

Performance analysis in team and racket sports by using SAGIT system

Goran Vučković

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Introduction



Motion analysis

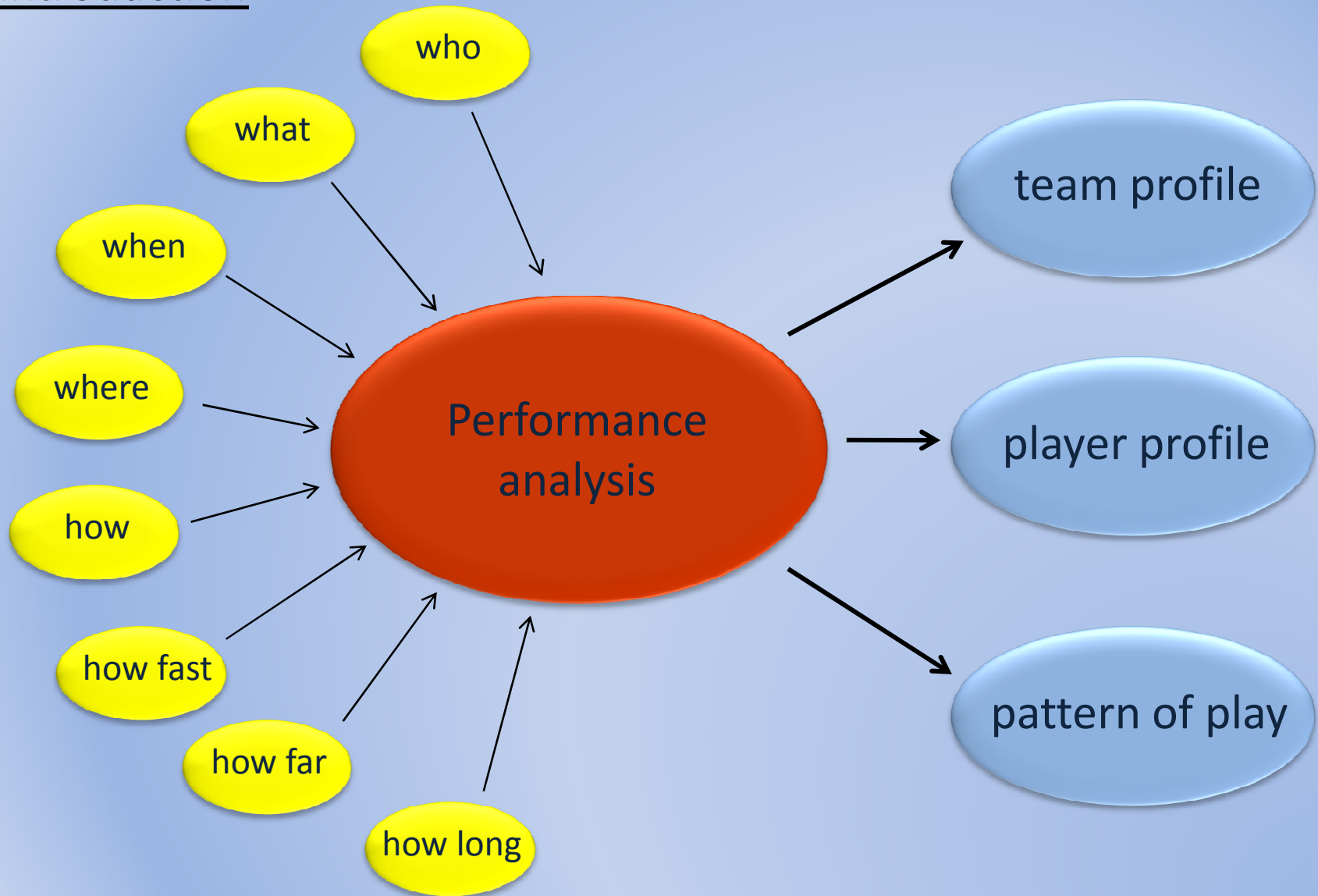
The measurement of distances covered by players, the velocity of their movements and their position within a two-dimensional space during matches serve as an important basis for the appropriate planning of work loads undertaken during training sessions.



Notation analysis

Notational systems are used by sports scientists and coaches to gather objective data on the athlete's behaviour.

Introduction



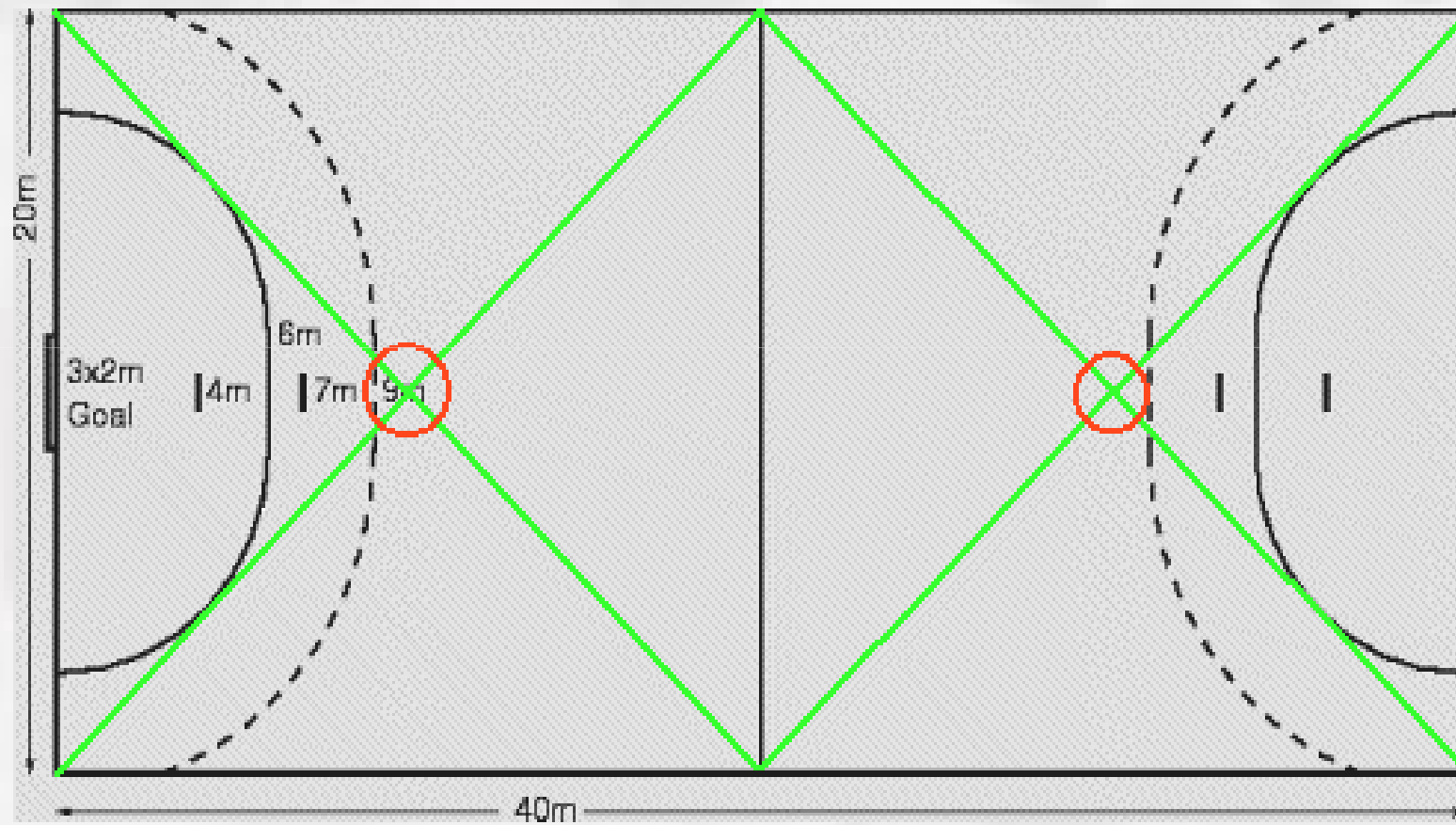
Methods

Methodology, Image processing, SAGIT



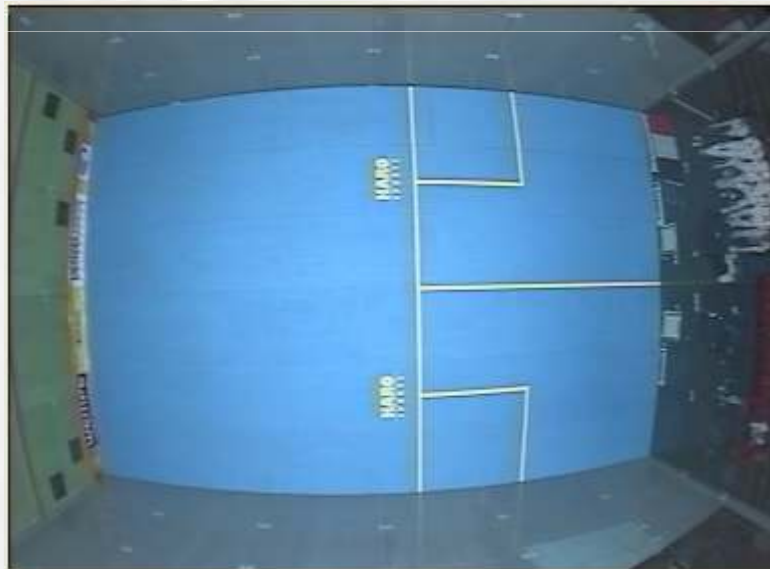
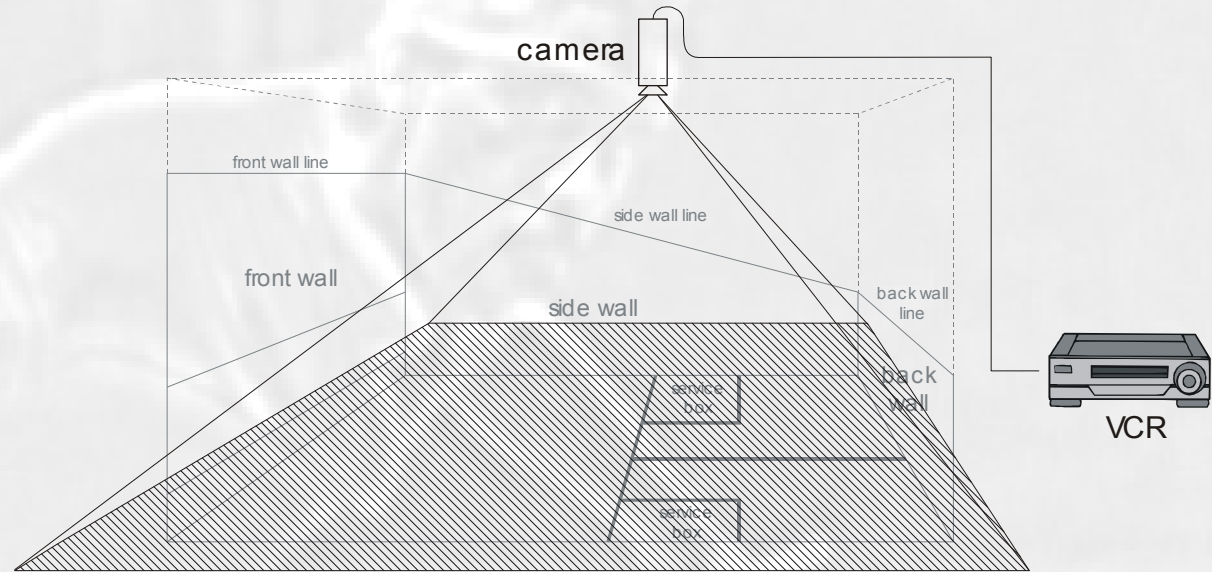
Image of the players and court with the corresponding binarized image

Methods



Video camera location

Methods



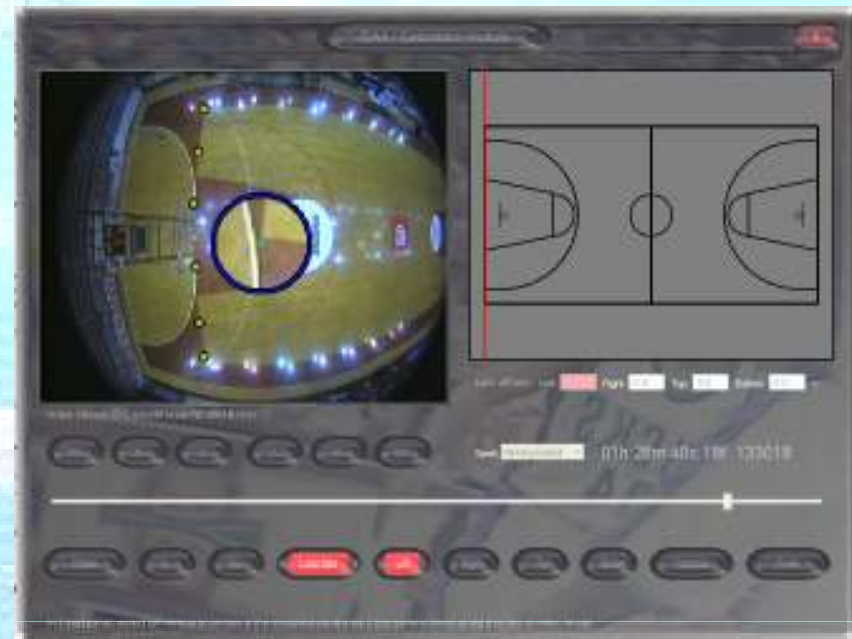
Video camera placement and connection to the S-VHS video recorder

Image of a squash court, as captured by the video camera

Methods



2. Tracking module

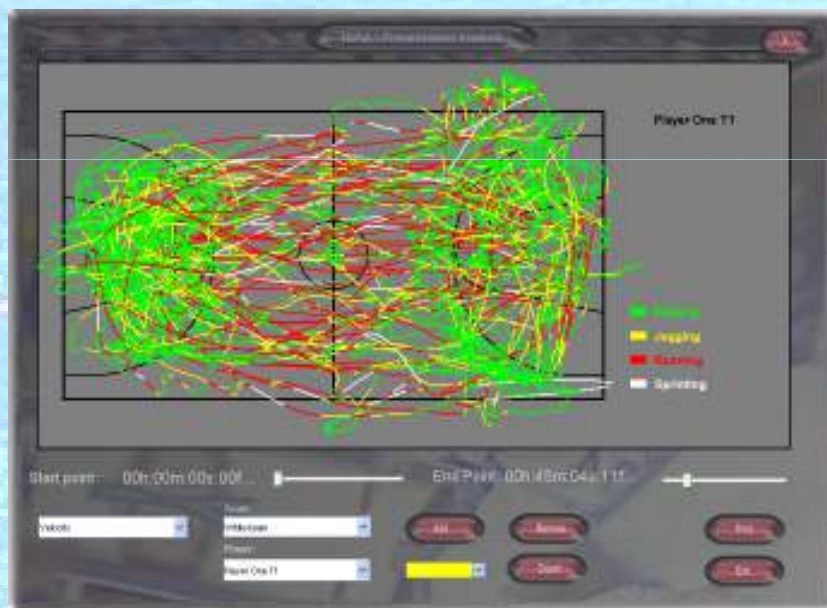


1. Calibration module

Methods

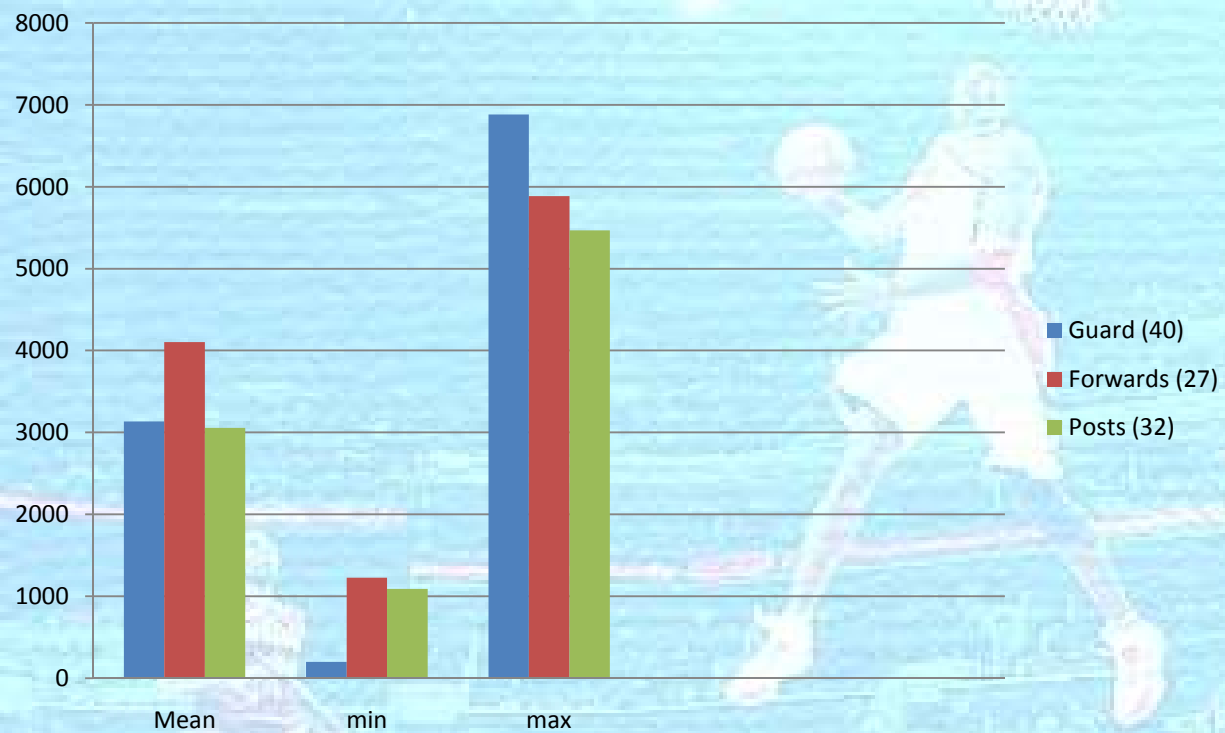


3. Annotation module



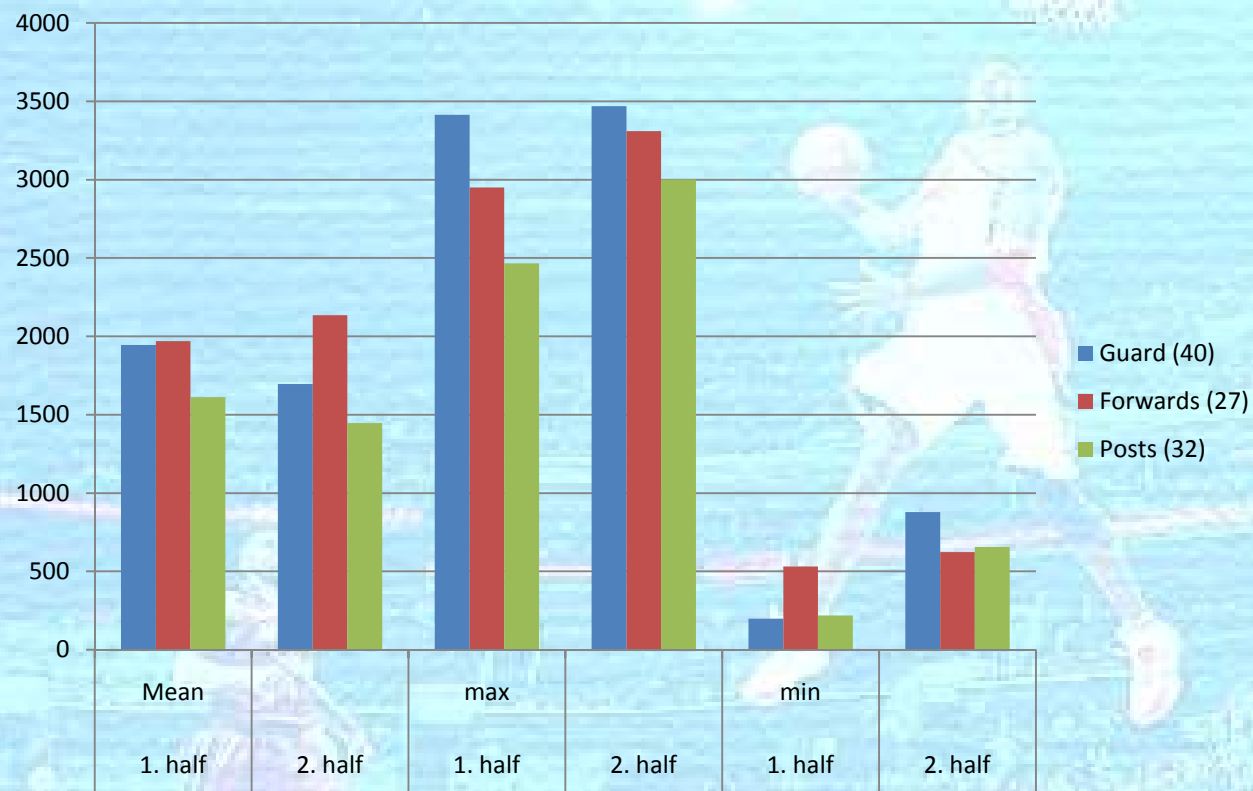
4. Presentation module

Results - basketball



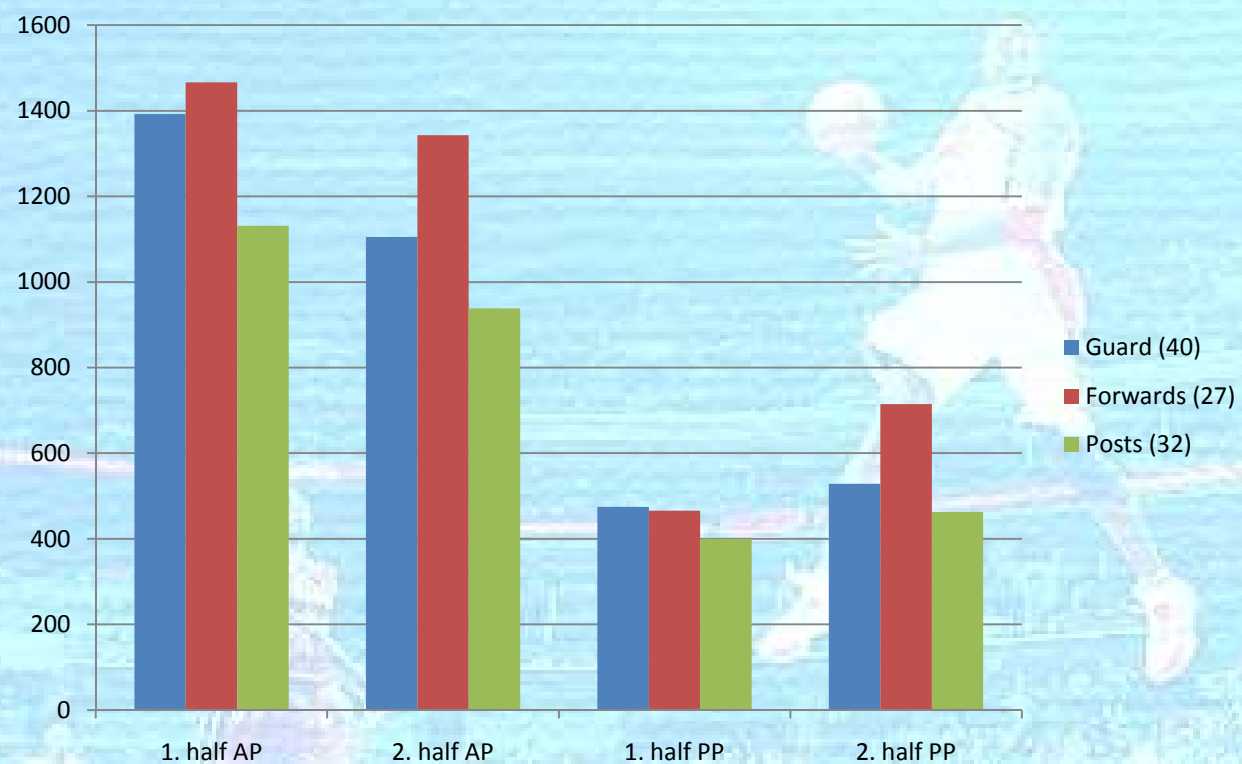
Average distance covered by basketball players during the all match (m)

Results - basketball



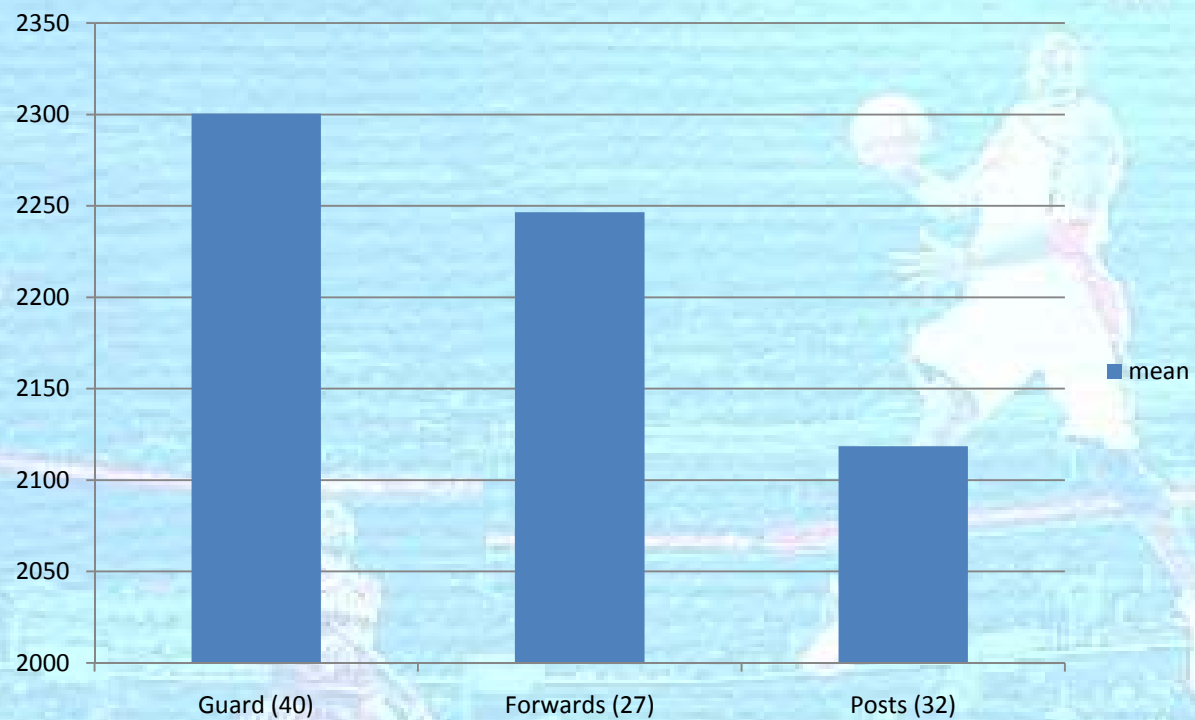
Average distance covered by basketball players during the 1st and 2nd half of the match (m)

Results - basketball



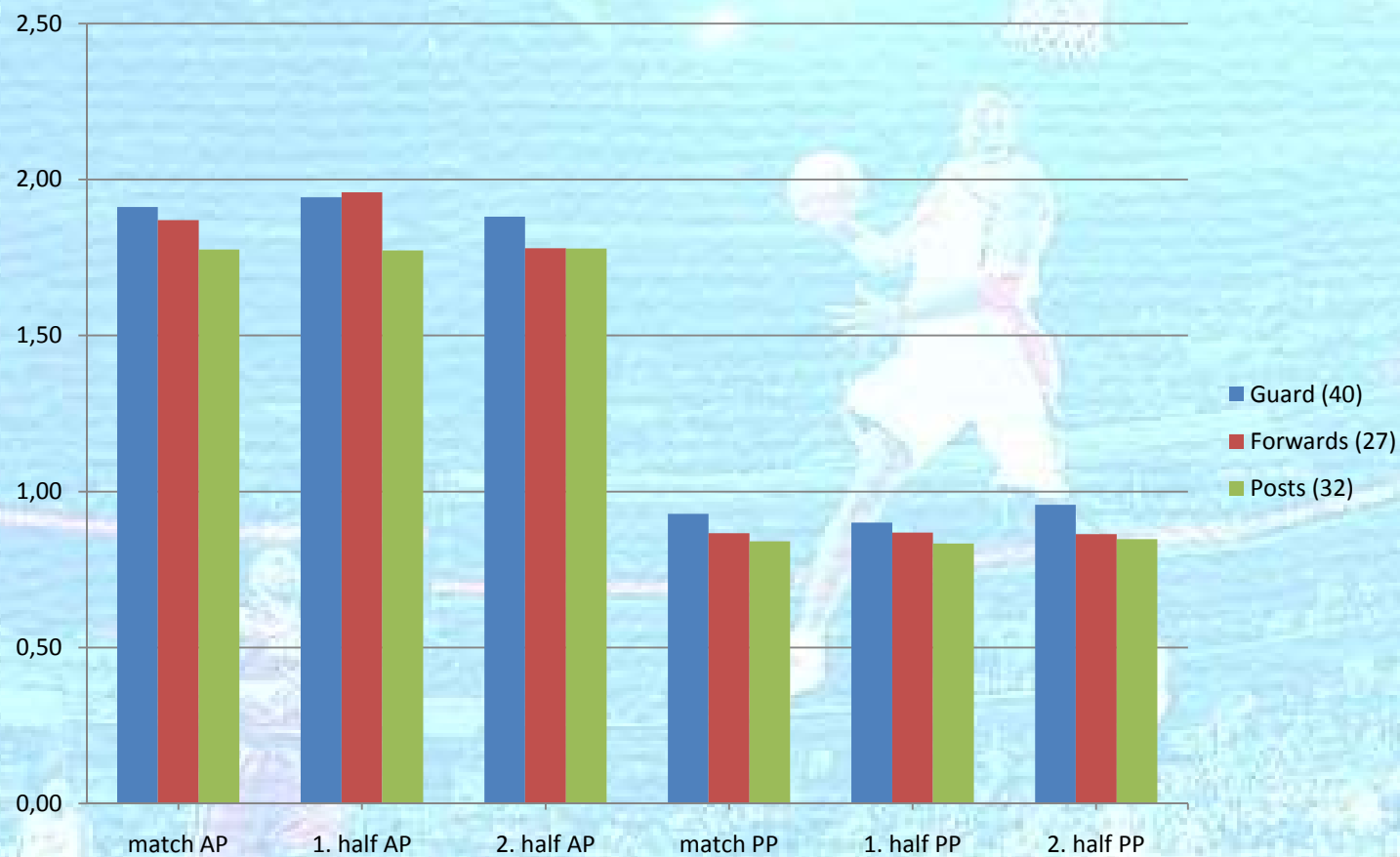
Average distance covered by basketball players during the active and passive part in 1st and 2nd half of the match (m)

Results - basketball



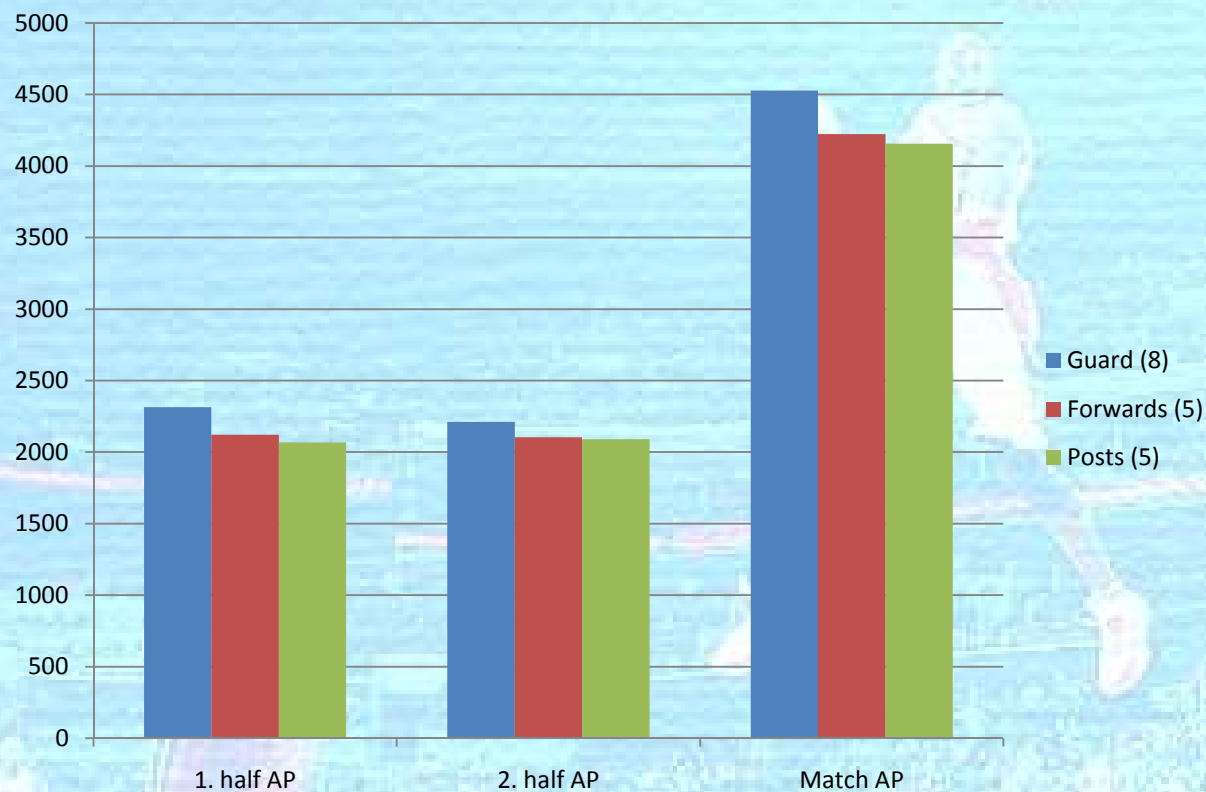
Distances (m) covering the active phase of a game by different types of players as if they had played an entire half (20 minutes)

Results - basketball



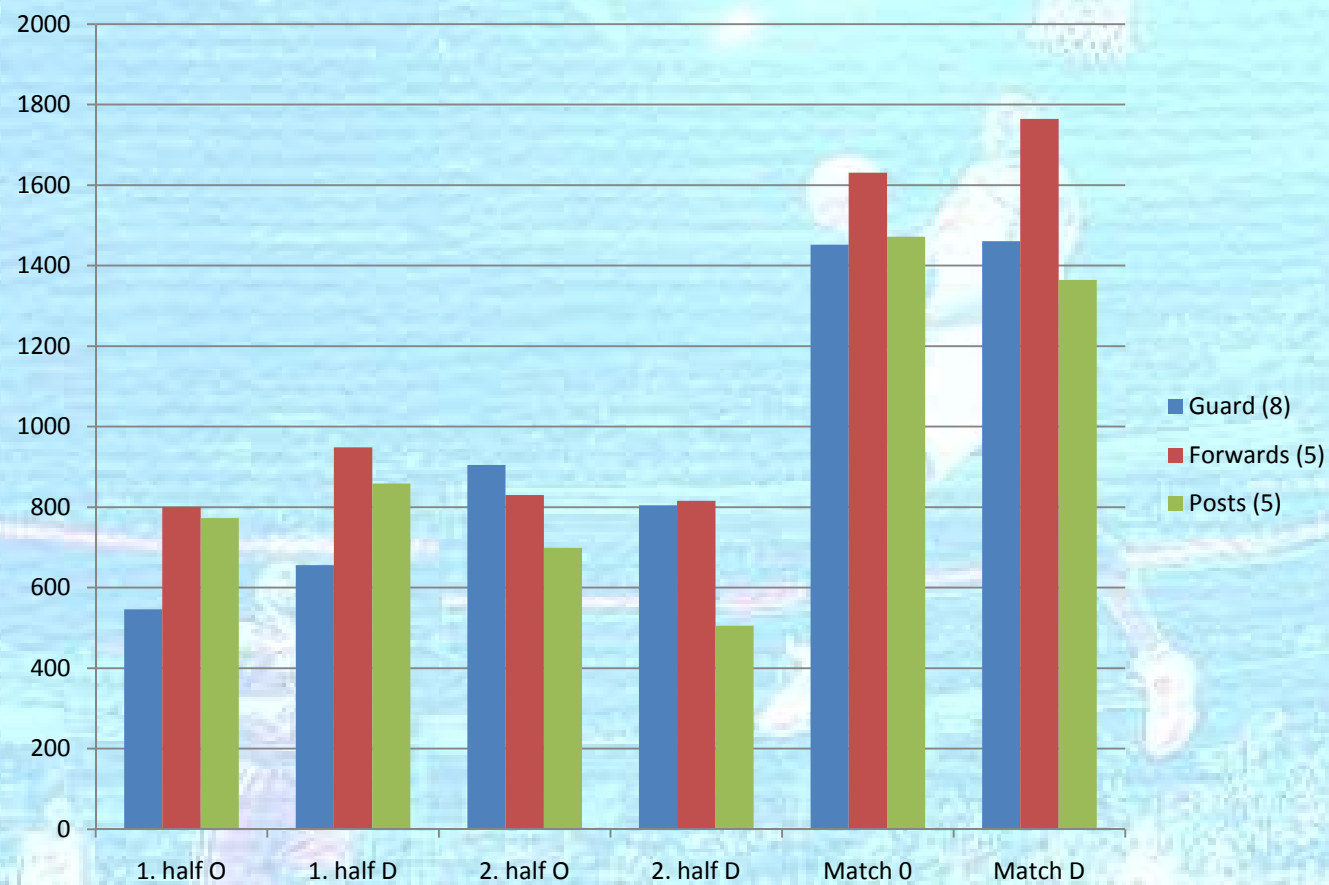
Player's average speed of movement during the match, active and passive part in 1st and 2nd half of the match (m/s)

Results - basketball



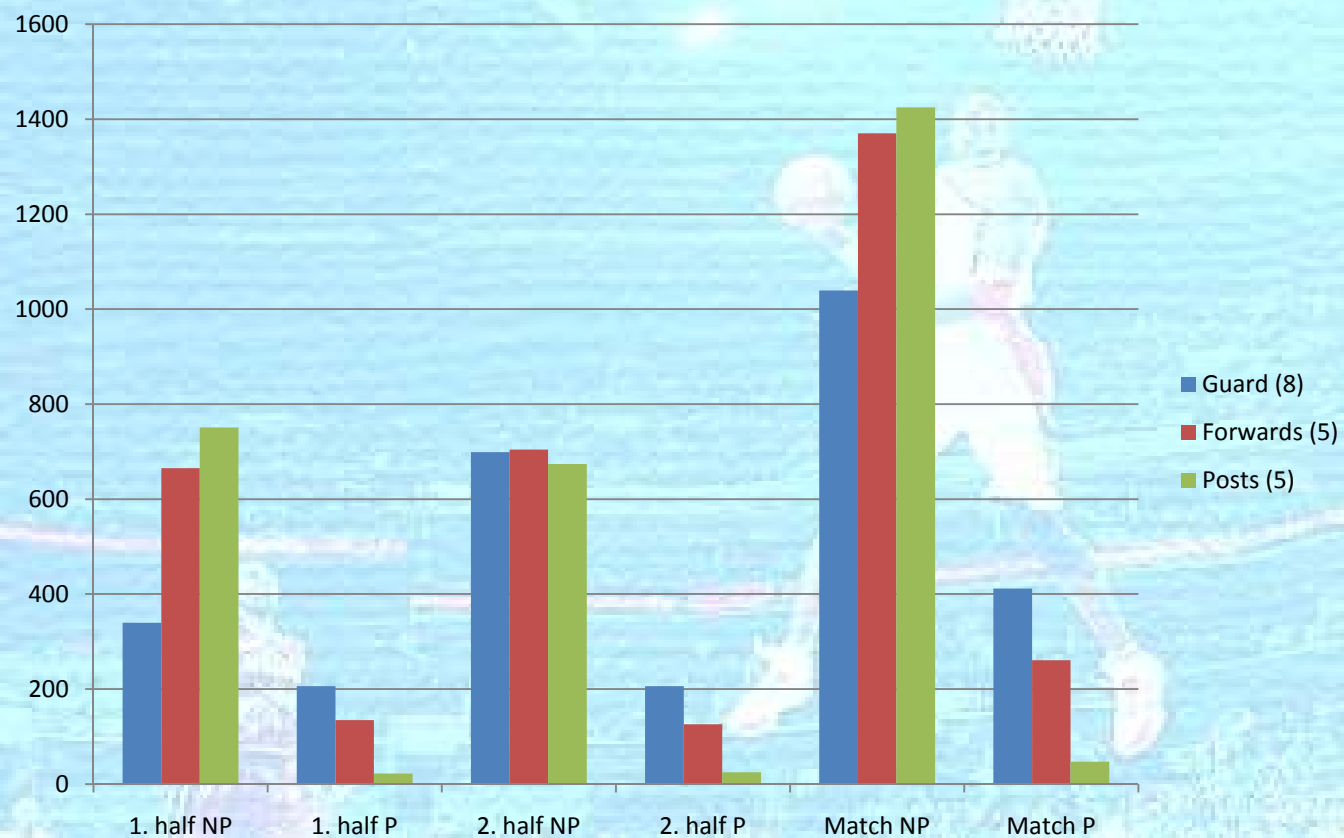
Distances (m) covering the active phase of a game by different types of players as if they had played an entire half (20 minutes) – EC (under 20)

Results - basketball



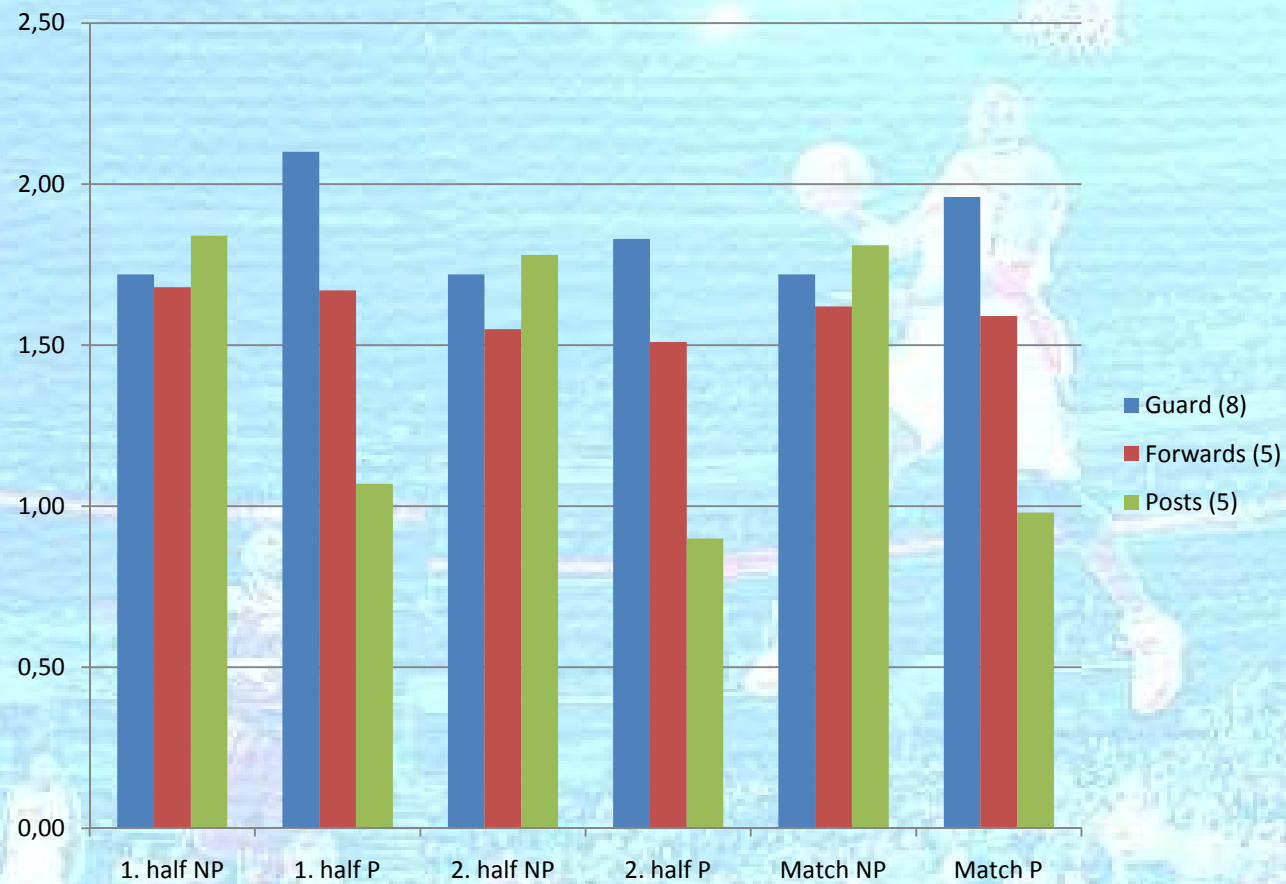
Average distance covered by basketball players during the active part in offence and defence (m)

Results - basketball



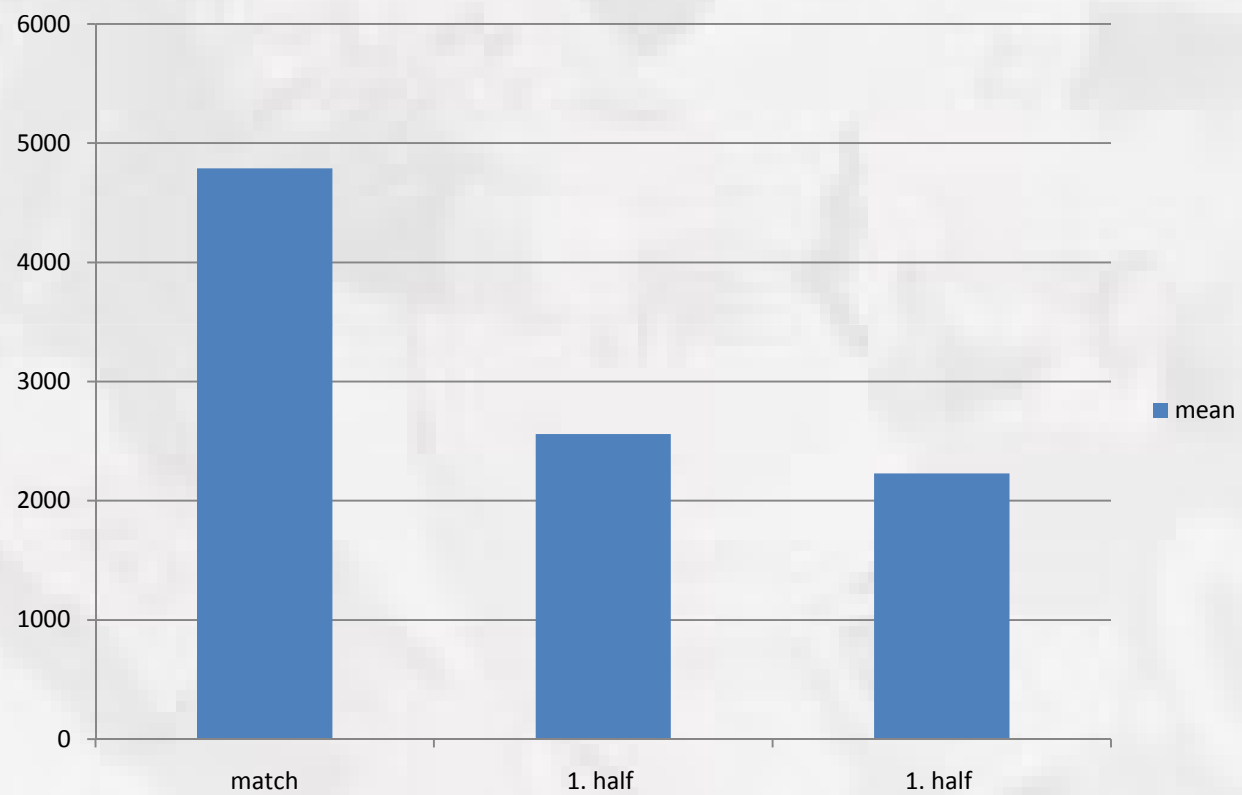
Average distance covered by basketball players during the active part of offence with ball possession and without ball possession (m)

Results - basketball



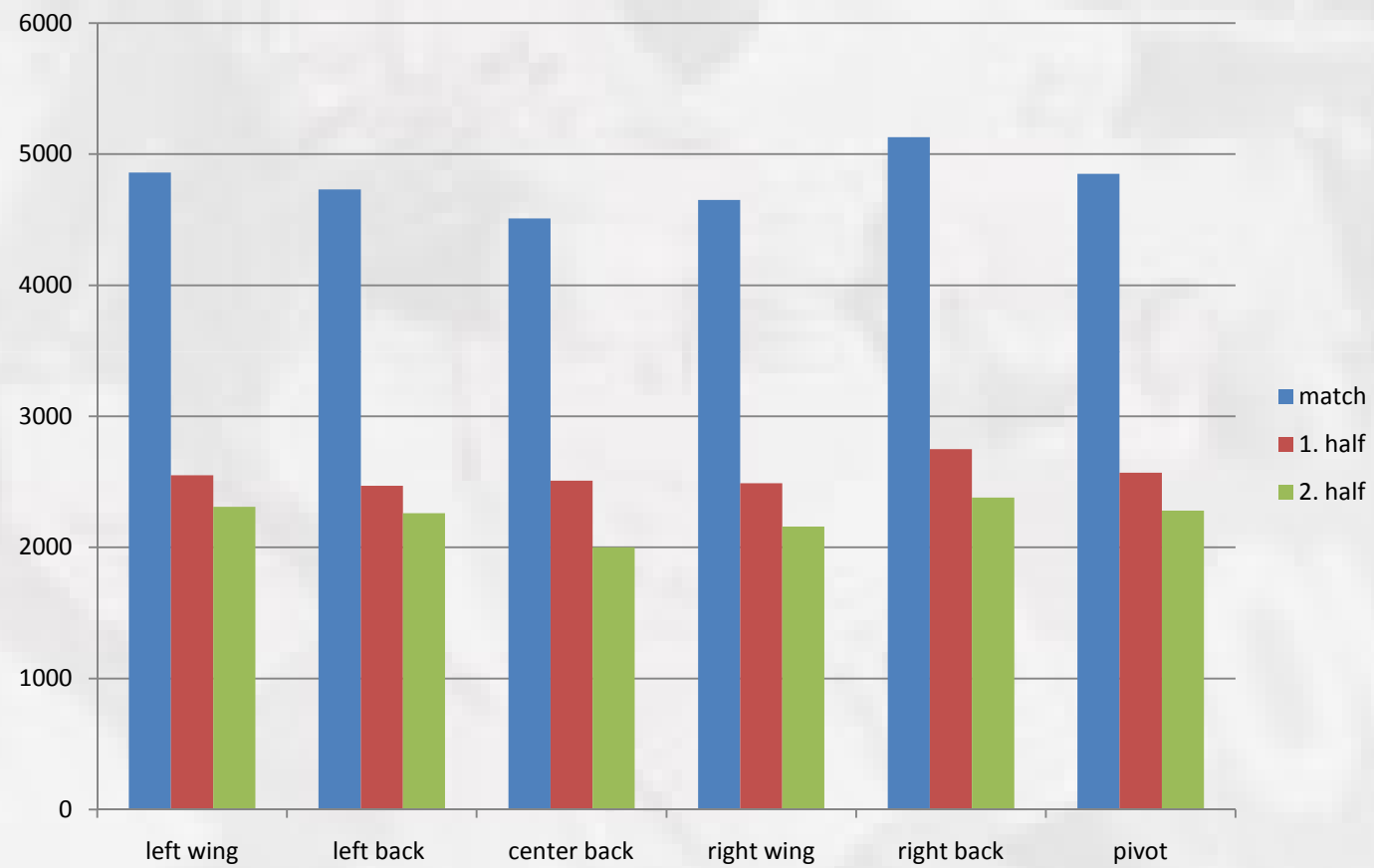
Player's average speed of movement with and without ball possession (m/s)

Results - handball



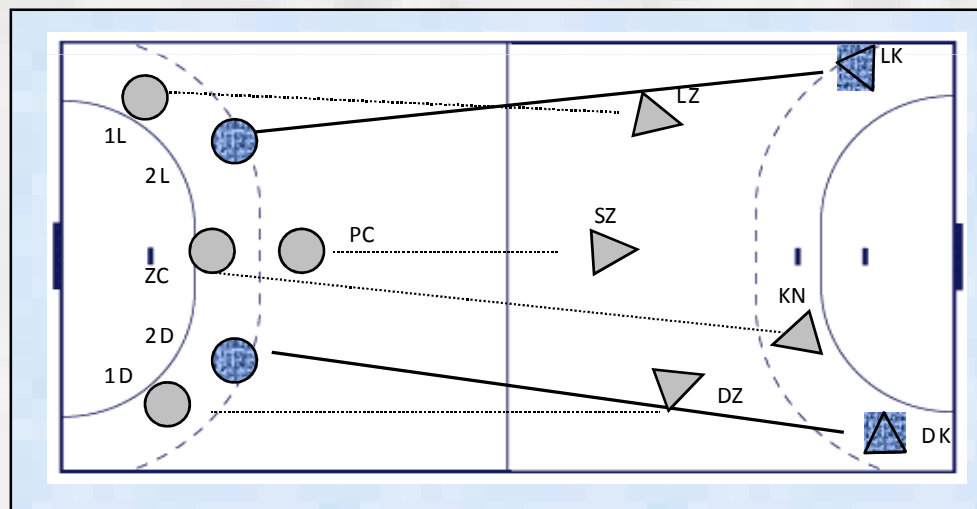
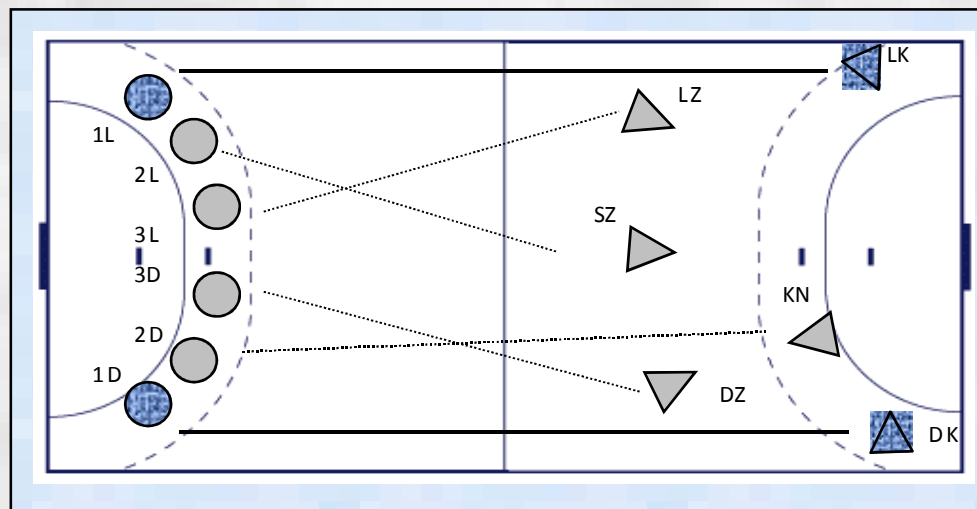
Average distance covered by handball players (m), (Bon)

Results - handball



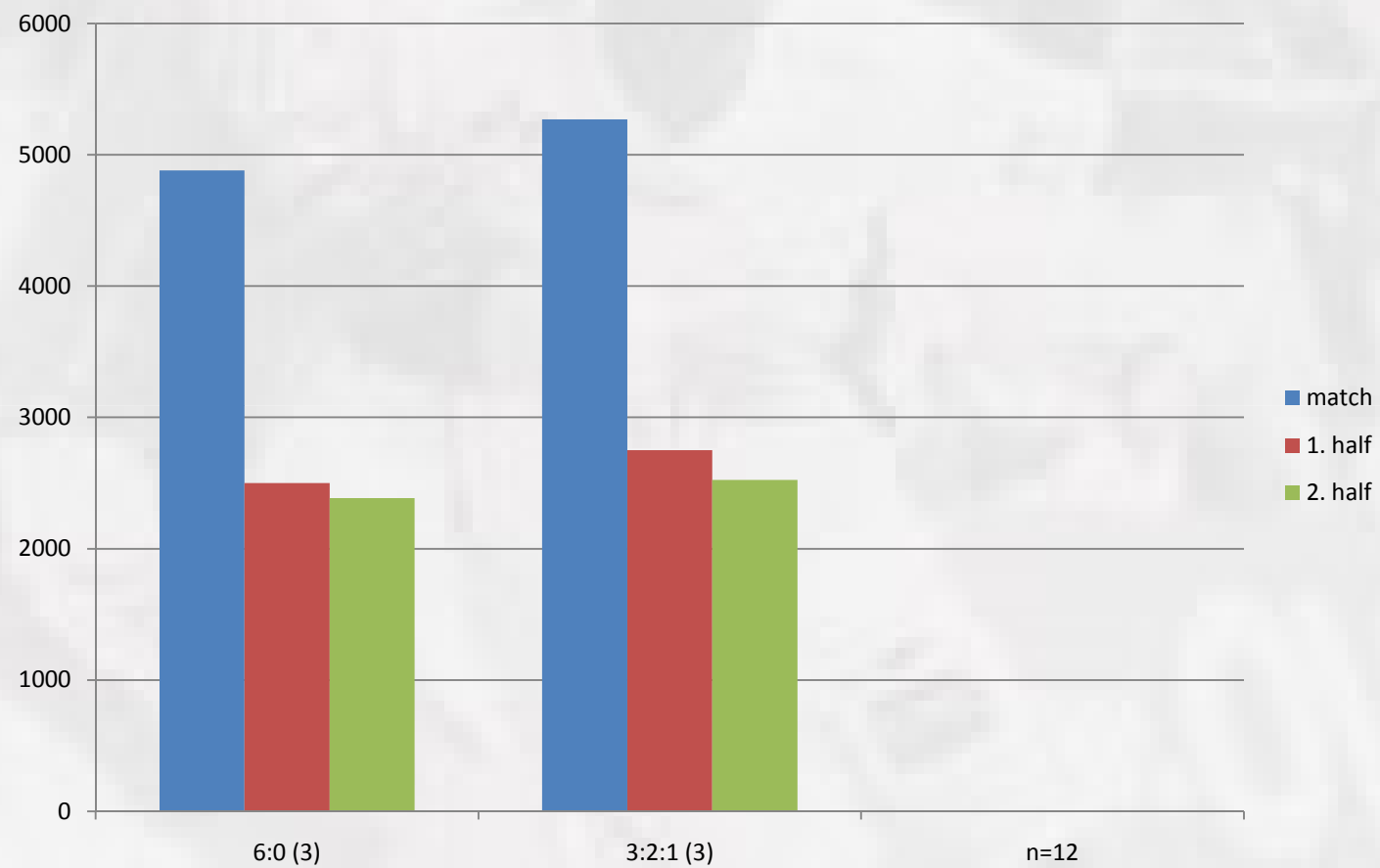
Distance covered by different types of handball players (m), (Bon)

Results - handball



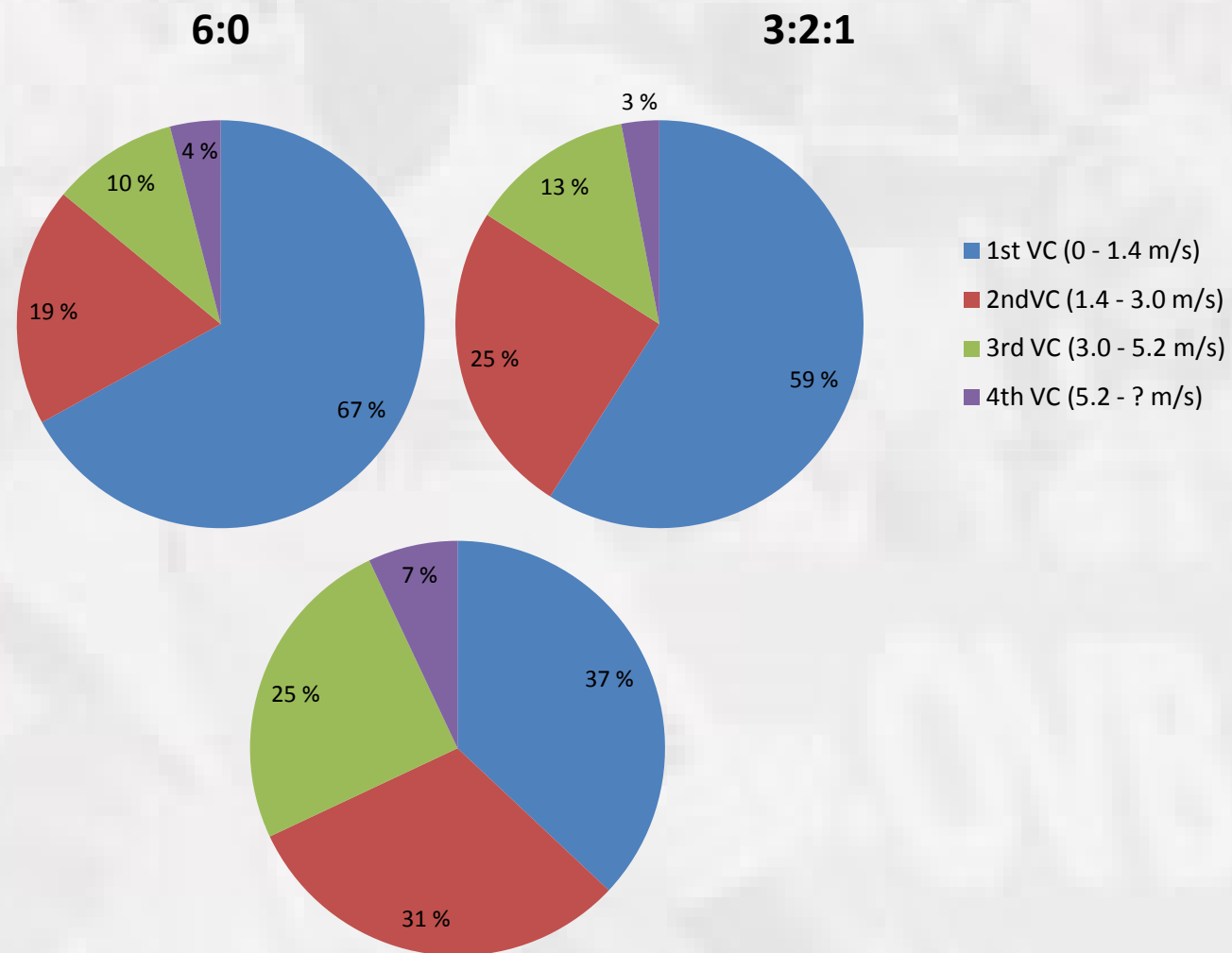
Position of the wing players in 6:0 and 3:2:1 zone defence, (Pori)

Results - handball



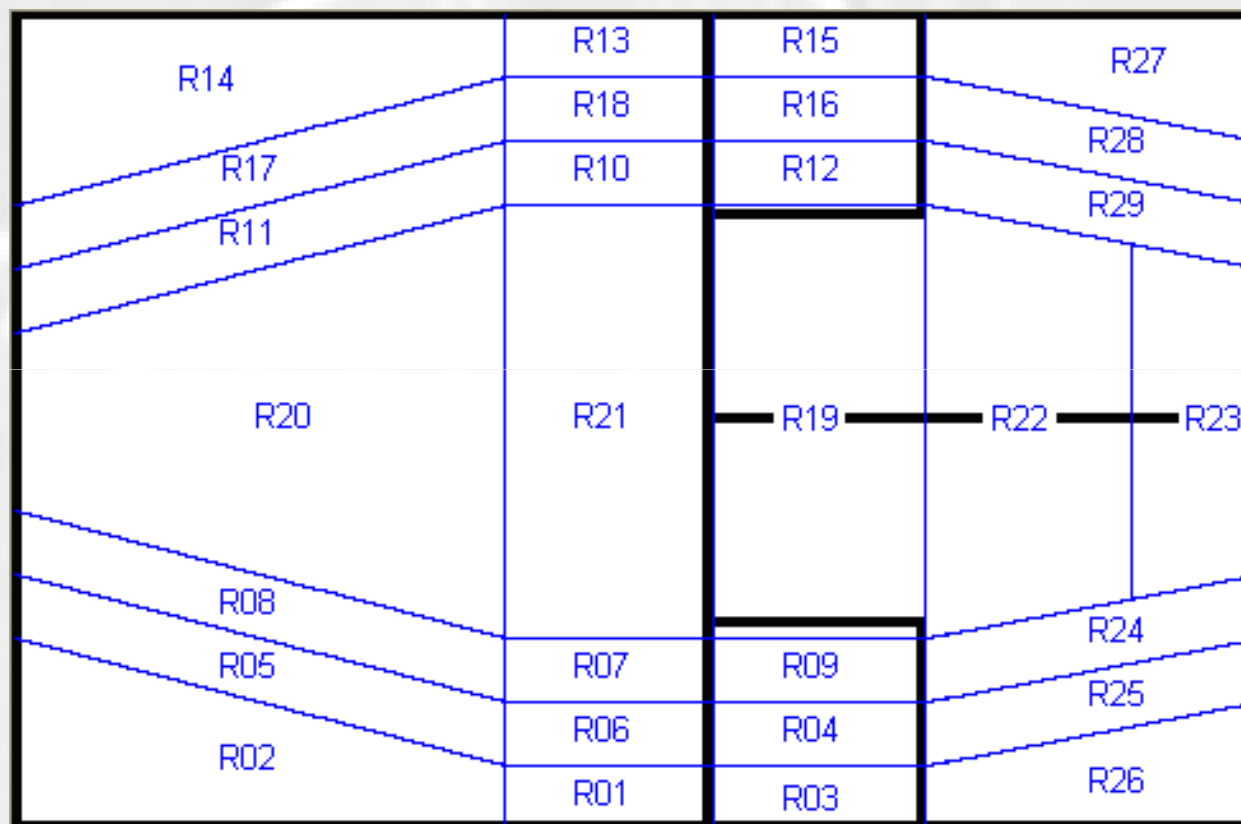
Average distance covered by wing players during the different zone defence (m), (Pori)

Results - handball



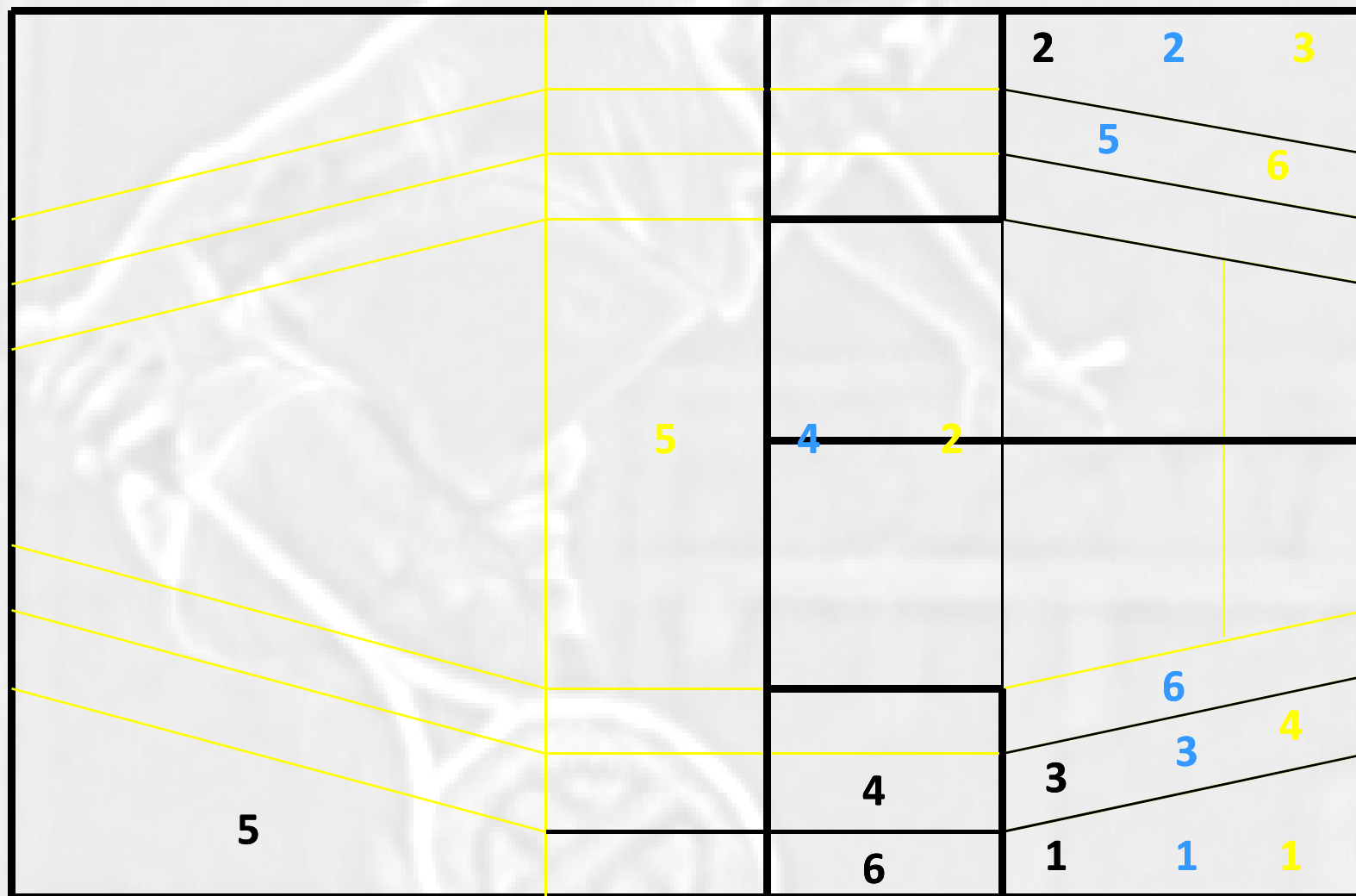
Movement intensity expressed as relative time spent within particular velocity class, (Pori; Bon).

Results - squash



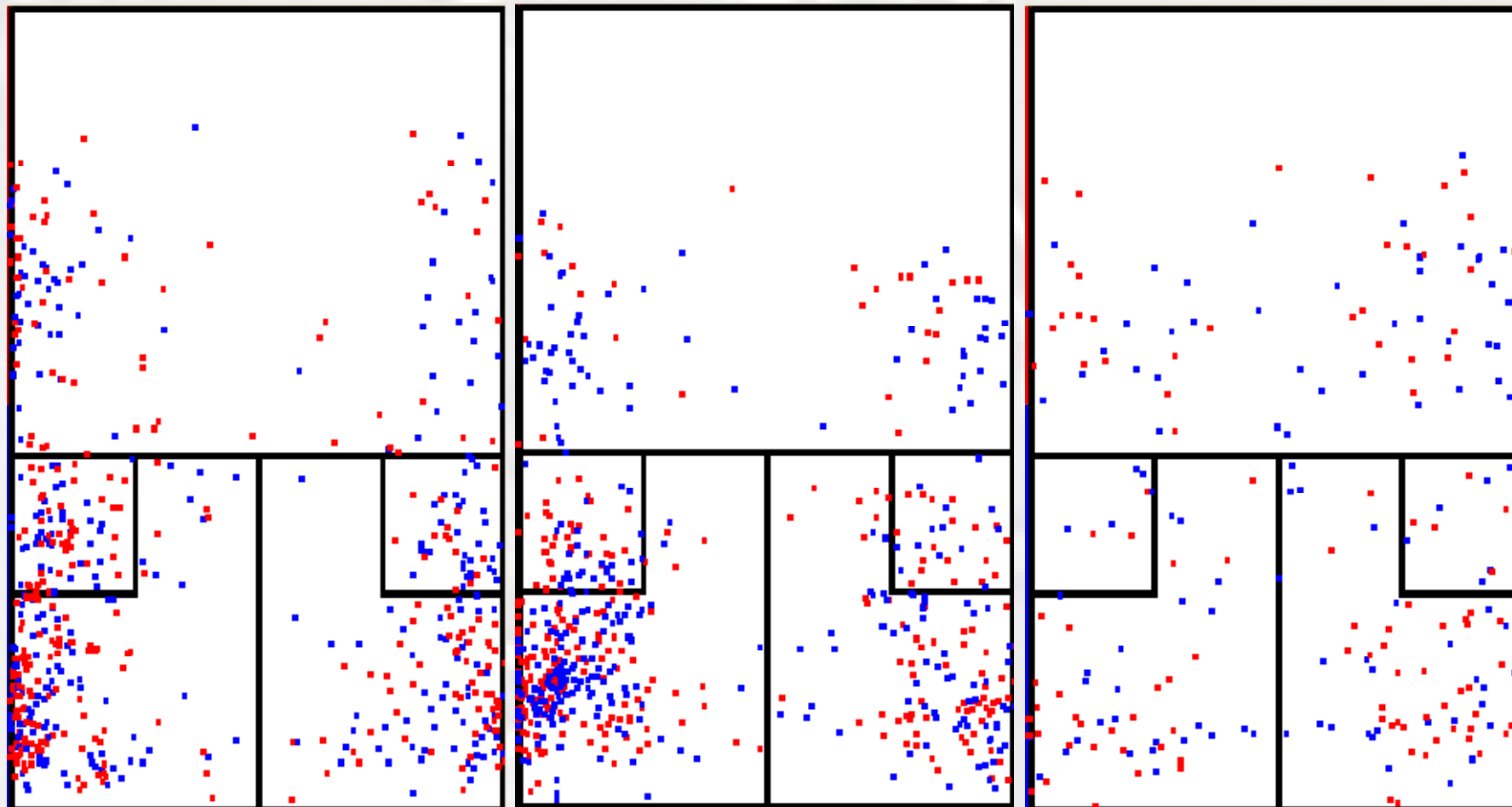
Squash court divided into 29 segments

Results - squash



Court segments with highest percentage of strokes for all group of players

Results - squash

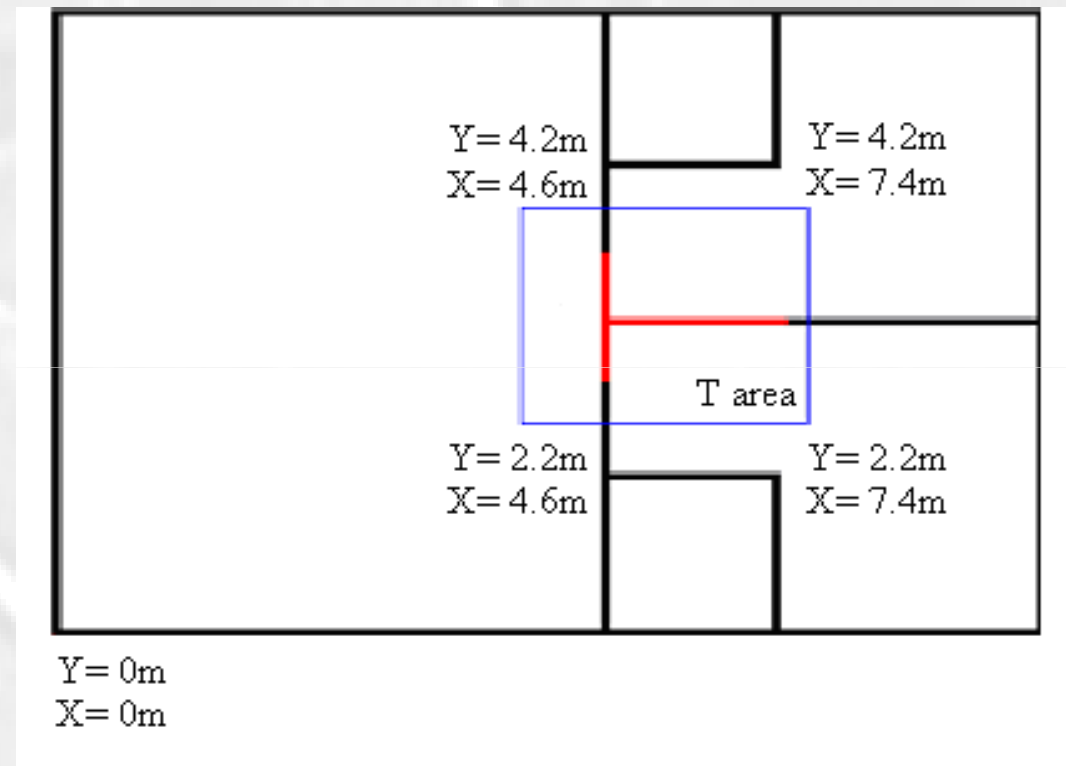


World top players

National top players

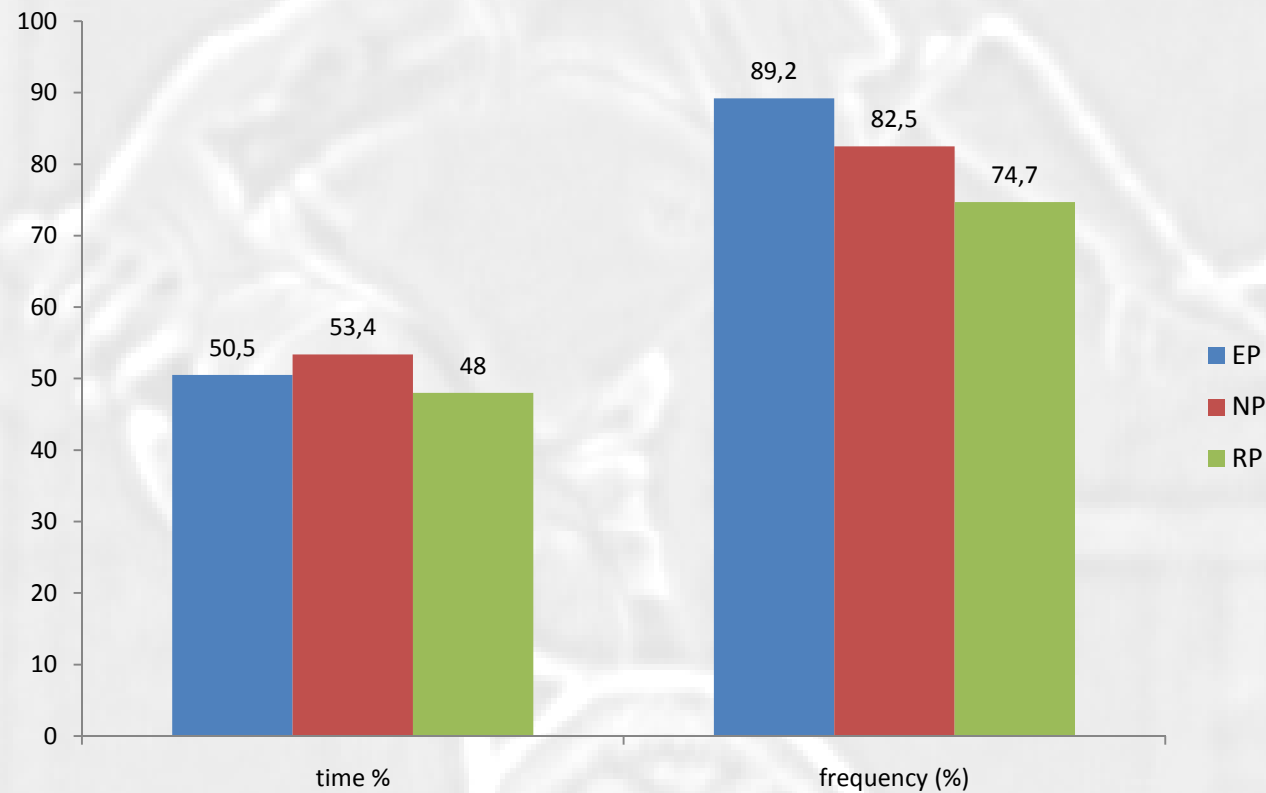
Recreational players

Results - squash



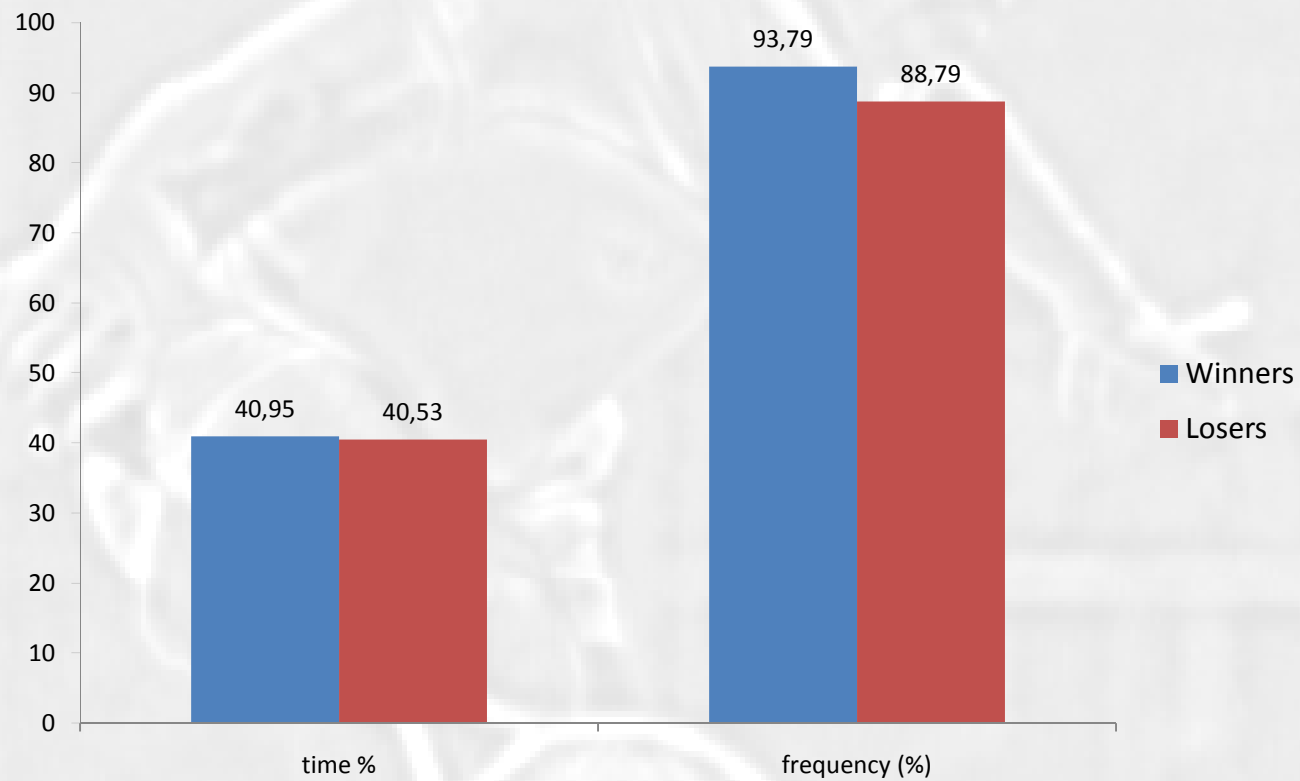
Location and coordinates of the T area on the squash court floor

Results - squash



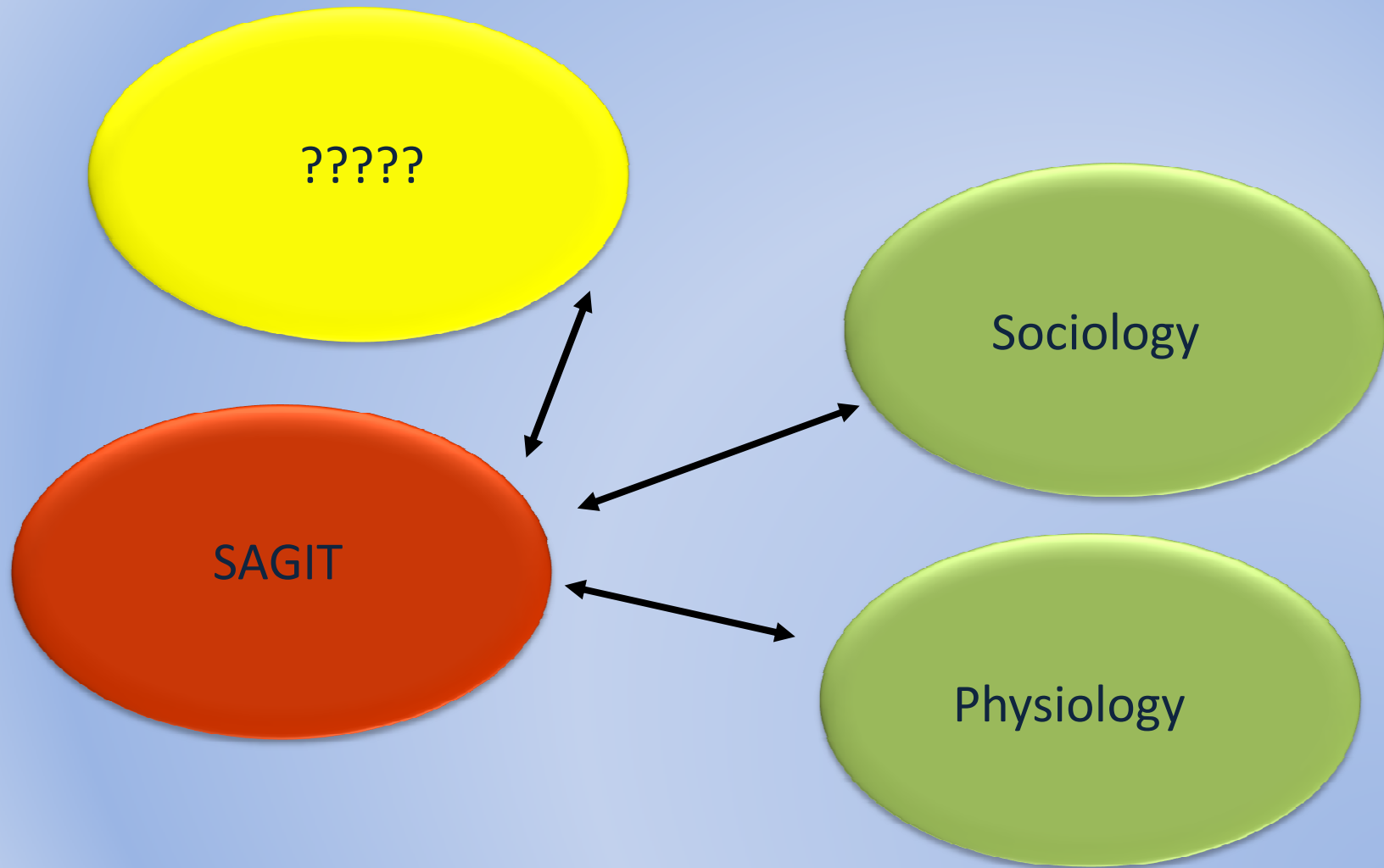
Percentage of times during which the players stayed on the basic position and frequency of player's positioning on the basic position

Results - squash



Percentage of times during winners and losers of the games stayed on the basic position and their frequency of positioning on the basic position

Further research



Thank you for your attention

