Decision making skills in sport: Analyses of players’ and team tactics in football by means of visual search and movement behaviour

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Background
Competitive sports like baseball, football and tennis require players to handle and return fast moving balls. The key to such a successful action is to meet the ball at the right place and at the right time and to apply exactly the right amount of force to catch, hit or kick it to the desired location. These types of actions require a high degree of proficiency in both perceptual and motor skills, as well as an effective coupling between perceptual and motor processes. In general, adequate perception is a prerequisite for an efficient execution of movement patterns.

In the last decade, numerous studies have shown that experts have superior anticipation skills compared to novices. In fact, research has demonstrated that the fundamental difference between experts and novices appears to follow from their ability to pick up useful visual information in advance. The PhD projects indicated below examine whether differences in visual search and locomotion behaviour can be identified in a group of young, talented football players, who were selected by the South Africa football association. The two PhD students will work closely together on the issues of talent identification and match analyses in football. In one project the individual visual search and movement behaviour will be analyzed, while the second will concentrate on the players’ behaviour in the team by means of individual and team analysis.

Projects
1. Visual search- and locomotion behaviour in young football players in an indoor environment

Until today, the so-called novice-expert paradigm has been predominantly used to detect differences in visual search behaviour. However, talents are not experts yet, but may become experts in the future. Another possibility is therefore to compare players with comparable levels of expertise, that is, a so-called within-group comparison. Using this methodology, the research in this project will investigate differences in
visual search and locomotor behaviour in a group of talented 10-16 year-old football players. The participants will watch film clips of game situations, presented on a large screen. The presented images will give them the impression of being immersed in the game situation, and they will be instructed to take what they consider the best decisions for play continuation (i.e., take position for reception, passing the ball to another player, staying in ball possession, taking a shot at goal, and so on). Participants’ locomotor and visual search behaviours will be collected continuously throughout the presentation of the clip. A within-group comparison will be made based upon the participants’ performance score, indexing the quality of the decisions taken.

2. Locomotion behaviour in young football players in (small-sided) matches (i.e., 4 against 4; 7 against 7) in an outdoor environment

The same participants that take part in the first project will also take part in the second. They will play in small-sided matches (i.e. 4 against 4; 7 against 7) on an appropriately sized outdoor soccer field, while their heart rate and position in the field are continuously measured, the latter aspect by means of a global positioning system (GPS) and video analyses. Individual tactical decisions will be analyzed (walking patterns) and compared to the team structure and players’ function in the team. In addition, the findings on the field will be compared to the indoor findings of project 1 for the talent identification.

In sum, the two projects are aimed at identifying the variables that are most important in distinguishing skilled from less-skilled players. These variables are essential in an attempt to detect talent, and only when our understanding of them is enhanced will it be possible to develop adequate tests for talent identification.

References


**Qualifications of candidate**

- Master degree in Human Movement Sciences or Sport and Exercise Science, or Kinesiology
- Good communication and writing skills in the English language
- Preference for a candidate with experience in recording of eye or head movements; knowledge about visual perception theories; experience with research with children

**Biographical note**

Geert Savelsbergh studied Human Movement Sciences at VU University Amsterdam, the Netherlands. He also obtained his PhD at the VU University and the title of his thesis was ‘Catching Behaviour’ (from information processing to ecological psychological explanations). His major interest lies the role of visual information in the guidance and regulation of movement. In his research group entitled Perceptual-
motor control, the development, learning and performance (webpage: http://www.move.vu.nl/research/motor-control/perceptual-motor-control) examines these aspects in infants, children (with and without special needs) and in peak performance athletes. With respect to peak performance in the coming years special attention will be given to talent and talent development.