Quick Response: A Plan of Action

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Reaction time is an often overlooked and usually underestimated element in the preparation process for athletes. What we refer to as "explosiveness" is often actually great reaction time. Think about it. In just about all sports you will find a constant series of reactions to auditory and visual cues. A player's ability to respond properly, quickly, and precisely to the information being sent is of utmost importance in determining success in the chosen sport. Decreasing reaction time to various stimuli is just as vital in overall development as the conditioning protocol you implement.

Before we outline a game plan for getting this done, however, we should probably clarify some vital points. The term "reaction time" actually has a different meaning than the context in which it is usually used. Reaction time is defined in the motor learning literature as "the interval of time between the onset of a signal (stimulus) and the initiation of a response." It is important to note that reaction time (RT) does not include the movement itself, but only the time prior to the beginning of movement. Movement time (MT) is the term used to define the interval of time between the initiation and completion of the movement. Response time defines the total time interval involving both RT and MT. As you can see, improvement in response time is predicated on improving RT, MT, or both. Our discussion will focus on four factors that will help you develop a strategy for helping your athletes improve their response times to the various cues they receive.

REDUCE THE NUMBER OF STIMULUS-RESPONSE CHOICES

There are numerous ways to accomplish a task, but some are better than others and a few may be considered to be the best. You would be well advised to teach your players the best responses to various stimuli. The fact is that the average person has a limited ability to acquire, store, and use "meaningful" information when it comes to learning and repeating specific tasks. In other words, teach them to do a few things very well as opposed to doing a lot of things poorly or below average.

Many times, there are choices needed to be made "on the run", such as with the majority of " open skills." Open skills are those that depend heavily on feedback before the correct responses can be made-- and many of these decisions must be made after movement has been initiated. Unlike a "closed skill", there is much more involvement than merely getting from point "A" to point "B" with no relative concerns for making adjustments in between (e.g., running the 100 meter dash). The option play in football is a prime example. In a case such as this -- when the QB needs to make decisions while on the move and all hell is breaking loose -- it is vital that he focuses on specific "keys" to make the correct decision. All of you coaches out there realize that a good option game will be defended with numerous "looks" and change-ups. Obviously, this will increase preparation time; thus making limited response choices all the more important for the sake of efficient use of practice time.

Experienced players tend to make better use of visual cues in determining their responses, as they are more capable than the novice of seeing through the "surface." This enables them to process the information quicker and make correct responses based on what they see.

SEARCH FOR PREDICTORS

How often have you heard an athlete make the comment, "I knew what was coming because he telegraphed his intentions"? What is actually happening here is that the athlete had more time to prepare a response because he "anticipated" the stimulus eventually sent by the opponent. The more predictable a stimulus, the quicker and more accurately a person can respond.

This element is closely related to reducing the number of stimulus-responses, as the process of elimination will usually kick-in before a response is required. In other words, the visual cue (or other sensory indicator)

-- such as a "pre-snap" read by the QB in football -- will many times narrow the possible options to one or two good ones.

An interesting study by Christina et al. (1990) investigated the effect of a four-week videotape-training program of a college senior linebacker aimed at improving his response selection accuracy without sacrificing response selection speed. The player viewed twenty different plays that were taped at an angle specific to the one seen from a linebacker's point of view on the field. The player was instructed to respond as quickly and accurately as possible to the play cue by moving a joystick in the direction he would move in that situation on the field. The question was whether the mental practice associated with the videotape sessions would benefit the cognitive element of the tasks.

It was determined that with each training session the subject improved his response selection accuracy while maintaining response speed.

How this type of mental practice would transfer to the field, at least in terms of the motor response required in that environment, is difficult to ascertain. The principle of specificity dictates that all conditions of the practice situation are exact to the conditions of the game situation for a positive transfer to occur. However, subjective interpretation of the coaches involved indicated that the training program had a positive effect, at least in terms of the accuracy of his responses. The positive transfer, if any, may have taken place in the form of improved processing of the visual cues and the subsequent anticipatory responses.

The main reason we study our opponents so intensely (e.g., game tapes, scouting, etc.) is to identify these predictors and utilize them in our preparation scheme.

INSURE AN OPTIMAL AROUSAL LEVEL,,, GET FIRED-UP!

How often is that said before or during an athletic contest? Of course, we are speaking primarily of an emotional mind-set -- more of an intangible, intrinsic component that is usually a product of motivation. There are those who maintain that as arousal increases, performance increases proportionately.

You must be careful, however, to influence optimal arousal so as not to negatively affect performance. Experienced coaches know that emotion will only carry you so far in a contest. Unfortunately, emotion without proper preparation and confidence in your abilities can result in bitter disappointment. Proper preparation breeds confidence which usually results in a successful performance (with, as they say, "all else being equal").

The goal here is to build security and confidence with a concurrent reduction of anxiety. This can be accomplished by properly preparing the mind as well as the spirit.

DESIGN QUALITY, TASK-SPECIFIC PRACTICES

Once the best responses have been defined for all of the possible situations to be faced in competition, the players should be drilled with both the correct cues (keys) and the appropriate reactions. Repetition of the proper responses in game situations is the best way to develop their "motor memory" so that they can recall the correct information when needed.

Proper practice -- that is, practice that is very specific by design -- reduces uncertainty in situations where much preparation is needed to translate unfamiliar stimuli or new stimulus-response relationships. This is especially true of tasks that are extremely complex and require a great deal of organization in the acquisition process. Most game situations require athletes to adjust techniques based on the cues they receive while on the move. The motor-learning literature refers to this variability as "forced-paced" actions and they add tremendously to the degree of difficulty in both the teaching and learning process. It also reinforces the tenet that to get the desired results, you must practice under the conditions of the anticipated circumstances.

CONCLUSION

Improved reaction time (or, more accurately, response time) doesn't happen by chance, nor is it just a matter of physical components. With proper planning and remaining true to the real meaning of specificity, you can make inroads with regard to the perceptual, sensory, and motor aspects of performance enhancement.

REFERENCES

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