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(1) Title of the abstract:

   Errors in judging offside in association football:  
   Comparison between the 2002 and 2006 FIFA World Cup

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Errors in judging offside in association football:  
Comparison between the 2002 and 2006 FIFA World Cup

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Helsen et al. (2006) observed that during the 2002 FIFA World Cup 26.2% of all the offside situations were assessed incorrectly. For this reason, FIFA made a lot of efforts to decrease the errors when judging offside. The aim of the present study was to analyse all the offside situations during the 2006 World Cup and to make a comparison with the 2002 World Cup. Across the 64 matches, we analysed 474 offside situations (7.4 per match). The results of the present study revealed a significant decrease in the number of errors during the 2006 compared to the 2002 World Cup of 14.1%. This decrease was mainly due to a decrease in the number of flag errors, 10.0% versus 26.1% during the 2006 and 2002 World Cup, respectively. In conclusion, the investments of FIFA from a structural and an educational point of view resulted in less decision-making errors in offside situations during the 2006 World Cup.  

Keywords: offside, decision-making skills, assistant referees

INTRODUCTION  
Helsen et al. (2006) analysed the correctness of the offside judgments during the 2002 FIFA World Cup in Japan and Korea. These authors revealed that 26.2% of the offside situations were assessed incorrectly. Based on these results, FIFA decided to take some initiatives to improve the performances of the assistant referees and to decrease the errors in judging offside. First, the contents of the offside law were refined. Specifically, the elements regarding the involvement in active play of the players were clarified as well as the definition of an offside position. In this latter case, “nearer to his opponents’ goal line” means that any part of his head, body or feet is nearer to his opponents’ goal line than both the ball and the second last opponent. In this definition, the arms are not included. Second, during the 2002 World Cup, the referee and the two assistant referees were appointed for a game, although in some cases, they never refereed a match together. This may have had also an impact on the performances of the match officials. Therefore, after the 2002 World Cup, FIFA decided to appoint a refereeing trio, consisting of one referee and two assistant referees, who worked together in national and international matches. Third, specific training programmes for assistant referees were designed, based on some major underlying mechanisms mediating offside decision-making errors. According to the optical error hypothesis, as proposed by Oudejans et al. (2000, 2005) the assistant referee should always be in line with the second last defender to make a correct decision until the very end of the game. This requires an appropriate level of physical fitness, speed and coordination skills. In addition, there were also perceptual and decision-making training sessions both on- and off-the-field. The assistant referees were trained and made aware of the visual constraints and illusions, such as the flash-lag effect (Baldo et al.,2002; Gilis et al., under review) that come into play when assessing the position of moving players at the moment the ball is played. Fourth, for the 2006 World Cup in Germany the assistant referees were carefully selected based on their fitness levels as well as on several specific offside decision-making tests. The aim of the present study is to analyse the correctness of the offside judgements during the 2006 FIFA World Cup and to compare this with the offside decisions during the 2002 World Cup.

METHODS  
The participants were all experienced FIFA top-class assistant referees (N=42, mean age = 40.5 years; range 29.5–45.3), selected worldwide. On average, they had 6.8 years experience as a FIFA assistant referee, with a range from 1 to 14 number of years experience. All 64 matches played during the 2006 World Cup were provided on videotape by FIFA and converted to digital form. To compare both World Cups, we used the same operational
definition of an offside situation as proposed by Helsen et al. (2006). Specifically, a distinction was made between two types of decisions: (1) when offside was flagged (offside given) and (2) when offside was claimed by one or more defenders but not flagged by the assistant referee (offside not given).

RESULTS
In total, we analysed 474 offside situations resulting in an average of 7.4 offside situations per match (ranging from 0-18). Regarding the error rate, there were significantly less errors during the 2006 World Cup (12.1%) compared to the 2002 World Cup (26.2%) ($\chi^2 = 16.64$, $p<0.0001$). Specifically, there was a significant decrease in the number of incorrect flag signals (flag errors) ($\chi^2 = 16.66$, $p<0.0001$). No significant differences have been found for the incorrect non-flag signals (non-flag errors) between both World Cups. In Table 1 an overview is given of the correct and incorrect offside decisions during the 2002 and 2006 World Cup.

Table 1: Overview of the correct and incorrect ‘flag’ and ‘non-flag’ signals for the 2002 and 2006 FIFA World Cup

<table>
<thead>
<tr>
<th></th>
<th>2002 World Cup</th>
<th>2006 World Cup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of offsides given ('Flag')</td>
<td>Correct</td>
<td>164 (73.9%)</td>
</tr>
<tr>
<td></td>
<td>Incorrect</td>
<td>58 (26.1%)</td>
</tr>
<tr>
<td>Total number of Offsides claimed ('non-Flag')</td>
<td>Correct</td>
<td>25 (73.5%)</td>
</tr>
<tr>
<td></td>
<td>Incorrect</td>
<td>9 (26.5%)</td>
</tr>
</tbody>
</table>

DISCUSSION
FIFA took several initiatives to improve the performances of the assistant referees when judging offside after the 2002 World Cup. First, from a structural point of view, the offside law and the appointment of referees and assistant referees was changed. Second, from an educational point of view, the assistant referees were made aware of the underlying mechanisms leading to offside decision-making errors during physical and perceptual training sessions. All these efforts resulted in a significant decrease of the offside decision-making errors. Unless, this significant decrease, there is still an error rate of 12.1%. To deal with those errors, it can be questioned whether video analysis during the game is a viable option to assist match officials when assessing offside situations.

REFERENCES


