Introduction
Assistant referees (ARs) in association football (soccer) assess on average 5.3 (Helsen et al., 2006) to 11.3 (Oudejans et al., 2005) challenging offside situations per match. During matches, therefore, an AR has not many opportunities to acquire and practice specific offside decision-making skills. The aim of this study was to examine the underlying mechanisms leading to decision-making errors in an on-the-field offside test.

Methods
Prospective ARs for the FIFA 2006 World Cup (N=71) were instructed to assess 30 offside situations played by 16-year old players. This on-the-field test was conducted within a fixed protocol with 1 passer, 1 receiving attacker and 1 defender. We manipulated the defender action in 2 different ways. First, in the static condition, the defender was standing still at the moment the pass was given. Second, in the dynamic condition, the defender moved in the opposite direction of the attacker. For the analysis, we discriminated between correct flag (CF) and non-flag (CNF) signals and incorrect flag (flag error, FE) and non-flag (non-flag error, NFE) signals.

Results
From a total of 2121 offside situations, we observed that 25.8% were incorrect. First, it was shown that, significantly more errors were made in the dynamic (30.4%) compared to the static (21.2%) condition. Second, we also observed significantly more FEs (27.6%) than NFEs (17.0%). Third, a bias towards FEs compared to NFEs was found for every position of the assistant referee relative to the offside line. Specifically, more FEs than NFEs were found, regardless of the fact the AR was behind, ahead or on the offside line.

Discussion
The results of this study support that it is not so much the position of the AR relative to the offside line that may explain errors in judging offside but rather visual illusions due to the flash-lag effect (Baldo et al., 2002). This on-the-field test has the potential to act as a useful training tool for improving offside decision making in addition to other techniques, such as video and computer animations that clearly can discriminate between ARs with different levels of expertise (Gilis et al., under review).

References
Helsen, W., Gilis, B., & Weston, M. (2006). Errors in judging offside in association football: Test of the optical error versus the perceptual flash-lag hypothesis. JSS, 24, 521-528.