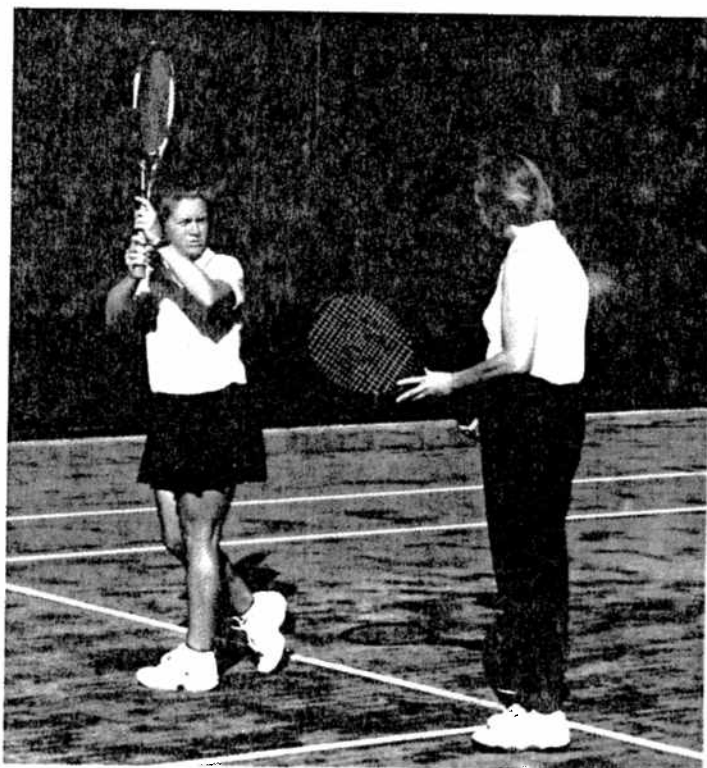


Teach **students** to teach themselves

by **Michael Kernodle, Ph.D.**
USPTA Master Professional



When working with older children and adults, the teaching pro should initially use a combination of qualitative feedback and low-level quantitative feedback.

As all informed tennis teachers and coaches know, there are many variables that must be controlled to optimize the teaching/learning environment. One of the most important and controllable elements is **feedback**.

Essentially, there are two major categories of feedback: intrinsic and extrinsic, or augmented. Intrinsic feedback is information the learner receives as a consequence of performing a skill. An example of this would be seeing a serve go in the service box. Or the feeling of the ball making contact with the strings of the racket.

Extrinsic or augmented feedback is information provided in addition to intrinsic feedback. This is information that a tennis professional or coach would give to his students. Augmented feedback can be provided either verbally or mechanically, such as in

videotape replay.

There are three main subcategories of extrinsic feedback:

- **Knowledge of results.** This is information about the outcome of a skill performance. An example of this would be a percentage of successful serves during a match or the number of down-the-line backhand winners during a match.
- **Knowledge of performance.** This is information about the movement pattern of the skill under scrutiny. This could be something as simple as showing a player a videotape replay or mentioning that they need greater knee flexion on a low volley. In his most recent book, Richard Magill has suggested that knowledge of performance can be divided into descriptive KP (knowledge of performance) and prescriptive KP.

Descriptive KP simply identifies the error while prescriptive KP prescribes how to correct it. Although there is no research-based information to support when to use which type of KP, it seems logical that the decision should be determined by the learning stage of each person. A beginner would not fare

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**A coach's greatest success
occurs when the student can
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Feedback

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well without information telling her how to correct the error and would therefore need to be provided with prescriptive KP. However, those with more advanced skills may have the knowledge to correct the error and descriptive KP may suffice.

• **Transitional feedback**

which is similar to prescriptive KP, refers to what was done incorrectly and how to go about correcting it. This has also been called error correcting instructions, and along with prescriptive KP, is considered to be the most effective for teaching a complex skill, such as seen in tennis, because it reduces the amount of information provided to the learner to the least amount relevant to the performance of the task. This, in turn, takes into account the limited processing capacity of the human system and does not overload the student. This is not to say that KR (knowledge of results) and descriptive KP are not useful, but because of the aforementioned reasons, it is suggested that transitional information or prescriptive KP would be most effective.

In addition to determining which type of feedback is most effective, one should also be aware of how to utilize this information appropriately. *How often* to provide feedback and the *precision level* of the feedback are two of the most important and easily manipulated variables.

Frequency of feedback (how often) is one of the most misunderstood and improperly utilized teaching tools available to an instructor. **The most efficient and effective frequency technique is**



Effective verbal feedback

1. Demonstrate the skill so the learner can establish a mental template.
2. Demonstrate skills more than once and from different perspectives.
3. Use understandable terminology.
4. Use the sandwich technique, which consists of surrounding a criticism with two positives. The pro might say, "Nice effort on that down-the-line passing shot, but your follow-through was incorrect. If you would swing on more of a low-to-high plane instead of straight ahead you would have more success clearing the net."
5. Focus their attention on the least amount of information relevant to the performance of the skill so as not to overload their information processing system. One of the easiest ways to do this is to use transitional information.

called fading. This technique involves providing feedback regularly at first and then gradually reducing the number of times feedback is provided.

This allows the learner to be initially guided toward the correct movement pattern, but requires problem solving as the

feedback is withdrawn. This forces the learner to develop an internal learning strategy and reduces the dependency on the feedback. Therefore, when the player is in a competitive situation, she is used to making her own decisions and will perform at a higher level.

Sometimes it is difficult for teachers and coaches to relinquish the control they have over the student by constantly providing feedback, but it is necessary if the final goal is to allow the player to transfer what she has learned in practice to produce optimal results in competition. One of the most often asked questions about fading is, "When do I start withdrawing the feedback and what schedule do I follow?" The answer is that there is no set answer.

Each learner will progress at a different rate and it is up to the experience of the teacher/coach to determine when the learner is ready to proceed and how rapidly to proceed. There is one other suggestion that should be provided at this point. When the instructor and student have arrived at the point where minimal feedback is needed, it is time for the instructor to ask the student to provide his or her own error correcting instructions.

A statement such as, "That was a great effort but could you tell me what you might have done incorrectly and how you could correct it?" is an example of this technique. Students may not be successful initially but with the guidance of the teacher they should become more and more proficient. Once again, the student is forced to problem solve, and at an even deeper level, which will allow for a more positive transfer to competitive situations. A coach's greatest success occurs when the student can successfully make the transition to becoming a teacher.

The precision of feedback is simply the accuracy of the information provided. The two major categories of feedback when discussing precision are qualitative and quantitative. Qualitative feedback has no quantity attached and might consist of a statement such as "nice try" or

“great effort” or “way to go.”

Quantitative feedback does have a quantity attached and might result in a statement such as, “Throw your toss 6 inches higher.” The research in this area suggests that up to a point the more precise the feedback the better the following performance. However, the level of precision utilized will depend upon a number of variables with two of the most important; the person’s age and stage of learning.

If you are working with very young players, you should stay away from precise feedback. In fact, with very young children you would be better served to almost exclusively use qualitative feedback. This is especially true of those working with a Little Tennis program, teaching children ages 3 to 5.

As the age of the players increase, so can the precision of the information. Their information processing system will become more developed, they will have more life experiences and more information, allowing them to better understand the more precise feedback.

If you are working with players in the beginning stages of learning, the teaching professional or coach should keep the level of precision relatively low. As the skill level of the player improves, then the feedback can become more precise. When working with older children and adults, it is suggested that the teaching pro should initially use a combination of qualitative feedback and low-level quantitative feedback. As the skill level goes up the pro can gradually insert more precise quantitative feedback. However, keep in mind that qualitative feedback such as “good job” or “way to go” can be motivational and can definitely be used in this manner.

In addition to requiring

knowledge about what type of feedback to use, how often to use it and what level of precision will be optimal, the teaching professional must also be aware of how to effectively provide the feedback. The two basic means for presentation are verbal and mechanical (for the teaching pro, this will almost always involve the use of videotape replay). It is important to keep in mind that one must do more than just walk on the court and begin to talk or turn on the VCR. If you are going to provide feedback verbally you should attempt to adhere to the following suggestions:

1. Demonstrate the skill so the learner can establish a mental template.
2. Demonstrate skills more than once and from different perspectives.
3. Use understandable terminology.
4. Use the sandwich technique, which consists of surrounding a criticism with two positives. The pro might say, “Nice effort on that down-the-line passing shot, but your follow-through was incorrect. If you would swing on more of a low-to-high plane instead of straight ahead you would have more success clearing the net.”
5. Focus their attention on the least amount of information relevant to the performance of the skill so as not to overload their information processing system. One of the easiest ways to do this is to use transitional information.

If you are planning to use videotape replay be aware that a great deal of research strongly suggests that the use of videotape, if not properly controlled, will be no more effective than a

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Key words

Knowledge of results (KR) – information about the outcome of a movement. Examples from the sport of tennis could include (1) the percentage of first serves made (2) the average number of hits per rally or (3) the percentage of points won while at the net.

Knowledge of performance (KP) – information about the movement pattern. Examples from the sport of tennis could include (1) viewing a videotaped replay of a just completed performance (2) being told to focus on your knee bend during the serve.

Transitional information or prescriptive KP – information about what was done incorrectly and how to go about correcting it. Examples from the sport of tennis could include (1) your toss is too low, you need to throw the ball 1 foot higher (2) you are rotating your hips at the same time as your shoulders when serving, the shoulders must lag behind the hips to achieve maximal acceleration (3) when preparing to hit the open stance forehand you are not rotating far enough clockwise with your hips and shoulders, you need to rotate another 20 degrees to be successful.

Fading – a frequency technique that consists of starting off by providing feedback on a very regular basis and gradually reducing the number of times the student receives feedback. When teaching beginners tennis, you may want to start off by providing feedback every time the student attempts to hit the ball and continue to do so for the first 25 attempts. Then proceed to give feedback every other time for the next 25 attempts, give feedback every fifth time for the next 100 attempts and so on. Keep in mind that this is just an example.

Qualitative feedback – feedback with no quantity attached. Examples from tennis could include such statements as “nice try on that forehand” or “great effort on that backhand.”

Quantitative feedback – feedback that does have a quantity attached. Examples from tennis could include (1) you need to clear the net by at least one more foot (2) you need to aim your groundstrokes at least two feet further towards the baseline or (3) you need to bend your knees another 15 degrees to prepare for the serve.

Suggested readings

- Magill, Richard A. (1993). *Motor learning: Concept and applications* (4th ed.). WCB Brown & Benchmark.
- Schmidt, Richard A. (1991). *Motor learning & performance: From principles to practice*. Human Kinetics Publishing.