The National Football League on Wednesday announced that it would impose its most stringent rules to date on managing concussions, requiring players who exhibit any significant sign of concussion to be removed from a game or practice and be barred from returning the same day.

The league has maintained, despite widespread criticism, that it was safe to allow players to return to the field as soon as their symptoms were gone — even in the same game in which the injury occurred. It has not been uncommon for players to return, either after passing a sideline test or by not revealing their symptoms.

The announcement is the latest of several recent changes to how the N.F.L. handles concussions, and comes at a time when some of its most high-profile players are coping with head injuries, including the star quarterbacks Ben Roethlisberger of the Pittsburgh Steelers and Kurt Warner of the Arizona Cardinals.

The new rule was made in the wake of heightened scrutiny of the league’s approach to head injuries, outlined in a series of articles in The New York Times. At a Congressional hearing in October, the N.F.L. was criticized for its practices and research methods. Last week, the co-chairmen of the league’s committee on concussions resigned under fire, on the same day the league announced that players who sustain concussions could be cleared to return only by independent experts.

“This re-emphasizes the imperativeness of being extremely cautious when athletes complain of any symptoms relative to the head or brain,” said Dr. Joseph Maroon, the team neurosurgeon for the Steelers and a member of the N.F.L.’s committee on concussions. “I think there may be more players held out than before. I think the effect is going to be a positive one.”

The league’s former practice of allowing players to return when their concussion symptoms subside has been criticized for putting its players at risk. It is widely known that symptoms of a concussion can reappear hours or days after the injury, indicating that the player had not healed from the initial blow.

The culture of playing through brain injuries in the N.F.L. has also influenced younger players, for whom repeat concussions can be serious. Because the governing bodies at the college and high school levels do not have rules regarding concussion management, amateur players routinely return after concussions, even if they are evaluated by a doctor or athletic trainer.

The new rule, which will take effect in this week’s games, still allows players with some fleeting concussion symptoms to return to games.
Symptoms that require immediate removal include amnesia, poor balance and an abnormal neurological examination, whether or not those symptoms quickly subside. For symptoms like dizziness and headache, however, a player can return to the field unless they are “persistent,” the statement said.

“There has to be some discretion for medical professionals,” Dr. Maroon said. “There’s a difference between a fever of 99 that goes away and a fever of 105. I don’t think we’re going to take the occasional minor fever out of football. On every play there are traumatic experiences to the head. The question is one of degree.”

Dr. Elliot Pellman, a member of the league’s committee on concussions and the primary author of several published studies that defended the league’s more liberal return-to-play protocol, declined to comment on Wednesday’s rule change.

Disqualifying players with any significant concussion symptoms could backfire, experts have said. Players have been known to hide their symptoms from medical personnel to stay on the field, and knowing they will have no chance to return could only discourage them further.

In Wednesday’s statement, N.F.L. Commissioner Roger Goodell reasserted the players’ growing responsibility for concussion care.

“A critical element of managing concussions is candid reporting by players of their symptoms following an injury,” Mr. Goodell said. “Accordingly, players are to be encouraged to be candid with team medical staffs and fully disclose any signs or symptoms that may be associated with a concussion.”

In September, The New York Times obtained the results of a league-sponsored telephone survey that indicated that N.F.L. retirees were reporting diagnoses of dementia and other memory-related diseases at several times the rate in the national population. The finding corroborated several other studies that the league had disparaged, prompting the House Judiciary Committee to hold a hearing on football brain injuries on Oct. 28 in which Mr. Goodell and the players union were criticized on the issue.

Beyond Roethlisberger and Warner, the running backs Clinton Portis of the Washington Redskins and Brian Westbrook of the Philadelphia Eagles have dealt with concussions in recent weeks, stoking the scrutiny of the league’s policies. Westbrook’s teammate DeSean Jackson sustained a concussion last week and may not play this weekend.

Dr. Thom Mayer, medical director of the players union, said that all independent experts who will work the sideline of every game have been identified and approved by him and Dr. Pellman. He added that there are four finalists to become the new chairman, all of whom have academic backgrounds with no prior connection to the N.F.L.
Wednesday’s rule change contradicts past recommendations by the N.F.L.’s committee. A paper published in the journal Neurosurgery in 2005 — whose lead authors were Dr. Pellman and the co-chairmen who recently resigned, David Viano and Ira Casson — defended as safe the league’s practice of returning players after concussions.

“Players who are concussed and return to the same game have fewer initial signs and symptoms than those removed from play,” the paper said. “Return to play does not involve a significant risk of a second injury either in the same game or during the season. The current decision-making of N.F.L. team physicians seems appropriate for return to the game after a concussion, when the player has become asymptomatic and does not have memory or cognitive problems.”

Despite criticism by experts that returning to play on the same day as a concussion was dangerous, dozens of N.F.L. players have done so.

Starting this week, they no longer will.

Dr. Maroon called the rule “another progressive step for the league in terms of player safety.” Asked why the league did not adopt the rule three years ago, when outside experts were calling for it, he said: “You can ask a lot of good questions. The important thing is it’s being done now.”