CHAPTER 4: EQUIPMENT

INTRODUCTION

You will be expected to recommend, provide information, and advise your students on a variety of equipment issues, including:

1. Racquets
2. Strings
3. Footwear
4. Clothing
5. Tennis balls

1. RACQUETS

Racquets have evolved from wooden construction to today's fiberglass, graphite, and, occasionally, small amounts of material such as Kevlar and ceramic fibres. Racquet head size has grown from approximately 65 square inches to as much as 135 square inches. Touring pros use racquets in the 85 square inch to 110 square inch range (with most ranging between 85 to 95). Recreational players generally have better success with larger head racquets (100 square inches and above).

The newest innovation on the market is a racquet with an increase in length from the traditional 27 inches to as much as 32 inches. The I.T.F. has ruled that a racquet can not be longer than 29 inches for tournament play. To retain maneuverability in longer racquets, it has been necessary to reduce the weight of the longer racquets, with some less than 9 ounces (unstrung).

When asked to recommend a grip size, you would be safe in saying that most men use a 4 1/2 or 4 5/8 grip, and that most women use a 4 1/4 and 4 3/8 grip. A quick way to size the grip is to measure (in inches) from the tip of the ring finger to the bottom lateral crease on the palm of the hand. Cushion grip systems have become increasingly popular and help prevent tennis elbow by reducing shock to the arm. Cushion grips should be replaced every six to twelve months.

'Wide body' is the generic term for any high cross-sectional frame (usually wider than 20 mm). The first generation 'wide bodies' were very stiff, thick, powerful frames. Newer model 'wide bodies' have reduced stiffness and width, and increased aerodynamic styling.

Junior racquets are normally shorter (19 inches to 25 inches), lighter, have smaller grips, and are designed for children under the age of twelve. It is recommended that juniors advance to normal size racquets (27 inches and greater) as quickly as they can handle them. Because there are numerous lengths of junior racquets available, it is recommended that children use a racquet length they can easily maneuver.

RACQUET FACTS

- A heavier frame generates more power.
- A heavier frame vibrates less.
- A heavier frame has a larger sweet spot.
- A stiffer frame generates more power.
- A stiffer frame has a larger sweet spot.
- A stiffer frame transmits more of the shock load to the arm than a more flexible frame.
- A stiffer frame provides a more uniform ball response across the entire string plane.
- A larger frame generates more power.
- A larger frame is more resistant to twisting.
- A larger frame has a larger sweet spot.
- A longer frame generates more velocity and therefore more power.
- The string-bed in a longer frame generates more spin due to increased velocity.

2. STRING

String is the key ingredient in the playability of a racquet. Here are some important basic facts to remember when advising your students:

String is categorized according to its construction: Gut or Synthetics.

Gut offers the best playability of any string and is used by a majority of top pros. Gut is also up to two and half times more expensive, is more fragile, and is affected more readily by humidity and moisture. Only a small percentage of recreational players use gut.

Synthetics are usually made from nylon. Some of the higher quality nylons are called synthetic gut, but this is just a marketing term. Synthetic construction can vary from a solid centre core to multi-filaments. Two of the common concerns recreational players have are durability and playability. Habitual string breakers can use the same string in a thicker version (i.e., go from 17 gauge to 16 gauge - lower numbers are thicker) or use a more durable string such as Kevlar (for the main strings) to reduce breakage. Two factors affect playability: 1.) gauge, and 2.) type of construction -the thinner the string (higher number gauges are thinner), the better the playability. If a player does not break string, recommend a thinner string. Multi-filaments and multicore strings generally play better than solid core nylon with a corresponding increase in cost.

Whenever a racquet is strung, the string begins to lose playability whether it is used or not. Re-stringing should be done on a regular basis. Recreational players should re-string their racquets at least twice a year. Recreational players get better results when playing with newly strung racquets.

The manufacture's recommended re-stringing tension range is often shown on the side of the racquet. If not, most stringing businesses have manuals that provide this information. Tension affects the playability as follows:

As a rule, beginners should use racquets with lower string tensions as lower tension generally provides a larger sweet spot, less shock to the arm, and less muscle fatigue.

		Lower tensions	Higher tensions
1.	Power	More	Less
2.	Ball control	Less	More
3.	Sweet spot	More	Less
4.	Shock to arm	Less	More
5.	Muscle fatigue	Less	More
6.	String life	More	Less

3. FOOTWEAR

Feet, like people, are all different, but we identify three categories -- a pronated foot leans inward -- a neutral foot wears shoes relatively evenly -- a supinated foot leans outward.

From the moment you put them on, tennis shoes should feel comfortable. No break-in period is necessary for a proper fitting pair. Because feet tend to swell during the day, recommend shopping for new shoes later in the day (shoes that fit well in the morning may not fit during an evening match.) Tennis stresses the feet, and because foot pain takes the pleasure out of playing tennis, recommend wearing high quality shoes.

Several shoe manufacturers now offer up to one-year wear warranties, and most shoes are more durable than in the past. Tread materials should be matched to the court surface. Today's outsoles are designed for grass, clay, or hard courts. A herringbone tread is generally recognized as being the best tread on Har Tru or Clay, and a radial design is a good all-around tread.

4. CLOTHING

Your choice of clothing is determined primarily by the weather, and you should feel comfortable in clothing while playing. Some hints:

1. Layer your clothing so you can remove layers if you feel too warm.
2. Put your warm-up suit on immediately after training
3. Always wear a warm-up suit prior to playing or practicing.
4. Always carry extra clothing. Never play or train in wet clothing.
5. Nylon or synthetic suits are optimal for training in windy and cold weather—they let sweat evaporate and prevent rain and wind from making contact with your skin.

5. TENNIS BALLS

Tennis balls, when dropped from a height of 100 inches on a concrete surface, must bounce to a height of 55 inches (plus or minus 2 inches). Wilson and Penn control over 90% of the world market. Several factors should be considered when buying balls.

Regular Duty Balls:

- best suited for clay, Har Tru, fast dry, omni, or soft courts
- have a more tightly woven felt covering which does not pick up material from the court
- travel more quickly on hard courts, making then better for a serve and volley style
- Slazenger and Penn both make grass-specific balls, but, in a pinch, the regular duty ball will suffice

Extra Duty Balls:

- have a thicker felt that gives better durability on hard surfaces, but these balls pick up moisture and grit from soft surfaces, causing them to play "heavy", meaning they play slower and lose their bounce earlier.

High Altitude Balls:

- normal balls play wildly at high altitudes, making it difficult to keep the ball in the court
- high altitude balls are sometimes referred to as low pressure balls, although Wilson uses a softer core which reduces the bounce rather than the ball pressure.

When purchasing teaching balls, consider practice balls. These balls are cosmetically blemished or irregular in some fashion, are cheaper, and must be purchased directly from the wholesaler.