in orientation, one day in skills testing, 11 days on the forehand, 12 days emphasizing the backhand, and 25 days primarily on the serve. During the 25 days which were devoted to the serve, ten minutes of each period were devoted to a review of the forehand and backhand. During the class periods devoted to the serve, the first five periods were given to instruction in the basic movement and to the practice of each phase of the stroke. The last 20 periods were devoted to practice and individual instruction. The final exam class period, which was two hours long, was used for testing the serve. The regular class periods were 45 minutes long.

#### Teaching Method

The subjects of each group received identical instruction on the forehand, backhand, history, strategies, equipment, rules and tennis terms. Much of this information came from supplemental reading material which was purchased by each subject. (This material may be found on page 46 of the Appendix.)

### Service Stance

The "directional-foot" group was taught to stand so that as the weight was shifted from the foot farther from the net to the foot nearer to the net, the body moved in a sideways manner, directly in line with the intended flight of the ball. (See Figure 1, page 20.) The subjects of the "fixed-foot" group were taught to stand with the foot farther from the net parallel to the base line, and the foot nearer to the net at approximately a 45 degree angle to the base line. A line drawn from the toe of the foot farther away, to the nearer foot, made a line perpendicular to the base line. The shoulder turned in the desired direction of the serve as the player was aiming. (See Figure 2, page 20.)

### Grip

In both groups the Continental grip was taught. No emphasis was placed on the type of spin to be placed on the ball.

### Toss

The subjects for both groups were told that the toss should be the result of the ball rolling out of the hand as a natural extension of the raising of the arm, rather than a deliberate tossing motion. The ball was to be released just as the tossing hand was on a parallel plane with the court. It was to go slightly higher than

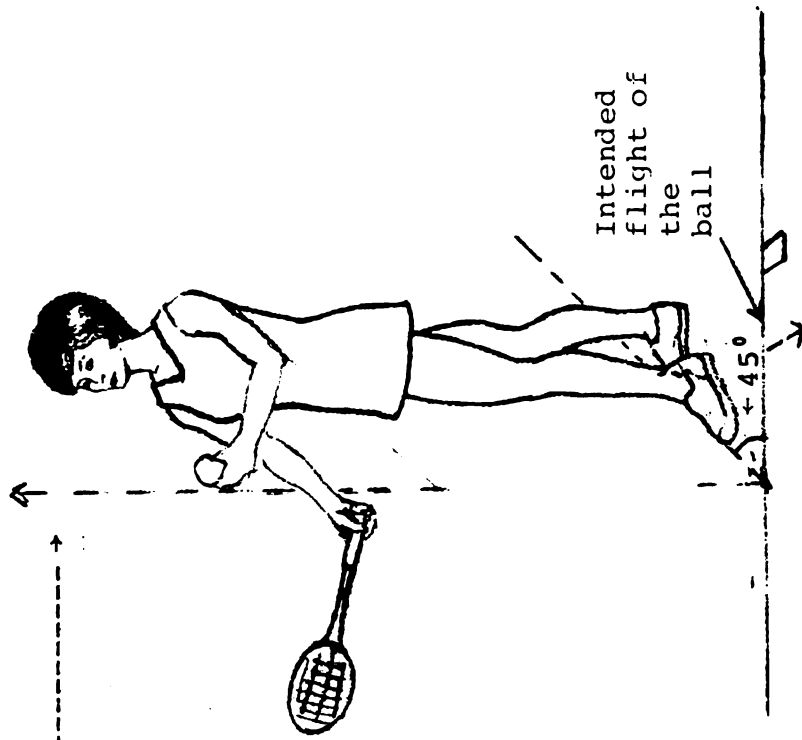


Figure 2.--"Fixed-foot" position.

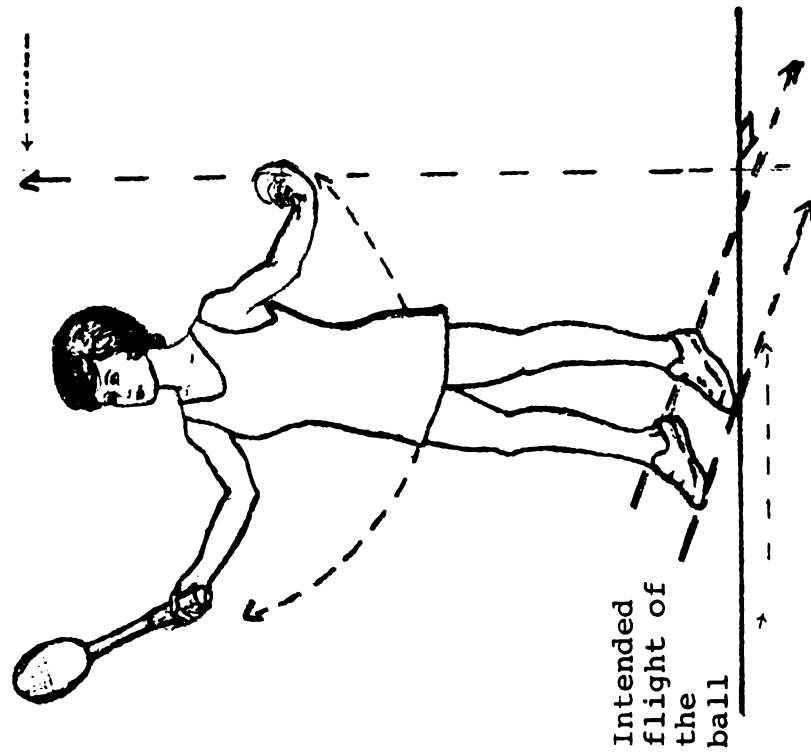


Figure 1.--"Directional-foot" position.

the height of the racquet when it was fully extended.

The ball toss for the "directional-foot" group was lined up as though the server were pointing to the spot where the ball should land. The toss for the "fixed-foot" group was to a constant area which was diagonally in front of the foot nearer the net, and slightly to the side of the body.

#### Stroking Phases and Sequences

Both groups were taught then to make the tossing and swinging motions simultaneously, after the desired target area in the middle of the service court had been established with the racquet. The weight was placed on the foot farther from the net at the start of the serves, and transferred to the foot nearer the net as the tossing arm was raised. In the service swing, the serving arm was initially extended in front of the body, at waist level, with the racquet pointing in the direction the ball was to go. As the arm lowered in an arc to a point where the racquet was perpendicular to the court, the arm began to turn out until the racquet face had made a 180 degree turn. The arm continued to raise in an arc until it reached shoulder level. At this point, the arm flexed and the racquet dropped back behind the shoulder. (At this time, the thumb of the hand should have been able



to touch the shoulder.) From this position, the server turned her shoulders toward the court which she was aiming, and extended the racquet to hit the ball, following through with her racquet on the opposite side of her body from her serving arm.

### Testing Procedures

During the final exam period, the subjects of each group were given the Hewitt Test for Service Placement and Speed. The decision to use this test was based on validity coefficients of .72 for service placement and .89 for service speed. It was also chosen for the expediency with which it could be given. For this test, the service court was marked off into six areas, with each area counting a certain number of points from one to six. The back court, from the service line to the base line, constituted zone one of the speed measure; an area from the base line back ten feet constituted zone two, and the area from the ten foot mark back another ten feet constituted zone three. The area beyond the second ten-foot mark constituted zone four. (See Figure 3, page 23.)

The purpose of the test was to measure the speed according to the number of the zones in which the ball bounced the second time, after landing in the proper service court. The higher the zone number, the higher the score. The accuracy measure was also determined by numbers, the higher the number, the more difficult the

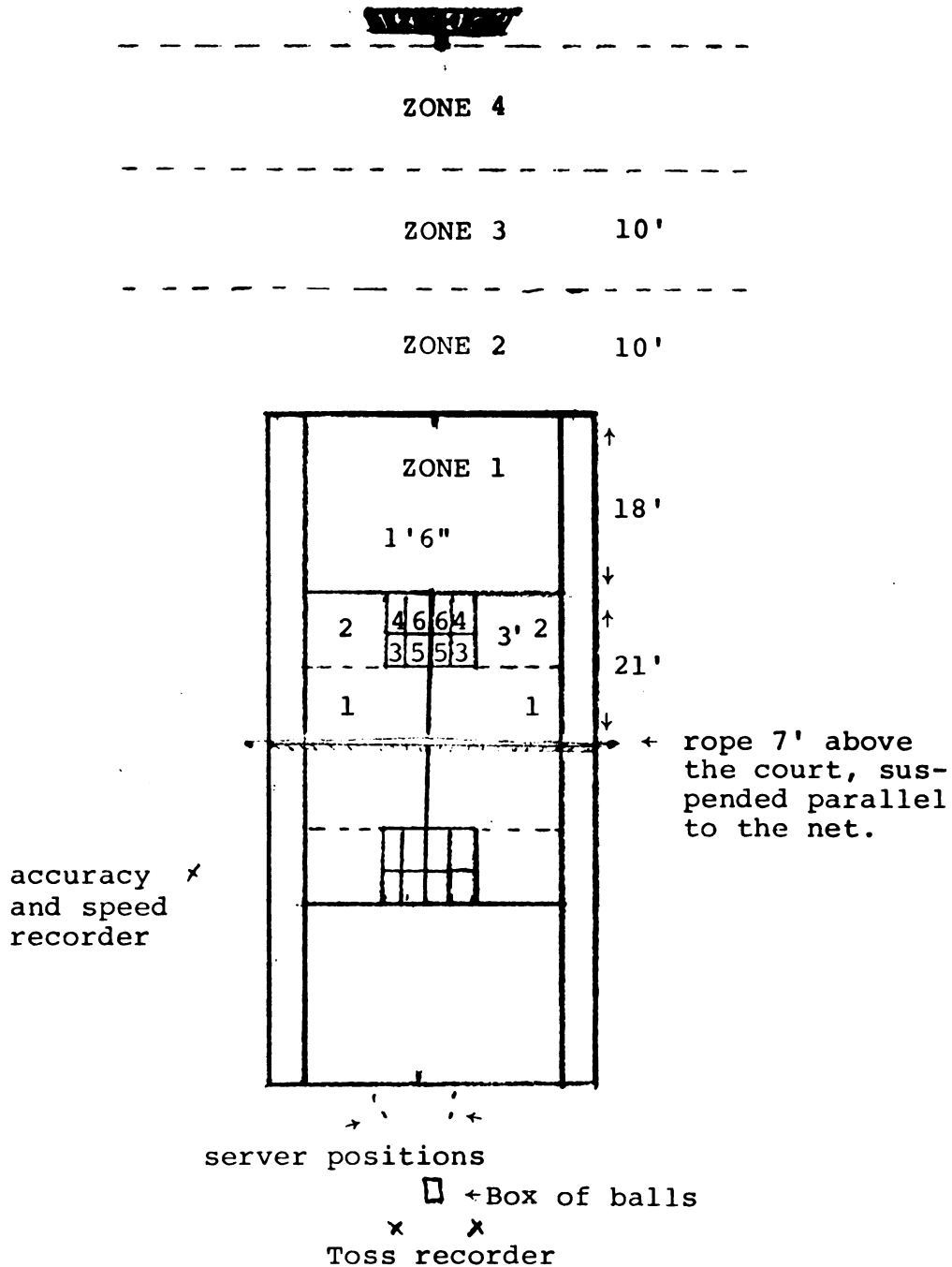


Figure 3.--Diagram of Hewitt Test. The numbers 1,2,3,4,5,6 in the boxes indicate the number of points scored for hitting those areas. Those are accuracy scores. The zones are the speed scores.

target. If a serve did not land in the proper service court, the server was given a zero for accuracy and speed. A rope extending seven feet above the court, parallel to the net, and directly over the net was used to determine the height of the ball. If the ball went over the rope, it was considered "out," and the server was given a zero for the serve.

Each person served ten balls. The highest possible score one could receive was a "60" for accuracy and a "40" for speed. To reduce the amount of tension experienced by the participants, each subject was allowed to take ten warm-up serves into both the forehand and the backhand service courts of a court which was set up just as the testing court. For the test, each woman served into both the forehand and the backhand service courts. The investigator administered the test and the accuracy and speed were recorded by the coach of the men's varsity tennis team. The investigator recorded the stance and tossing area.

#### Instruments and Equipment

The court designations for the Hewitt test were marked with chalk in both the forehand and backhand service courts, on each side of the net, to accommodate right and left-handed players. To help the recorder more efficiently determine the area where the ball was tossed and the foot positions, marks indicating the general foot position area

for the fixed stance were made three inches behind the base line, one and one-half feet from either side of the center mark on the base line. (See Figure 3, page 23.) The "fixed-foot" servers were expected to stand in the marked area. The "directional-foot" servers were expected to use the marking for the foot farther from the net as a guide for the position of her foot which was farther from the net. As a reference for the person who was observing the tosses, six planks, each two feet wide and four feet high were placed side-by-side, four feet above the ground along the fence behind the base line, on each side of the court, in such a way that three planks stood on each side of the center mark. Planks one, three, and five were painted black with white numbers two feet high with three-inch lines; planks two, four, and six were painted white with black numbers of the same dimensions. (See Figure 3, page 23.) The purpose of this was to help determine the height and direction of the ball. The recorder stood on the opposite side of the court from the server, and directly opposite her. She recorded the area of the toss as it appeared against the planks behind the server.

The instructor was the same for both groups. Testing was done under the same conditions. The students used their own racquets and the balls used for testing were newly opened and checked for freshness. (The check was made because occasionally balls lose their pressure

in the cans before they are opened, thus causing them to give little resistance when hit by the racquet.) Twenty-four cans of Wilson Championship tennis balls were used in the test. The balls were placed in boxes four feet directly behind the center mark of the base line.

### Statistical Analysis

At the end of the course each group was administered a post-test on the Hewitt serving test and a gain score was recorded from each woman's pre-test and post-test scores for accuracy and for speed. With  $\alpha$  set at the .10 level, the gain scores of each woman in Group I were correlated with her partner in Group II. A t-test for independent samples was computed on the gain scores to determine the significance of the difference of the scores. For the purpose of this study, the researcher based her conclusions only on data obtained when the subject was serving into the court diagonally behind her.

## CHAPTER IV

### ANALYSIS AND PRESENTATION OF DATA

The purpose of this study was to test the difference in the accuracy and speed yielded by two different serving stances and their respective tosses. The two methods, the "directional-foot" position, and the "fixed-foot" position, were taught to college women, beginning tennis players.

Originally, 24 subjects were to be used in the study. However, only 18 completed the course. Pre-test and post-test data were gathered on 18, normal college women ranging in age from 18 to 23.

#### Results of the Experimental Analysis

##### Test Scores

After the pre-test was given, two groups of nine girls each were set up, matching the girls in each group according to the similarity of their pre-test scores. Group I, using the "directional-foot" position method, showed an average gain score of zero when the pre-test and post-test scores for accuracy were compared. This group

showed an average gain of 1.11 on speed scores. Group II, the "fixed-foot" position group, showed an average gain of 1.33 in accuracy scores and an average gain of 4.22 in speed scores. (See Table I.)

When the individual gain scores for accuracy in each group were correlated, the gain score coefficients for accuracy and speed were .29 and .51 respectively. With degrees of freedom at seven and  $\alpha$  set at .10, the critical value was .58. Therefore, since neither of the correlation coefficients were significantly different from zero to warrant a t-test for dependent samples, a t-test for independent samples was run on the gain scores.

The Cochran-Cox t-test for independent samples was computed to test the significance of the difference in the gain scores for both speed and accuracy in the two groups. (See Table II.)

The t-score recorded for accuracy was .23, indicating that there was no significant difference in the accuracy yielded by the "directional-foot" position and the "fixed-foot" position. In the speed scores, however, a t-score of 2.10 was recorded indicating that there was a significant difference in the speed yielded by the two methods.

The low gain scores for each group in both speed and accuracy, compared with a general increase in daily scores in these areas, indicated to the investigator that

Table I.--Average Gain Scores for Accuracy and Speed with Pearson Product Moment Correlation Coefficients and Critical Values at the .10  $\alpha$  Level.

	Pre-Test Average	Post-Test Average	Average Gain	Coefficient
Group I	5.5	5.5	0	
Geoup II	6.1	7.4	1.3	.29
Group I	4.2	5.3	1.1	
Speed				.51
Group II	3.6	7.8	4.2	
				$\alpha$ level .10 Critical Value .58



Table II.--T-Tests for Accuracy and Speed.

t-test	df	$\alpha$	Critical Region of rejection	t-score	Conclusion
Accuracy	16	.10	$ t  \geq 1.75$	.23	no significant difference at the .10 level of confidence.
Speed	16	.10	$ t  \geq 1.75$	2.10	A significant difference at the .10 level of confidence.

the tension of final exam time could have been a negative factor in the post-test. In studying the areas in which the balls were tossed (page of the Appendix), it appears that, under the stress of the test, subjects using the "directional-foot" method showed a tendency to use the "fixed-foot" method of tossing, while subjects using the "fixed-foot" method tended to use it consistently throughout the test.

## CHAPTER V

### SUMMARY, CONCLUSIONS, RECOMMENDATIONS

#### Summary

It was the purpose of this study to investigate the effectiveness of two different methods of serving on the accuracy and speed of the service deliveries of college women, beginning tennis players. The subjects were comprised of 18 normal college women between the ages of 18 and 23. All subjects were pre-tested on serving using the Hewitt Test for Service Placement and Speed. Two comparison groups of identical size matched according to pre-test scores were used. One group was taught the "directional-foot" position method, and the other was taught the "fixed-foot" position method. Instruction for both groups lasted 25 days. Both groups were post-tested after the instructional period using the same Hewitt test.

The results were analysed by using the correlation coefficients of the individual gain scores in each group and the significance of the difference of the gain scores was determined by a t-test of independent samples.

### Conclusions

Based on the analysis of the data presented the following conclusions have been established.

1. There was no significant difference in the accuracy in service deliveries yielded by the "directional-foot" position and the "fixed-foot" position.

2. There was a significant difference in the speed of service deliveries yielded by the "directional-foot" and "fixed-foot" positions.

3. The speed of service deliveries yielded by the "fixed-foot" position was significantly greater than that yielded by the "directional-foot" position.

### Recommendations

The following recommendations are submitted by the investigator as a result of this study:

1. A similar investigation could be made using a larger number of subjects.

2. Women who have an intense desire to learn to play tennis should be used for the study.

3. A third group should be used, this one employing the "fixed-foot" position method of tossing and the "directional-foot" method of foot-positioning.

4. If the experiment is given during a school term, the post-test should be given at a time other than final exam time, if at all possible.

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## APPENDICES

## APPENDIX A

### Raw Data Group I

## RAW DATA

GROUP I PRE-TEST ACCURACY/SPEED SCORES  
May 26, 1976

Serve:	1	2	3	4	5	6	7	8	9	10	Total
Jackson	0/0	0/0	1/1	0/0	2/1	1/1	3/1	1/1	2/2	1/1	11/8
Hack	2/1	0/0	0/0	2/2	0/0	2/1	0/0	0/0	1/1	2/1	9/6
Hill	0/0	0/0	0/0	0/0	2/1	1/1	1/1	2/2	1/0	1/3	8/8
Minc	0/0	2/1	0/0	1/1	2/1	2/1	0/0	0/0	0/0	0/0	7/4
Beresford	2/1	1/1	1/1	0/0	0/0	0/0	0/0	0/0	1/1	1/1	6/5
Hoerner	0/0	0/0	0/0	0/0	0/0	2/1	0/0	1/0	0/0	2/2	5/3
Richardson	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Parton	0/0	0/0	0/0	0/0	0/0	1/1	0/0	1/1	0/0	0/0	2/2
Greenhill	0/0	0/0	0/0	1/1	0/0	0/0	0/0	0/0	1/1	0/0	2/2

## RAW DATA

GROUP I POST-TEST ACCURACY/SPEED SCORES  
June 3, 1976

Serve:	1	2	3	4	5	6	7	8	9	10	Total
Jackson	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	2/3	2/3
Hack	0/0	0/0	3/2	0/0	2/2	1/1	1/1	0/0	2/2	2/2	11/10
Hill	0/0	0/0	1/1	0/0	0/0	4/2	0/0	0/0	1/2	6/2	12/7
Minc	2/2	0/0	0/0	0/0	0/0	0/0	0/0	0/0	2/2	1/2	5/6
Beresford	0/0	1/1	0/0	0/0	1/2	0/0	0/0	0/0	0/0	2/2	4/5
Hoerner	0/0	0/0	0/0	0/0	0/0	0/0	0/0	3/3	0/0	0/0	3/3
Richardson	0/0	1/1	1/1	0/0	0/0	2/2	0/0	0/0	0/0	0/0	4/4
Parton	0/0	0/0	2/2	0/0	0/0	0/0	0/0	0/0	0/0	0/0	2/2
Greenhill	1/1	2/2	1/2	1/1	0/0	0/0	0/0	1/1	1/1	0/0	7/8

## APPENDIX B

### Raw Data Group II

## RAW DATA

GROUP II PRE-TEST ACCURACY/SPEED SCORES  
May 26, 1976

Serve:	1	2	3	4	5	6	7	8	9	10	Total
Range	0/0	0/0	1/1	1/1	1/1	2/1	0/0	0/0	0/0	5/1	10/5
Stone	1/1	0/0	1/1	0/0	0/0	0/0	6/1	0/0	0/1	1/1	9/4
Gruenwald	0/0	1/1	0/0	1/1	2/1	2/1	0/0	1/1	0/0	2/1	9/6
Crossett	0/0	0/0	0/0	0/0	1/0	0/0	1/1	4/1	0/0	1/1	7/3
Fosket	4/1	0/0	2/1	0/0	0/0	0/0	0/0	0/0	0/0	0/0	6/2
King	1/2	2/2	2/1	0/0	1/1	0/0	0/0	0/0	0/0	0/0	6/6
Mathiott	1/1	0/0	0/0	2/1	0/0	2/2	0/0	0/0	0/0	0/0	5/4
Podeyn	0/0	0/0	0/0	0/0	0/0	0/0	1/1	1/1	0/0	0/0	2/2
Conson	1/1	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1/1

## RAW DATA

GROUP II POST-TEST ACCURACY/SPEED SCORES  
June 3, 1976

Serve:	1	2	3	4	5	6	7	8	9	10	Total
Range	0/0	4/2	1/1	0/0	1/1	0/0	0/0	0/0	2/2	1/1	9/7
Stone	2/3	3/3	1/2	0/0	0/0	0/0	4/2	5/2	0/0	0/0	15/12
Gruenwald	0/0	1/2	0/0	0/0	0/0	1/2	1/1	0/0	0/0	1/2	4/7
Crossett	0/0	0/0	2/2	0/0	2/2	0/0	0/0	0/0	3/2	0/0	7/6
Fosket	0/0	2/3	0/0	2/3	0/0	0/0	0/0	0/0	1/2	1/2	6/10
King	0/0	0/0	0/0	2/2	0/0	2/2	1/2	1/1	0/0	0/0	6/7
Mathiott	0/0	0/0	2/2	2/2	2/2	0/0	0/0	0/0	0/0	1/1	7/7
Podeyn	0/0	1/1	2/1	0/0	0/0	0/0	0/0	2/2	1/1	1/1	7/6
Conson	2/3	0/0	0/0	0/0	2/3	0/0	0/0	2/3	0/0	0/0	6/9

## APPENDIX C

### Toss Areas for Court Behind Server

## RAW DATA

## TOSS AREAS FOR COURT BEHIND SERVER

[illegible]



## APPENDIX D

### An Introduction to Tennis

AN INTRODUCTION TO TENNIS

BY

BECKY SANKNER

AN INTRODUCTION TO TENNIS

By

Becky Sankner

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## TABLE OF CONTENTS

CHAPTER I	
A Brief History of Tennis.....	1
CHAPTER II	
Terms in Tennis.....	7
CHAPTER III	
Basic Rules and Etiquette,....	12
CHAPTER IV	
Tennis Equipment.....	18
CHAPTER V	
Points to Remember in Stroking.....	22
CHAPTER VI	
Conditioning Exercises.....	30
CHAPTER VII	
Strategies.....	33

## CHAPTER I

### A Brief History of Tennis

Tennis as we know it today is actually lawn tennis. The game was introduced in 1873 to a London garden party by Major Walter Clopton Wingfield. He made the game of court tennis, which had come to England from France several centuries earlier, into a more practical game which could be played outdoors. He originally named it Sphairistike, after the ancient Greek game of handball from which court tennis descended. His game caught on much more quickly than its name. Major Wingfield did not appreciate references to his game as the game of "Sticky", consequently, in 1874, he changed the name to "tennis", from the French term "tenez". He added the adjective "lawn" to indicate that it was to be played outdoors. Along with the French name, he adopted the French system of scoring. The system, which is almost identical to the system used by the French in the 1500's, is the one we use today. One difference is the use of the term "forty", instead of "forty-five". Originally, the scoring was divided into units of fifteen.

Since tennis had become so popular in Britain, Major Wingfield decided to spread the game about the British colonies. By this time, ofcourse, the United States had divorced itself from <sup>this</sup> group, and it took a trip to Bermuda for the Americans to discover the game. The trip was made by Mary Ewing Outerbridge, in 1874. Miss Outerbridge had everything necessary for tennis to be developed in the United States, an enthusiastic interest in the game, the wherewithal to purchase the necessary equipment, and a cooperative brother who was an influential member of the Staten Island Cricket and Baseball Club. The Club established two courts in a corner of its grounds, and tennis was thus formally introduced to the United States.

While New York Athletic Clubs and the Ivy League institutions were still trying to justify the purpose of such a sport in developing the ideal masculine character, the English were holding the first national tennis championship. This was held at Wimbledon in 1877. The United States followed suit in 1880 with its own tournament. An attempt was made, at least, but it is one of those things which is not much talked about. We ran into the unfortunate combination of an undeveloped set of rules, and a well-developed set of tennis alibis. From this incident, a meeting of responsible tennis enthusiasts was held in New York City, in May of 1881. This marked the birth of the United States Lawn Tennis Association, (USLTA). A primary purpose of the organization was to develop a uniform set of rules. The success of this endeavor was to be seen in the rather smoothly run United States National Championships held at Newport, Rhode Island in the same year.

Tennis continued to progress in an inconspicuous way, and in 1900, a trio of men from the United States invited a group of Englishmen over for a match. This was to become an annual event known as the Davis Cup match, in honor of Dwight F. Davis, the member of the original American trio who donated the cup. The Davis Cup grew, as did tennis, and now includes competition in over fifty countries.

As tennis spread throughout the world, it seemed necessary to develop an organization responsible for unifying its rules on an international scale, thus the International Lawn Tennis Federation was established in 1913. Presently, it is made up of ninety-three national associations, including the USLTA. (The International Lawn Tennis Federation will hereafter be referred to as the ILTF.)

In 1923, a group of United States women invited a group of British women over for a team match, very simi-

lar in structure to the Davis Cup. The trophy for this was donated by Mrs. Hazel Hotchkiss Wightman, and today, these team matches which alternate between the United States and Britain, are known as the Wightman Cup Matches.

Despite the almost complete lack of financial gain, tennis continued to progress on an international scale, predominately in the United States and Australia, with the occasional emergence of Great Britain, France, and various other countries.

Tennis suffered during the two World Wars, but it responded to their catalytic effects, as did many other facets of civilization. Previous to World War II, men's and women's tennis was primarily a game of concentration and strategy, as well as stamina. Power tennis was merely glimpsed in the games of Maurice McLoughlin, Bill Tilden, and Donald Budge. It was after this war that the power game came into its own, with young players such as Jack Kramer and Pancho Gonzalez coming to the fore. These strong Americans found rough-going in the early Fifties, however, due to a group of determined Australians. Among these were, Ken Rosewall, Lew Hoad, Ashley Cooper, Mal Anderson, Neale Fraser, and later, Roy Emerson, Rod Laver, Fred Stolle, and still later, John Newcombe and Tony Roche. The superiority of these men is evidenced by the fact that Australia held the Davis Cup fifteen times from 1950 to 1970, while the United States held it only six.

The United States has re-grouped, however, and has produced some fine players, including, Stan Smith, Arthur Ashe, Cliff Richey, and Jimmy Connors. Unfortunately, the United States has not yet produced a group of players who match the court demeanor of the Australian sportsmen.

The United States women have had a slightly better record in Federation Cup play, since 1963, when it was established by the ILTF as a parallel for the Davis Cup. At

least thirteen countries have competed in this team event which the Australians and Americans have dominated. <sup>P</sup>/Among top women players throughout the years are; Hazel Wightman, May Sutton Bundy, Helen Wills Moody, Helen Jacobs, Sarah Palfrey, Doris Hart, Maureen Connolly, Althea Gibson, Darlene Hard, Nancy Richey Gunter, Billie Jean King, and Chris Evert for the United States, Suzanne Lenglen, and Franceise Durr for France, Christine Truman Janes, Ann Haydon-Jones, and Virginia Wade for Great Britain, Leslie Turner, Margaret Court, and Evonne Goolagong for Australia, and a number of women from the Netherlands, Brazil, Czechoslovakia, and South Africa. As in men's tennis, women from the United States, Australia, and Britain have dominated the game.

As tennis has developed, so has the prestige of certain tournaments, these are; The All-England Championships at Wimbledon, The United States Open at Forest Hills, the Australian Open, and the French Open. It is winning these four tournaments in one year which constitutes winning the Grand Slam in tennis. This has been accomplished by, Don Budge, in 1938, Maureen Connolly, in 1953, Rod Laver, in 1962 and 1969, and Margaret Court in 1970.

Through the years, and through the tournaments, until 1968, when open tennis became a reality, the game had been organized, sponsored, and run by the ILTF and its various national, sectional, and district Associations. In 1968, amateur tennis reluctantly opened its tournaments to the pros. Capitalizing on the publicity the pros were getting since they had returned to the fold of the amateur tournaments, Lamar Hunt of Texas, and several associates established the World Championship Tennis organization. This is a professional organization in which players sign contracts to play certain tournaments each year, and, in return, receive a set salary, regardless of



their wins or losses. This organization caught on quickly, and has grown from its original membership of eight men, to over sixty-four men.

A similar situation has developed with the women, in the establishment in 1970, of the Virginia Slims. This organization was spearheaded by Gladys Heldman, Billie Jean King, Ann Haydon-Jones, and Rosie Casals, in conjunction with the Reynolds Tobacco Company.

In 1973 a new method of playing tennis for profit was introduced in the form of World Team Tennis. The team tennis concept is probably the most startling break from the traditional tournament and scoring concept, and has caused just one more point of controversy between the ILTF and the professional organizations.

It seems that the ILTF and its Associations look upon the attitudes and activities of the professional organizations as expressions of ingratitude and rebellion. The more extreme players who have joined the professional groups on the other hand, look at the amateur organizations as rather archaic relics who hold conscience as an obstacle to their freedom to make money.

It is hard to speculate what will come of these changing concepts, but it is certain that it will be understood by an increasingly large segment of society. Tennis, because of its practicality, convenience, and healthful after-effects, is one of the fastest growing sports in the world today. It is hard to believe that less than ten years ago, players such as Rod Laver and Ken Rosewall were giving exhibitions in the streets of large cities, before a handful of people, just to promote the game.

Regardless of the popularity of the various professional organizations, the producers of the tennis talent will probably continue to be the many district, sectional, and national Associations of the ILTF. It is the member clubs, and teaching professionals, and those who certify

the teachers, who guide the young players and provide the tournament groundwork they need to reach the top.

## CHAPTER II

### Terms in Tennis

The following is a partial glossary of highly used tennis terms. Some of the terms will be found defined in other sections of the booklet. In some cases, words which are not found here may be found in Chapter III or Chapter IV.

**Ace-** This is a term often used in reference to the service delivery, to indicate that the person who hit the ball hit it so well, that his opponent could not possibly receive it.

**All-court game-** This describes the game of a player who is able play any stroke well, from any court position.

**Alley-** The area on each side of the court created by the outer sideline. This area is used as the side boundaries in doubles.

**Amateur-** A player who does not accept money as a prize for winning a tournament.

**Angle game-** A game in which the player employing it hits his shots mainly in an angled direction to the sidelines.

**Approach shot-** A hard-driven shot meant to land deep in an opponent's court in order to force him into a defensive position and allow the attacker to move to the net.

**Australian doubles formation-** A formation in which the server and his partner stand in line with each other while the server is serving.

**Backcourt-** The area of the court between the service line and the baseline.

**Backhand-** A groundstroke in which the racquet starts in a position across the body.

**Backswing-** The portion of the swing where the player brings the racquet back in order to give a forceful impetus to the ball.

**Baseline-** The back boundary line on the court which runs parallel to the net.

**Baseline game-** A type of strategy in which the player stays in the back court, by the baseline, most of the time.

**Big game-** A type of strategy in which the player serves quite hard and follows his serve to the net.

**Break-** The action of the ball as it bounds up from the court.

**Broken service-** A game in which the server lost.

**Bye-** In an elimination tournament, the opportunity to proceed to the next round without playing a match.

**Center mark-** The mark on the baseline indicating the center of the court's width.

**Center service line-** The line running perpendicularly to the net, in the center of the court, ending at the service line, indicating the separation between the left and right service courts.

**Center strap-** A strap running down the middle of the net which secures the net in a certain position.

**Chip-shot -** A groundstroke hit in the same manner as a volley. A similar stroke is the chop.

**Circuit-** A series of tournaments which are entered en toto by the same group of players.

**Clay-** A term which is used to refer to any soft court made of clay, dirt, or any sandy composition.

**Closed tournaments-** Tournaments which restrict those who are entering by requiring certain specified qualifications.

**Cross-court-** A shot in which the ball goes diagonally from one side of the court to the other.

**Deep-** A ball that lands back by the baseline.

**Default-** The award given a player whose opponent fails to play the match. As a verb, it is also the act of not playing a scheduled match.

**Defensive shot-** A shot which is made without choice, or a weak return.

**Doubles-** A game in which there are two players on each side.

**Double fault-** Called when a server misses both his chances to serve into the proper court.

**Double-hit-** A ball hit twice before it goes over the net.

**Draw-** The method employed in matching players to compete against each other in a tournament. Names are drawn, usually at random, from a container. The resulting matches are the matches for the tournament.

**Down-the-line shot-** A ball hit parallel to and close to, the sideline.

**Draw sheet-** A sheet that shows the scheduled matches of a tournament. Results of the matches are also recorded on this sheet.

**Drive-** A sound, well-hit groundstroke, usually hit quite hard.

**Drop shot-** A ball hit after it has bounced, which will just barely clear the net and drop on the opposite side.

**Earned point-** A point won because the ball was so well hit, not because of an opponent's error.

**Fast surface-** Courts such as grass, cement, and wood which cause the ball to bounce fast and low, due to skidding. On these courts, there is a great deal of resistance to the ball.

**Fault-** The failure of a served ball to go into the proper court.

**Flat serve-** A serve hit hard, without spin.

**Follow-through-** The part of the stroke which follows the contact of the racquet with the ball.

**Foot fault-** A violation caused by a server's foot touching or crossing the baseline before the server has hit the ball.

**Forecourt-** The area between the service line and the net.

**Forehand-** A stroke in which the racquet starts out to the side of the body and moves across in front of it as impetus is given to the ball.

**Frame-** The portion of a racquet which encircles the face and holds the strings.

**Gallery-** A term used to refer to the spectators at a tennis match.

**Grip-** The method of holding a racquet for a certain shot; also, the handle of the racquet.

**Ground stroke-** A stroke used to hit the ball after it has bounced once.

**Half volley-** A ball which is hit just after it has begun to leave the ground.

**Head-** The part of the racquet which consists of the frame and the stringed area.

**Hard courts-** Courts which have surfaces which offer great resistance to the ball. Examples are; asphalt, covered asphalt such as Laykold or Dynaturf, cement, or wood.

**Heavy-duty balls-** Balls which have a thicker layer of fuzz for the purpose of lasting longer on hard surfaces.

**High ball-** A ball which bounces to at least shoulder height.

**Hitting down on the ball-** Hitting the ball in such a way as to finish the swing with a downward motion.

**Invitational tournament-** A tournament in which players compete only by invitation.

**Independent pro-** A player who is not under a professional contract.

**Let-** A ball which is served into the proper court although it has touched the top of the net in flight. Any point which is replayed.

**Linesman-** A person who calls the balls which go out over a designated line during a tournament match.

**Lob-** A stroke which causes the ball to go high over the head of the man at net.

**Long-** A term used to indicate that a ball has gone out over the baseline. It also refers to a served ball which goes out over the service line.

**Mixed doubles-** A doubles combination made up of one man and one woman.

**Net ball-** A ball which touches the top of the net while it is in play. This does not include a ball which has just been served.

**Net game-** A strategy in which a player plays from a volleying position at the net.

**No- man's land-** The area between the service line and the baseline, considered a risky position in which to stand, because it is where the ball is likely to be landing.

**Not up-** A term used to indicate that a player did not contact the ball before it had bounced twice.

**Offensive volley-** A volley hit at a level higher than the net.

**Opening-** An error on the part of a player which allows his opponent the opportunity to make a winning or offensive shot.

**Overhead-** A shot hit with the racquet coming through the ball from an overarm position.

**Rallying-** The act of hitting a ball back and forth over the net.

**Referee-** The person who is in charge of the tournament.

**Round robin-** A type of tournament in which each participant plays all the other participants, with the player having the best record at the end being the victor.

**Runner-up-** The player who comes in second in a tournament.

**Rushing the net-** A strategy in which one player tries to pressure his opponent by moving quickly to the net.

**Seeding-** Organizing competitors in such a way as to keep

players with exceptionally good records from meeting each other until the final rounds of the tournament.

**Service line-** The line which runs parallel to the net and forms the back boundary of the service courts.

**Setup-** An easy shot, usually unintentionally hit, which allows an opponent to hit a very well placed return.

**Side line-** A line on either side of the court which forms the side boundaries of the court. In doubles, the outer side line is used. In singles, the inner line is used.

**Spinning for serve-** A method of determining who will serve first, by spinning the racquet of one of the players. The player who has called the side of the racquet which faces upward at the end of the spin, has the choice of serving first, or relinquishing that opportunity and choosing a side first.

**Straight sets-** A term used to indicate that a player won a match by all the sets which were played.

**Tournament-** The term used to refer to official tennis competition.

**Volley-** A stroke in which the ball is hit before it touches the ground.

**Western grip-** A grip in which the 'V' between the thumb and forefinger is almost at the bottom of the racquet.

**Wood shot-** A shot in which the ball is hit with the wooden portion of the racquet.

## CHAPTER III

### Basic Rules and Etiquette

There are a variety of rules which comprise the structure of tennis. The rules listed in this chapter are excerpts from the Official Code of the International Lawn Tennis Federation as reported in the U.S.L.T.A. Encyclopedia of Tennis, edited by the Staff of the U.S.L.T.A., and copyrighted in 1972. The excerpts are not printed verbatim, but are merely summaries of the rules.

**Court Dimensions-** A singles court is twenty-seven feet wide and seventy-eight feet long. The only difference between the dimensions of a singles court and a doubles court is the width of the side boundaries. In doubles, the width of the court is extended to thirty-six feet. The service line is twenty-one feet from the net and runs parallel to the net for the entire width of the singles court. The area from the service line to the baseline, which forms the back boundary, is eighteen feet in length. The service courts are divided into areas thirteen feet six inches wide, and twenty-one inches long. The doubles boundaries are four and one-half feet from each singles side line. The net should be three feet, six inches high at each end, and three feet high at the center of the court. A center mark running from the center of the baseline perpendicularly, four inches into the court should be marked to help guide the server into the proper serving position.

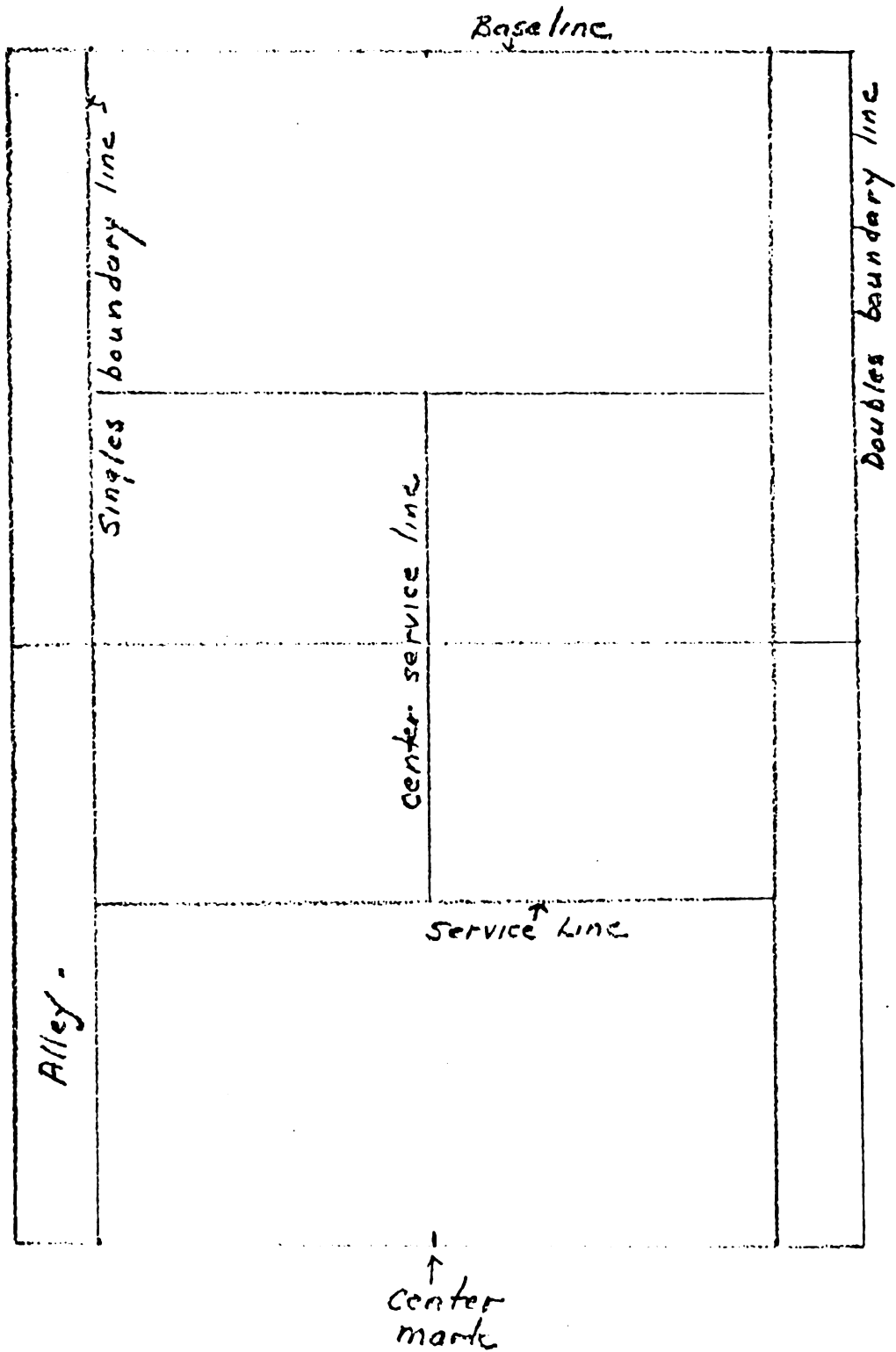
**Choice of Side or Service-** At the beginning of a match, the choice of side or service is determined by a toss. The winner of the toss may choose to serve first, or he may choose to receive on a particular side of the court, thereby relinquishing his right to serve first. If a player chooses to serve first, his opponent has the right to choose sides.

**Service Delivery-** A player preparing to serve must stand with both feet behind the baseline, on the side of the center mark which is at a diagonal to the service court toward which he is aiming. He must then project the ball into the air in any direction, and hit it to the intended area before it bounces.

**Foot fault-** A player who changes his position during the serve by walking or running, or who steps on or over the baseline or the center mark before he has contacted the ball, commits a foot fault, and his serve



# COURT



is not considered good.

**From Alternate Courts-** A server shall start play by serving from his right court, diagonally into his opponent's right court. After that point, he shall then serve into his opponent's left court. He shall proceed to serve alternately in this manner until the game is over.

**Faults-** A serve is a fault if; the player foot faults while executing it, if it hits any where outside of the intended service area before it has bounced, or if it hits a permanent fixture other than the net before it has bounced.

**Service After a Fault-** If the first serve is a fault, the server has the opportunity to serve one more ball into the proper court. If the ball does not land in the court, the server has committed a double fault and he loses the point.

**Receiver Must Be Ready-** A person in the receiving position must be ready before the server serves. If he is not, and therefore does not attempt to return the service, the serve must be replayed.

**A Let-** A let is played any time there is an legitimately recognized interruption in play. When a let is called the point is replayed.

**The Service is a Let-** The service is a let if the served ball hits the top of the net in flight, but still lands in the proper court. It is also a let if the receiver is not ready.

**When the Receiver Becomes Server-** The receiver becomes server at the end of a game. The server and receiver alternate after each game.

**Player Loses Point-** A player will lose a point any time he does not hit a ball by the time it has bounced once. He will also lose a point if a ball he hits lands anywhere outside of the designated boundaries. He will lose a point if his ball fails to go over the net, or if it hits a permanent object before it has bounced once. He will lose a point if he touches a ball before it has come over to his side of the net, or if any part of his body, clothing, or racquet touches the net while the ball is in play. He will lose a point if the ball hits any part of his body or clothing rather than his racquet, as he is attempting to hit the ball. He will also lose a point if he hits a ball more than once as he is attempting to get the ball back over the net.

**Ball Falling on Line- Good-** A ball which lands on a boundary line is considered good. The ball is good if any part of it hits the line.

**Ball Touching A Permanent Fixture-** If a ball hits an object before it touches the ground, provided the object is a permanent fixture, other than the net and its supports, the player who hit it loses the point.

**Good Return-** A return is good if; 1) the ball passes over any part of the net and lands either on the lines of, or within the proper court, 2) the ball is returned from outside the court, outside the net posts, either above or below them, and lands in the proper court, 3) the ball is hit into the proper court and rebounds over the net, and the player who was to return it, reaches over the net and hits it before it bounces, 4) a player's racquet passes over the net after he has hit the ball, provided the racquet follows the ball over the net, 5) a player is able to return a ball which has struck another ball on the court during the first bounce.

**The Game-** A game is made up of points, the first point a player wins is fifteen, the second is thirty, the third is forty, and the fourth is game for the player who wins the point, provided he is at least two points ahead of his opponent. If, however, the opponents each have forty points, the score is deuce, the next point to be won is an advantage. The game continues until one player has two advantages in a row.

**The Set-** A player must win at least six games to win a set in tennis. He must win at least six games and be at least two games ahead of his opponent. If a player has six games and his opponent has five, he must win at least seven games to win the set.

**(Match)-** A player must win at least two sets to win a match. If each opponent wins a set, a third set is played to determine the winner of the match. An exception to this is some men's events in which the participants must win the best three out of five sets.

**When Players Change Sides-** Players change sides of the court after every odd-numbered game.

**(Play Shall Be Continuous)-** Play is continuous from the first set until the match is finished, unless players split sets, in which case women get a ten minute break at the end of the second set, and men get a ten minute break after the third set.

**Doubles:**

**Order of Service-** Once a doubles team has won the toss, if they choose to serve, they decide who shall serve the first game. That player then serves in the fifth game.

In the second game, a player from the opposing team serves; in the third, the original server's partner serves. In the fourth game, the opposing partner serves. The serving order may be changed at the beginning of each set.

**Order of Receiving-** When a doubles team is first receiving, their receiving order is established, and they keep the same receiving positions throughout the set. They may change positions at the beginning of each new set.

**Service Out of Turn-** If a partner serves out of turn, the player who should be serving does so as soon as the error is discovered, but the points made, or lost, up to the time of discovery count. If an error in the serving order is not noticed until after the game, the order remains in the altered form.

**Error in Order of Receiving-** If players receive in the wrong order, they shall receive in that order until the game is over, and the game shall count. They shall correct the error in the next game in which they are receivers.

**Ball Touching Server's Partner Is a Fault-** If a served ball hits the server's partner, the ball is a fault. If the served ball hits the receiver's partner, the server wins the point.

Tennis etiquette can be placed into two categories; player etiquette, and spectator etiquette. The following are lists of some of the more important points of both.

#### Player Etiquette:

1. When practicing or playing a game, always make sure your opponent is ready before you hit the ball.
2. If your ball rolls onto another court where people are playing, wait until their ball is dead before attempting to retrieve the ball. Wait on the edge of your court, do not run onto their court unless they indicate that you may.
3. If a ball rolls on to your court call a let, if you feel the ball has disturbed you. Then return the ball immediately.
4. If your ball rolls several courts away, stand with your racquet raised to indicate that it is your ball. Do not shout to the players.
5. When playing, or waiting for a court, be as quiet as possible. If you must discuss something with your opponent, walk to the net and talk quietly.

6. Never stall in a game, or between games. Keep play running as smoothly and efficiently as possible.
7. In receiving serve, never return a ball on the first fault, just let the ball go by.
8. It is your responsibility to call all balls which land on your side of the net. If you are not sure whether the ball landed in or out, give your opponent the benefit of the doubt. Call the shot immediately.
9. Never enlist the aid of spectators in making a call.
10. Never question an opponent's call. If you are playing in a tournament, and have reason to believe your opponent is intentionally cheating, call for an umpire immediately. This is quite a severe judgement to make, however, and you are usually better off to assume that your opponent is being honest, because he usually is.
11. Do not show anger on the court.
12. Absolutely never use profanity on the court.
13. The server always keeps score, and he should keep it aloud after every point, unless there is an umpire present.
14. When waiting to receive a serve, do not make distracting movements with your arm or racquet.
15. When playing a close match, do not spend time chatting with your opponent between games, or during a game.

#### Spectator Etiquette

1. Remember that tennis, as any individual or dual sport, requires a great deal of concentration, therefore be as quiet as possible. To cheer and shout as one does at a football game is really a sign of a lack of respect or appreciation for what the players are doing.
2. Do not move about when a game is in progress. Movement at courtside is very distracting to the players. If you must leave the stands, wait until the players are changing courts.
3. Try not to eat food such as pop corn or potato chips during a tennis match, these foods are noisy as are the bags in which they are contained.
4. Never try to help a player make a call. Remember that, unless you are a linesman, you are not in the most advantageous position to judge the ball, or the player's decision on a call. Never label a player a cheater on your spectator evidence.

5. If you must walk behind a court, wait until the point on that court is finished, then hurry across.
6. Remember to applaud fairly. Applaud all good shots and well-earned points regardless of the person who is your favorite. It is often embarrassing to the favorite if no one applauds his opponent.
7. Do not applaud lucky shots or points. Never applaud a player's error.

The key word in tennis etiquette is consideration. One never loses if he is considerate of others. This includes off-the-court etiquette. When a match is finished, an alibi for your defeat is not in order. A good rule to follow is one used by the Australian players, "If you are on the court, you are fit to play, if you are not fit, you should not be on the court." Always congratulate your opponent, and be free to compliment his good points.

These rules and points of etiquette are basic to the game of tennis. When they are followed, one can be sure of a pleasant experience, regardless of the outcome.

## CHAPTER IV

### Tennis Equipment

There are four areas to consider about tennis equipment; attire, balls, racquets and strings, and courts. The first consideration will be attire.

When one is planning to play tennis, one of his first considerations should be the type of shoes he will wear. The best shoes for tennis are thick-soled tennis shoes, preferably white. Basketball shoes, or any other rubber-soled shoes with large indentations on the bottom, should never be worn on a tennis court. The suction created by the indentations are very bad for the court surface. Casual, thin-soled shoes are not very durable in hard play and they do not provide much protection for the feet against the surface.

Along with the shoes, one should wear a pair of thick, absorbent socks. Often, on quite hard surfaces players will wear two pairs of socks. Women will often wear low-cut socks with attachments on the heel to keep the socks from slipping into the shoe.

As far as the clothing goes, shorts and shirts are right for men and women. Women may also choose tennis dresses. Shirts should be made of a knit material, fairly cool and very flexible and durable. The shirts should not be binding in any way. This also holds true for the shorts. Again, these should be of a durable material which will stretch and give easily. Tight-fitting tennis clothes should be avoided whenever possible. As for the proper color, white is still right for tennis clothes. Many clubs allow pastel colors, or colors which they sell in their line of tennis clothes in the pro shop. All clubs will honor white. Cut-offs are generally considered unacceptable, and many clubs will not allow

players wearing them to be on the court. This holds true even for children.

The next consideration will be given to the type of balls one should buy. There are four points to think about in buying balls. The first clue to good balls is the seal of approval on the side of the can. The can should have either the I.L.T.F. or the U.S.L.T.A. seal of approval on it. A second clue is a rush of air that should come from the can as it is opened for the first time. This indicates that the balls have been properly pressurized. A third clue is the feel of the balls. They should be very difficult to squeeze when first opened. If the balls are soft, they will not offer much resistance to the surface and will have poor rebounding action. The fourth clue has to do with the actual bounce of the balls when first opened. They should bounce about waist high when dropped from shoulder height.

A type of ball is produced which is pre-pressurized. This is a good ball to use for practice at the beginning level. It is a bit heavier than a regulation ball, but it will last for quite a long time. Some regulation balls are marked "heavy duty", or "extra heavy duty", these balls are for use on hard surfaced courts such as concrete or asphalt. Unless a box of balls is marked "pre-pressurized", balls should be bought in a can. Balls which are packaged in plastic bags have no guarantee of a good bounce.

Various brands which are highly reputable are; Wilson, Dunlop, Penn, Bancroft, and Slazenger. Of the pre-pressurized balls, Tretorn is the most popular brand at the present time.

Racquets and strings are probably among the most important considerations for a tennis player. The following are some points to remember in buying this



equipment;

1. When buying a racquet, one should take into account the flexibility, weight distribution, and weight, and grip size.
2. Normally, the thinner the shaft, the more flexible the racquet. Steel racquets such as the Wilson T2000 are quite flexible, as are racquets such as the Davis TAD. Bancroft also has some very flexible racquets in its line. Some of the medium flex racquets are the Wilson Jack Kramer, Spalding Pancho Gonzalez, and some of the metal racquets and combination wood and fiberglass racquets such as the Bancroft Competition and the Yamaha Composite. The stiffer racquets include, the Dunlop, the Spalding Smasher, the Wilson Stan Smith, and the Wilson Billie Jean King.
3. Racquets have various grip sizes. The range is as follows;  $4\frac{1}{4}$ ",  $4\frac{3}{8}$ ",  $4\frac{1}{2}$ ",  $4\frac{5}{8}$ ",  $4\frac{3}{4}$ ",  $4\frac{7}{8}$ "; and 5". Most women prefer the  $4\frac{3}{8}$ " and  $4\frac{1}{2}$ " sizes, while men usually prefer the  $4\frac{1}{2}$ ",  $4\frac{5}{8}$ " and  $4\frac{3}{4}$ " sizes. In choosing a grip size, a good key is whether or not the thumb will reach around and cover the fingernail of the middle finger.
4. The weights of racquets are light, medium, and heavy. Most women prefer a light racquet, while most men prefer a light or medium racquet. A racquet which is quite heavy can be a disadvantage, particularly for beginners, because it may put added strain on the arm.
5. There are two types of string which are the most popular, they are gut and tournament quality nylon. Gut is the most expensive and the least durable, but it has the most resiliency. This string is used primarily by better tennis players who have reached a stage where the touch of the racquet is very important to their style of play. String which is similar to gut in resiliency, but less expensive, more durable, and less sensitive to the weather is tournament-quality nylon. This nylon has a gauge which is nearly as thin as gut but it will not shrink in wet weather the way gut will do. There are many different brands of nylon, and some of the better-known are; Vantage, Tournament Nylon, Australian Gut, oil-filled nylon, and Duraflex. Among the better brands of gut (usually lamb) are; VS, Victor Imperial, and Blue Streak.
6. Racquets which are made of wood should be kept in a press when they are not being used. It is always a good idea to cover the strings of a racquet to protect them from the weather, regardless of the type of racquet.

7. When buying a metal racquet, one should consider the amount of give there is in the frame of the racquet to accommodate the action of the strings when they contact the ball. If no accommodation has been made, the strings will probably not last very long because of the excess strain on them where they wind through the frame.

The next, and final consideration is the type of court. There are three types of courts, generally speaking. They are, fast, medium, and slow. The speed of the court refers to the amount of time it takes for a ball to bounce, rebound, and bounce again. The fast courts include, concrete, wood, and grass. Medium courts include asphalt courts, and courts with an asphalt base. Slow courts include courts of clay, dirt, or composition materials. Other courts which fall in any one of these categories, depending on the brand, are the indoor carpet courts.

In building and maintaining courts, the following points may be considered.

1. Asphalt base courts are the most expensive courts to build and among the least expensive to maintain. When properly built, they shed water very well and dry quickly.
2. Grass courts are expensive to build and extremely difficult to maintain.
3. Clay courts are relatively inexpensive to build, but require a great deal of care.
4. Concrete courts are relatively inexpensive to build, and to keep up, but they are quite hard on players' legs and feet.

Actually, all of these courts are very nice to have, and when properly cared for, pay for themselves completely in the enjoyment they render.

## CHAPTER V

### Points to Remember in Stroking

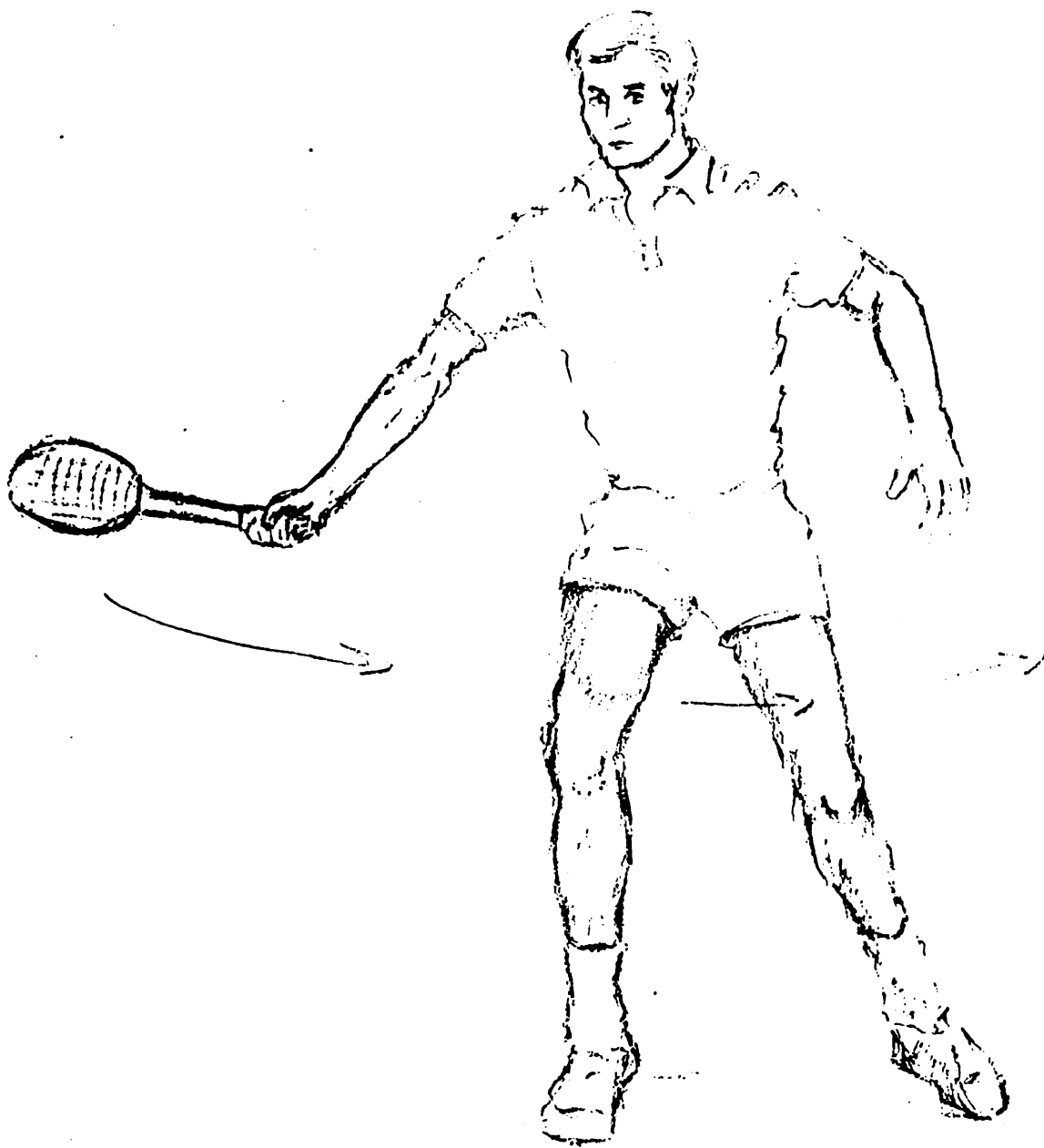
The following lists comprise points which should be remembered in good stroking. They may be used as references in correcting errors, or more appropriately, in keeping the principles of the strokes in mind.

#### Points to Remember in Hitting a Forehand

1. Grip your racquet with the 'V' between your thumb and forefinger on the top, just as though you were shaking hands with it.
2. Stand sideways to the net in a straddled position.
3. Keep your eye on the ball from the time it leaves your opponent's racquet until you hit it. This is a very important point, because, it is the only way to guarantee the ball hitting the center of the racquet; it is also the only way to keep the stroker from getting ahead of the action of the racquet by looking up too soon.
4. Start your backswing as soon as the ball leaves your opponent's racquet, and you are able to determine its direction. It is good to let your opponent's racquet "shove" your racquet back. The racquet does not necessarily have to reach the end of its backswing, but it should be very close to this point.
5. Bring your racquet almost straight back on the backswing, so that at the end of the backswing, the racquet will be at hip-level and parallel to the ground just as you start the forward swing.
6. As you swing, step out on the foot nearer the net. The step is diagonal toward the ball and toward the net. Remember, shift your weight in a sideways motion, from the back foot to the foot nearer the net. It is not a pivot. The foot nearer the net should be parallel to the net, not at right angles to it. If this is not adhered to, there is a tendency to point the foot toward the net, thus facing it as the ball is being hit.
7. Hit the ball as it reaches the foot nearer the net. In so doing, you can put all your weight into the shot, thus making the most efficient of your body. Your weight should be shifted toward the ball and toward the net. Your weight is what creates the force for the ball to go over the net. If it is shifted away from the ball, or the desired direction of the return, there is no assurance that the ball will go in that direction.

8. Keep your swing and shoulders almost completely parallel to the court. You should also, at this point, keep your wrist as stiff as possible when contacting the ball. In hitting the ball, you are working with what is almost a horizontal arc; if there is a variation in the arc, there will be the same variation in the trajectory of the ball. If you do not keep a fairly stiff wrist, except when hitting certain spin shots, the variable thus created may nullify all the work of your arm and body.
9. Remember to bend your knees. First you bend at your knees and then at your hips, never at your waist. The idea of leaning your weight into the ball would be completely nullified if you were to bend at your waist. When you bend at your waist you throw the center of gravity back away from the ball.
10. Stay down while you hit the ball, keep your weight down behind the ball all the way. On this point, remember to let your body follow the racquet through the shot, letting the racquet pull rather than pulling the racquet. You should also keep in mind that if you do take the ball in a straight position, except when it absolutely can not be helped, you will be sacrificing balance.
11. Follow through where you want the ball to go. This generally does not include the fence behind you, or the sky directly above you. It does include the various areas of your opponent's court.
12. Again, remember the idea of the arc, the ball will go in a reverse cross-court direction away from you, if you hit it a little early in the arc, in other words, if you let it get behind the foot nearer to the net. The ball will go straight down the line in front of you if you hit the ball in the center of the arc. If you hit the ball too late in the arc it will go in a severe cross-court direction from you. The key to the trajectory of the ball lies in the timing of the hit. If you vary the point of impact more than a foot or so, the ball will go wide.
13. If your follow-through brings the racquet face either up or down, this will cause a significant variation in the direction of the ball.
14. Having hit the ball, move immediately back to the baseline, facing the net, on your toes. This should prepare you for your opponent's next shot.
15. Keep in mind, there are many variations on the pure forehand stroke. One of these variations is the lob, a shot in which the ball is hit in a high arc, generally above the head of an opponent who has rushed the net. In hitting this shot, you merely dip the racquet a bit

# Forehand



Racquet back to hip level -  
step out - diagonally toward the net  
and toward the ball



Shove the ball back over  
the net.

lower in the backswing, and raise it a bit higher in the follow-through. You do not go at the ball as though you were serving in badminton. This would surely give your opponent the necessary hint of what you had in mind.

Another variation of the forehand is the slice. This shot is used to put a slight backspin on the ball, causing the ball to bounce almost straight up. In order to hit this shot, you merely raise the racquet a bit high in the backswing, tip the racquet back slightly on contact with ball, and shorten the follow-through. None of these movements are to be exaggerated.

One more popular variation of the forehand is the topspin shot. In this shot, the ball is given a little overspin, so that it will take a high bounce which lunges toward the opponent's back court. In this shot, the racquet is lowered very slightly in the backswing, it contacts the ball slightly behind and under it, and rolls just a bit over the top on the follow-through. Topspin is usually put on balls which have bounced lower than hip-level. It is sometimes used as a compensatory measure to pull the ball into the opponent's back court.

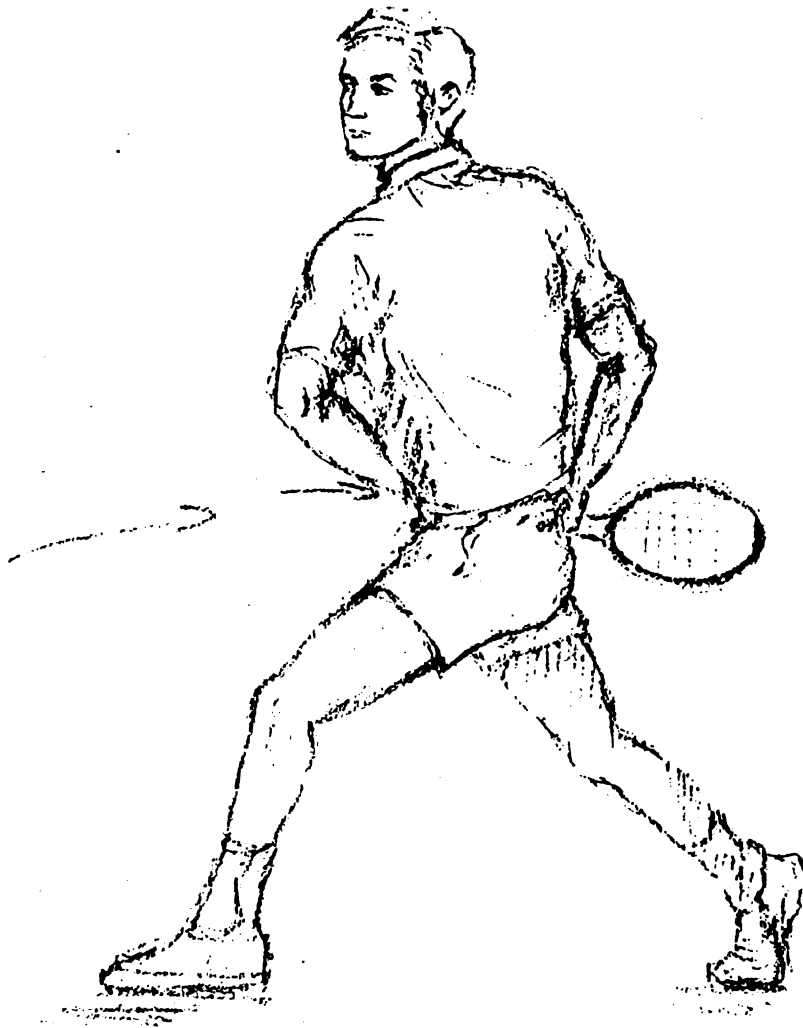
#### Points to Remember in Hitting the Backhand

1. Grip your racquet with your thumb bracing the back side of it. Hold the racquet straight out in front of you. It should be parallel to the ground, perpendicular to your arm, with its face facing you. You should be holding it by the throat with the hand which is not used in swinging the racquet. Grip the racquet in an overhand grip, then raise the thumb up so that it is pushing against the back of the grip. This will feel awkward, but this grip is mainly used to insure proper mechanics in the force behind the swing. Once you understand the principles behind the swing, you may drop the thumb to a more normal gripping position.
2. Stand a bit more sideways to the net than you do on the forehand. You should be almost three-quarters away from the net rather than directly sideways to it. In doing this, you will make more efficient use of the parts of your body used in this shot, namely your back and shoulder.
3. Bring your racquet straight back so that it is resting loosely at hip-level, between the thumb and forefinger of the opposite hand. The racquet at this point, should be parallel to the ground, and its head pointed slightly behind you. The face should be tilted slightly upward, or not tilted at all. The movement to the backswing is very similar to replacing a sword in a sheath hung at your side. Remember, you are resting the rac-

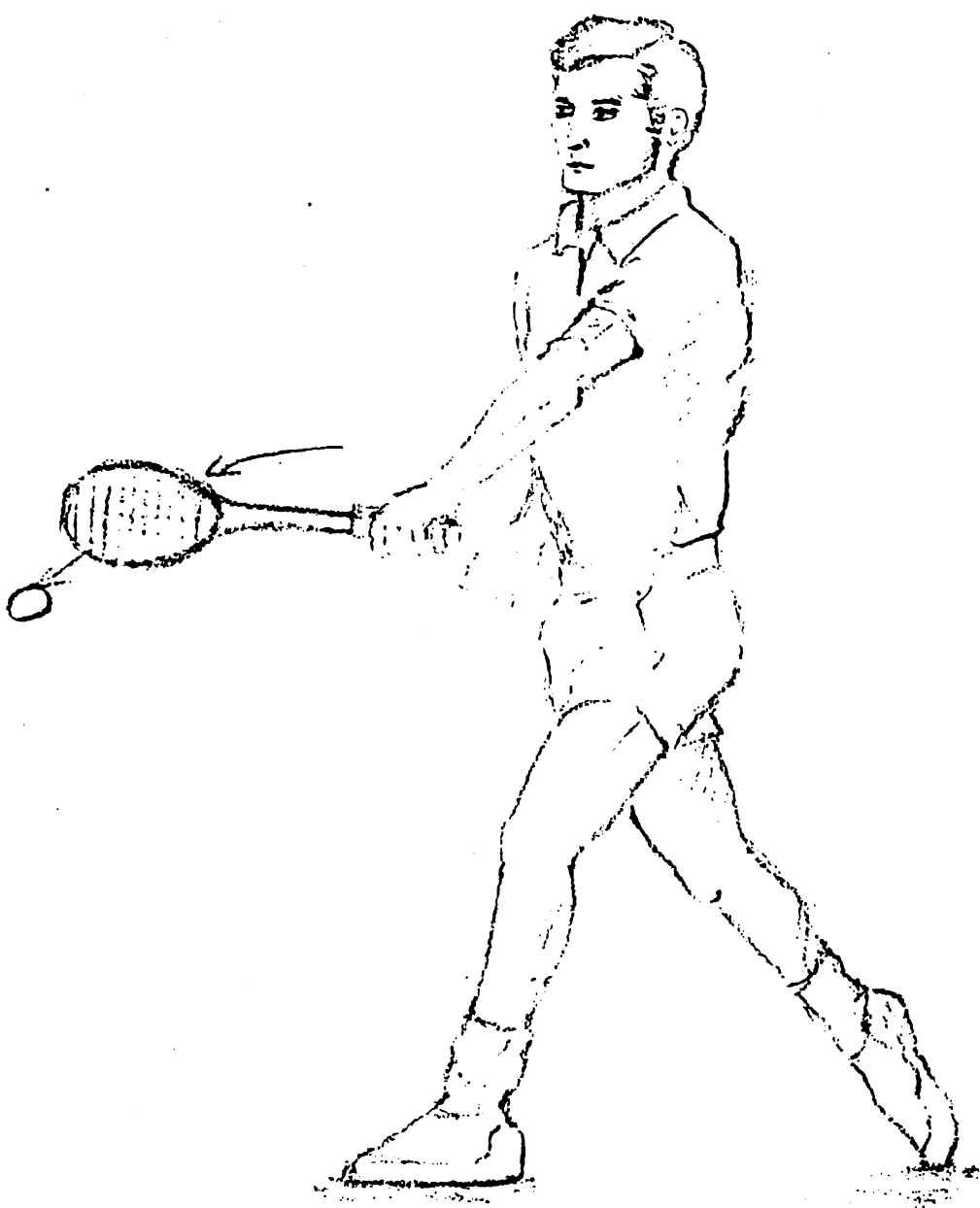
- quet in the opposite hand as opposed to holding it firmly. You do this to help shove the racquet and guide it through the shot.
4. As you hit, step diagonally toward the net and toward the ball, keeping your feet in a parallel position to the net.
  5. Lead into your shot with your shoulder. The force comes first from the shoulder, then from the arm. You should shove the racquet into the ball, not pull it. Your arm should be kept quite straight on this shot because the movement is primarily from the back and the shoulder. If your elbow is bent, the work is handled completely by the forearm, nullifying the force provided by the rest of the body.
  6. Hit the ball just before it reaches the foot nearer the net; in fact, it is a good idea to sight the ball over your shoulder. When the ball comes in line with your shoulder, it should be in a good position to contact. Again as on the forehand, you are working with a horizontal arc. The point in the arc where the racquet face is absolutely parallel to the net, is generally right over the hitting shoulder and right beyond the foot nearer the net.
  7. Keep your racquet and shoulders parallel to the ground throughout the swing. On your follow-through, your racquet may be raised slightly to point over the top of the net. It is good to make sure that your shoulders stay even, because the dipping or raising of your shoulders will cause real problems in keeping the ball in your opponent's court.
  8. Remember to bend at the knees and hips, never at your waist.
  9. Stay down behind the ball until you are sure you have finished hitting it.
  10. Follow through where you want the ball to go, and make sure that the racquet face is not pointed upward or downward to any great extent.
  11. Watch the ball from the time it leaves your opponent's racquet until it leaves yours.
  12. Start your backswing as soon as your opponent follows through on his shot.
  13. It is important to allow about a foot more distance between you and the ball on the backhand, because there is nothing blocking your arm's length on this shot. On the forehand, your body blocked part of your arm's length as your arm crossed it.
  14. On the backhand, it is very important to time the shot well. If the ball gets a little too far back on the



# Backhand



Racquet back to hip level. -



Bring racquet straight through  
and hit the ball just before it  
reaches your foot nearer the net.

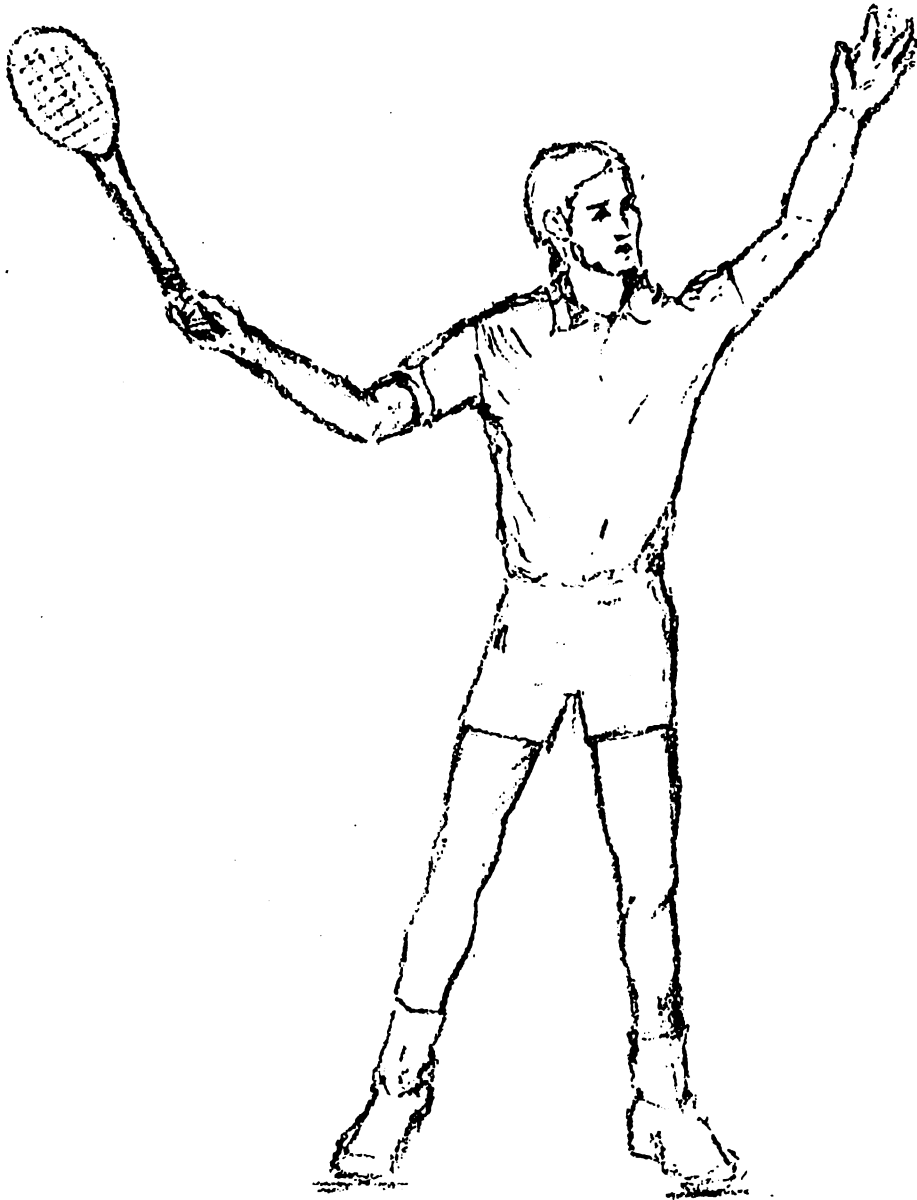
forehand, it is somewhat correctible, but if it happens on the backhand, it is very difficult to compensate. It is always important to have the body behind the action.

15. Never feel that it is necessary to pivot toward the net on the backhand follow-through.
16. On the backhand, there are the same stroking variations as there are on the forehand, and the same principles apply. It is not good to learn only the topspin or slice. These shots should be attempted only when you have thoroughly learned and demonstrated the basic principles of the shot. The topspin in the backhand should be used very wisely and deliberately. It is a shot which requires a great deal of patience and excellent timing. There is a tendency, when this shot is developed without proper foundational stroking, to rush the racquet over the ball. This causes, among other things, loose wrist action.
17. In regard to the two-handed backhand, it is very important on this shot, to be in the right place at the right time. This is true because, with the other hand on the racquet, you do not have the reach that you have on a one-handed backhand. The same power can come from a well timed, orthodox backhand.

#### Point to Remember in Hitting a Good Serve

1. Stand behind the baseline, about a foot from the center-mark; have your feet in a slightly straddled position, lined in the direction which you want the ball to go. In other words, stand in such a way that if you shift your weight from your back foot to the foot nearer the net, you will automatically be shifting it in the intended direction of the ball.
2. Aim your racquet in the direction you want the ball to go. Hold the racquet across your body much the way you would if you were holding it in the backswing position of your backhand, only point it in the direction you want the ball to go.
3. Grip your racquet with either a forehand or a Continental grip.
4. Hold the ball in the hand which is not holding the racquet.
5. Swing both arms upward and outward at the same time, sort of as though you were signal to a group of people to rise.
6. As you toss the ball, let it roll naturally from your hand. This should come as merely an extension of your swinging motion. Pretend that you are tossing the ball to someone who is directly above your tossing hand. Your ball should be tossed in such a way that it will

# SERVE



Toss the ball up as you bring  
your racquet up - and "throw" your rac-  
quet at the ball.



Reach high to hit the ball - don't  
let your elbows bend as you reach -

drop right back into your hand at the point where you tossed it.

7. Toss the ball slightly higher than your racquet height when it is fully extended in the air.
8. Your serving swing should be very much the same as the motion used in throwing a ball in a high arc. From the aiming position, bring your racquet back to about shoulder-height, then let the racquet drop back behind your back. (It should do this naturally as a result of the momentum of the swing.) At this point, cock your shoulder as though you are throwing a ball with an over-arm motion, and "throw" the racquet at the ball, only don't let go of it.
9. Hit the ball at its peak height. This will mean that you reach out for it. When you hit the ball, your body should be fully extended, with your hitting arm out straight.
10. Watch the ball as you hit it.
11. As you hit the ball, your body will pivot naturally toward the net, and your back foot will come through and land in front of the foot nearer the net. This should be a natural result of your arm action, if you start with your weight on your back foot, as you should.
12. Make sure that your motion is smooth and natural all the way through the shot. Keep one pace throughout the swing, don't stop your action anywhere along the way, until you've finished your follow-through. This will make your timing work. The toss and swing should be one smooth motion.

#### Points to Remember in Hitting a Good Volley

1. Use a Continental grip for both the backhand and forehand volleys.
2. Wait in a ready position, with your racquet out in front of you.
3. Watch the ball closely and swing with a slight chopping motion. Your racquet should not go behind your shoulder in the backswing.
4. Try to stand in a slightly sideways position, shifting your weight diagonally to the foot nearer the net, and into the ball.
5. Remember, you are essentially blocking and directing the ball. Never try to use a lot of wrist action, or unnecessary arm action, merely use the momentum of the ball as it is coming over.
6. Try to stand about ten feet from the net, or even a little more, so that, as you step forward to hit, you won't hit the net with your racquet.

### Points to Remember in Hitting a Good Overhead

1. Use the same grip and basic stroke as you use in serving.
2. Turn slightly sideways, or in the direction in which you intend the ball to go.
3. Raise your free arm up, and use your hand to sight the ball.
4. Reach up for the ball, don't wait for it to come into the range where you would hit it on the serve. If you do, the ball will probably hit you before you hit it. Remember, a ball coming with that pace, from that height, will have considerable momentum.
5. Watch the ball, and hit through it just the way you would on the serve. Make the swing one, smooth motion. Don't be afraid to hit the ball hard.

These points are very basic. Please keep in mind that there are variations to practically all of them, but, if you have a good understanding of them you will know how and when to use the variations. Tennis is fun to play, but it is more fun without all the guesswork.

## CHAPTER VI

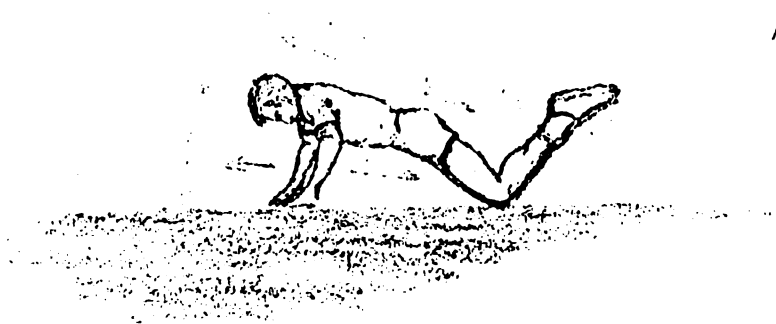
### Conditioning Exercises

To get the most from your tennis, it is wise to prepare physically as well as mentally. Tennis requires strength, stamina, speed, agility, flexibility, the ability to concentrate, and to anticipate.

The following program of exercises is recommended as preparation for an enjoyable tennis experience. The first group will be the least enjoyable to do, but will contribute a great deal to your fitness for the game.

#### Push-ups:

These may be done in a modified form. A good sequence is; ten a day the first week, fifteen a day the second week, twenty a day the third week, twenty-five a day the fourth week, and thirty a day the fifth week.



*Remember to  
keep your body  
straight—*

#### Sit-ups:

These should be done with your hands behind your head. When you sit up, your elbows should not come forward past your shoulders. Follow the same sequence on these as you do on the push-ups, only add ten each week instead of five.

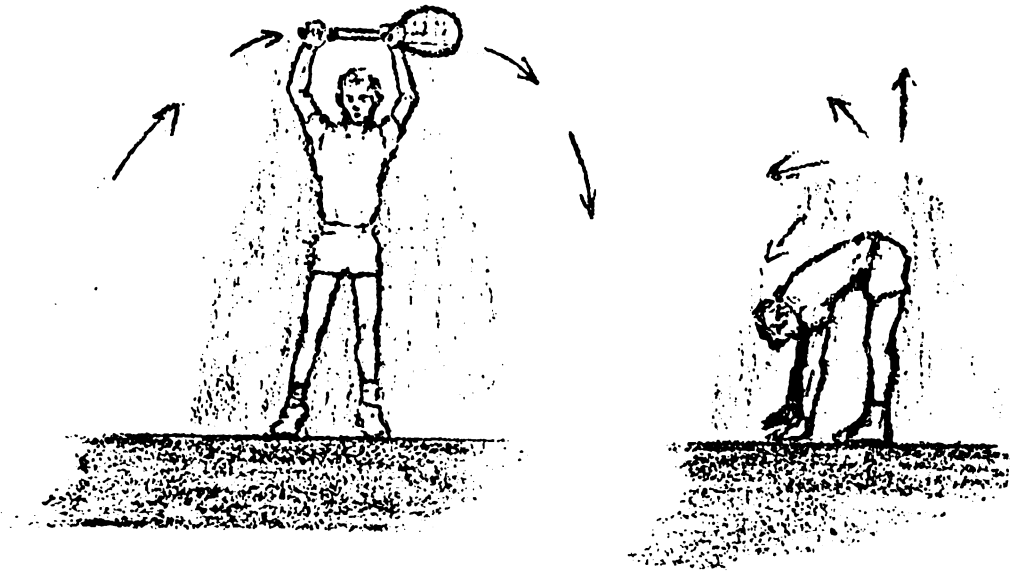


*You may brace your feet, if you like —*



### Stretch Sequence:

These exercises are merely to help you loosen up. It is suggested that you do each one of these twenty times a day. On the waist bends, do ten in each direction.



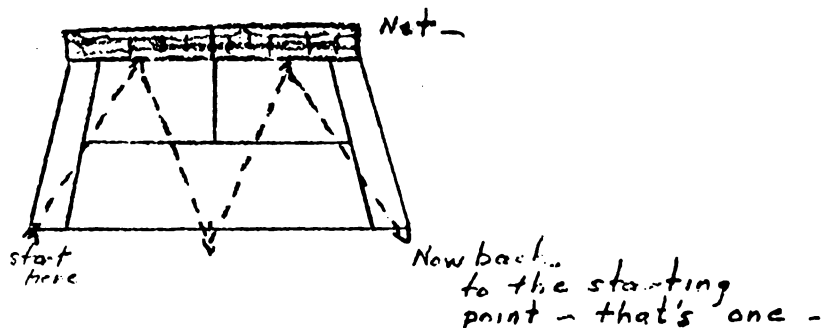
*Don't forget  
the racquet  
swings.*

### Run-in-place:

Run in place for one minute the first week, two minutes the second, three minutes the third, four minutes the fourth, and five minutes the fifth week. You should step high at first, then relax a bit, then step high again as you finish.

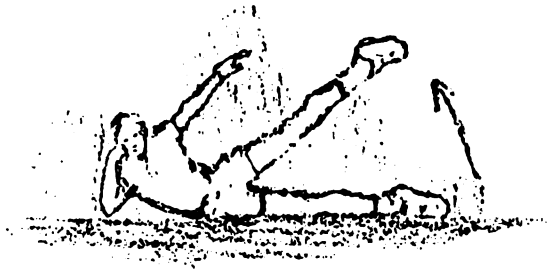
### Windsprint Pattern:

This pattern should be run once in thirty seconds, three times, with a one-minute rest in between each sprint, the first week, through the fifth week.



### Side-to-side exercises:

If you are able to get to a court each day, the side-skipping exercise is preferred. You should do this twenty times a day. If you are not able to get to a court, or if it is a rainy day, an indoor leg-raising exercise will suffice. Do about twenty of these exercises for each leg.



### Ball Toss:

One cannot emphasize enough, the importance of the toss in the serve. A good practice for the toss, is to toss the ball at least fifty times a day, making sure that it falls right back into your hand at the point where you released it.

*Be sure to toss the ball at least as high as your racquet is when it is extended directly upward.*



To help your flexibility and concentration, it is suggested that you throw a ball against a wall of some sort, such as a garage, and let it bounce or roll back to you. In catching the ball, you should be bending at your knees and hips, and watching the ball as you pick it up.

## CHAPTER VII

### Strategies

The following is a list of points to remember in developing a winning tennis game.

1. Get a good warm-up before you start your match.
2. Analyze your opponent during the warm-up. Check the following points;
  - a. Does he move well on the court?
  - b. Does he seem to anticipate well?
  - c. With which stroke does he seem most at home, forehand or backhand?
  - d. Is he left-handed or right-handed?
  - e. Does he take wide, time-consuming swings?
  - f. Does he ask you to hit some overheads in the warm-up?
  - g. Does he seem to like to volley.
  - h. Is he timid when he hits, or does he enjoy hitting hard?
  - i. What sort of serve does he have?
3. Keep in mind, women usually move better from side-to-side than they do forward and back. Men are just the opposite. They tend to prefer the run in to the net over the cross-court movements.
4. Whether you are receiving a serve, or rallying, you should take a ready position just behind the baseline, equi-distant from each of the side boundaries. On the serve, stand so that you are about in the middle of the service line. Always be ready to move either to the backhand or the forehand side.
5. Watch your opponent hit the ball, if he hits it out in front, he will be hitting a crosscourt shot. If he hits it a little farther back on the arc, the ball will probably go down the line. If he seems to lean hard into the shot, he will probably move into the net as he follows through.
6. Never get caught standing between the service line and the baseline when you are waiting to receive the ball. Unless you are volleying, hit the ball and return immediately to the center of the baseline.
7. If your opponent likes to come to the net, lob over his head and into the back court. If possible, hit balls consistently to the baseline area of the court and keep your opponent in the back court.

8. If you like to rush the net, make sure you hit a hard, deep shot to your opponent's back court before you move in. As you are moving in, slow down a bit and look to see where your opponent is hitting the ball before you make your final commitment to the net position.
9. If you have difficulty hitting hard shots, relax, just watch the ball and hit it deliberately. Remember, once you get the ball on the other side of the net, it's your opponent's problem. All you have to do is get the ball into his court one more time than he gets it into your court.
10. In doubles, let the stronger partner take the backhand court. This is the side of the court in which the game points are most often made, so it is good to have the stronger player in that position.
11. In doubles, although it is good for both players to have a strong net game, and to play the net whenever possible, it is not always possible, or wise to have both players at the net. The important thing is to have both players adequately covering the court, preferably in positions in which they each feel most confident.
12. If, in doubles, the server has a powerful and consistent serve, his partner should feel free to stand in a volleying position at the net. In receiving, the partner who is not being served to should stand at the service line, ready to move to the net or to the baseline, depending on his partner's return of service.
13. The important thing about tennis strategy is to use common sense in each situation. Try to hit the ball away from your opponent, or in such a way that it will be difficult for him to return it. Try, also, to be in the best possible position to return the ball he hits to you.
14. Always watch the ball when it is in play. At the time that you're playing a point, nothing around the court matters until the point is over.
15. Don't dwell on errors, forget them, and think in terms of the principles behind your strokes, soon you will be expressing them in action.
16. Don't be afraid of a good opponent, forget your opponent and just concentrate on what you want to do with the ball. If the ball comes fast and hard, think in terms of positioning yourself more advantageously.
17. If you are playing on a fast court, shorten your backswing. The same is true if you are playing against the wind.
18. If you are playing on a slow court, increase your backswing. The same is true if you are playing with the wind.

19. If the wind is blowing in a certain direction, hit , quite hard to that direction, and exaggerate your angle to it.
20. If you are hitting with the wind, slow down the pace of your stroke, and don't angle the ball quite as far in the desired direction as you normally would.
21. Above all, remember that you have as much right and ability to win as your opponent, and the match is not over until the last point is played. There is no time limit, and many players have come back when they've been down 6-0, 5-0, and still won the match.

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