



## READING COMPREHENSION

Read the following text and choose the correct answer for the questions below.

### HOW LONG DOES IT TAKE TO RECOVER AFTER A MATCH?

UEFA has been supporting football-related academic research projects through its Research Grant Programme since 2010. This month, Kevin Thomas presents details of his research on how the neuromuscular system responds and adapts to exercise, which looks at cycling, resistance training and intermittent forms of exercise, such as football.

In a typical football match, an elite player will cover about 12 kilometres, with an activity profile that includes high-rate sprints, turns, jumps, kicks and changes of direction. An inevitable consequence of those considerable physical demands in fatigue reduces physical capacity during the match and persists for days afterwards. The consequences of fatigue are compounded by the competitive schedules of today's elite footballers, which include frequent demanding periods where multiple games are played in a week, often separated by as little as 48 hours. These congested fixture periods have been linked to an increased incidence of injuries, and a range of high-profile managers have called for more flexible scheduling to protect footballers and ensure the best possible spectacle for fans of the game.

#### What we did

With support from the UEFA Research Grant Programme, we conducted a project that aimed to provide new information on the fatigue experienced by players and the time that it takes to recover from a match. We defined 'fatigue' as a reduction in the ability to produce force, and using stimulation of the brain and the nerves that activate muscle, we determined whether this fatigue could be explained by 'central' processes (i.e. fatigue of the central nervous system) or 'peripheral' processes (i.e. fatigue of the muscle). We used these techniques to study the fatigue experienced by footballers immediately after a simulated match, and we monitored the recovery of the central nervous system and muscle function for three days after a game, to see how long it took for players to recover.

#### What we found

We found that football match play resulted in a high degree of fatigue, with players' ability to produce force being impaired for up to three days after a game. Immediately after the game, this fatigue could be explained by effects on both the central nervous system and muscle function. However, just 24 hours after the game, the central nervous system had recovered markedly, albeit there was still evidence of small impairments, which took two days on average to fully resolve. In contrast, the deterioration in muscle function persisted for around three days, and it took until two days after the game before there were any signs of recovery. These negative effects

on the central nervous system and muscle function were also associated with a reduction in physical performance: players could not sprint as fast after games and they could not jump as high for up to three days afterwards. Feelings of fatigue and muscle soreness also took three days to recover from.

All in all, our project demonstrates that it can take up to three days to fully recover from match play and that the negative impact on muscle functions is the primary cause of this. These findings have important implications for the people responsible for managing the training process and scheduling fixtures, who should look at how best to manage the recovery of players between competitive games.

## **Questions**

### **1. There has been an increased incidence of injuries in players due to the fact that in some occasions...**

- a. More than one fixture is spread out over a week.
- b. More than one fixture is held in a week.
- c. Matches have a flexible scheduling.

### **2. In order to analyse how long it takes for players to recover after a match, they based their study on the relation between fatigue and...**

- a. Muscle function and the central processes
- b. Muscle function and the peripheral processes
- c. The central nervous system and the central processes

### **3. After having carried out the study, they found that...**

- a. Two days after the match, the deterioration in muscle function had totally recovered.
- b. One day after the match, the central nervous system had completely recovered.
- c. One day after the match, the central nervous system had partly recovered.

### **4. The aim of the study was...**

- a. To spread out competitive games over time
- b. To improve the scheduling of matches
- c. A and B are correct.