



FACTORS AFFECTING INFORMATION PROCESSING IN OFFICIATING



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Although good officiating depends on physiological, psychological, mental, and technical skills, there are personal qualities that make an effective official. A recent research has indicated that top officials have essential qualities in common, including consistency, integrity, and decisiveness.

One would expect that competent officials will make the same decisions in identical or similar situations and they will apply the rules equally to both teams. Good officials call a game in an unbiased way and they do not modify their calls according to the reactions of players, coaches, or spectators.

Officials' calls should be quick and decisive. Their decisions should be "close in time" with the observed action. The purpose of this article is to present some of the important psychological factors that are needed to call the game in a successful manner.

In basketball officiating, there are many cases where the official makes a call and afterwards realizes that his call involved a non-existent foul. In order to prove that he is an official that is able to make any call, the inexperienced referee tries to anticipate and predict. This important phenomenon of "forced reaction" is the subject of several research studies. What often leads the official to call a non-existent foul are excessive stress levels, poor physical fitness, or inexperience.

RESPONSE TIME AND ATTRIBUTION OF INFRACTIONS

In order to process information, a time interval is required from the initiation of the stimulus to the execution of the decision. In

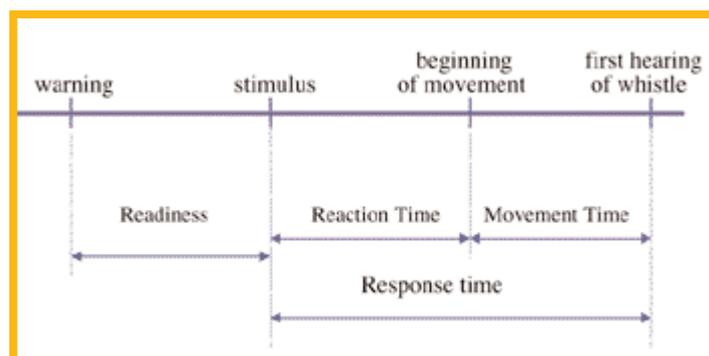
the area of motor learning and behavior, the time that intervenes between the initiation of a stimulus and the completion of the movement is called response time.

Scientists have further separated response time into reaction time and movement time. Reaction time is defined as the time interval that occurs between the initiation of the stimulus (contact between two opponents) and beginning of movement (activation of phonetic strings for the call). Movement time is determined by the time interval that intervenes from the beginning of movement up to its completion-initial phase of whistling (figure 1-response time paradigm).

Here's a common example: The official checks the space near the basket as the ball bounces off the rim and four players (two from team A and two from team B) are prepared to jump for the rebound. The whole process warns the official that some infraction may occur and he is ready to make a call. In order to rebound the ball, one player of the attacking team pushes one player of the defending team (stimulus).

The official processes the information and with the help of his long-term memory (storage of the rules), he decides that an infraction of the rules exists and is prepared to execute the decision (reaction time). The muscular system is activated and this is expressed when he blows his whistle (movement time).

In basketball officiating, however, response time is the time



interval that requires particular attention. It is important to know the time interval between the occurrence of a foul and the first whistle. Based on the scientific literature, it seems reasonable to consider a call as correct and acceptable when it occurs 350 to 800 milliseconds after the stimulus.

When a call occurs earlier than the 350-millisecond threshold, we can say that the official anticipated the infraction.

When the call occurs after 800 milliseconds (increase of reaction time), it implies that in his effort to attribute the infraction correctly the official is indecisive in making the right decision. These calls are regularly disputed by players, coaches, or sports fans and create uncertainty about the reliability of the official. In such cases, it is preferable not to make a call than to make a delayed call.

One of the most important criticisms officials receive from players, coaches, and fans involves calls that were not made during contact that developed in very small time intervals. Under these conditions, it is difficult for someone to make a right decision on which stimulus happened first and which occurred next. In experiments that were conducted under controlled laboratory conditions, it was found that when two or more stimuli occur virtually simultaneously, the longer it takes to process the information. When deciding which stimulus occurred first, there is a great probability of being wrong. In such situations, therefore, it is preferable for officials to hold their whistle to the end of the acceptable time frame (800 milliseconds) for the occurrence of a call, as this enhances their ability to process the information correctly.

EFFECT OF PHYSICAL FITNESS ON SPEED OF INFORMATION PROCESSING

Several studies have reported that physical exercise has an impact on mental functioning, while others reported no effects

whatsoever. However, individuals who exercise regularly often report that their mental abilities are positively affected. Moreover, it seems reasonable to accept that fit individuals perform better than unfit individuals on decision-making tasks when both have to participate in exercise bouts of similar physical demand. Highly-fit individuals (as compared to the poorly fit) can better cope with the demands of physical activity. Fit individuals have less energy expenses, are less vulnerable to fatigue, and are therefore able to process information efficiently and effectively.

The unfit official will tire easily and early in the game and will not be able to follow the flow of the game, leading to the deceleration of information processing and thus, to the increase of the official's response time. Moreover, this will lead to a significant decrease in his officiating performance. The results of a recent study on 31 top division officials of the Greek League revealed that the level of physical conditioning is strongly related to the officials' performance.

The study involved monitoring the heart rate of the officials during games. Officials who had a heart rate during the course of a game that approached or exceeded the upper acceptable limit (indicating poor physical conditioning) performed worse, made more mistakes, and thus held lower positions in the national ranking.

Basketball officiating consists of rapid eye-brain-whistle coordination.

Referees call the games with the whistle in their mouth. Despite what it says in the rules, referees have to make instantaneous decisions based on interpreting what they see.

Only when basketball officials equip themselves with a full range of psychological, physiological and technical skills will they achieve maximum performance.

