

Network Analysis of Passes in International Netball

Butterworth, Andrew¹; O'Donoghue, Peter².

¹College of Life Sciences, University of Derby, Derby, UK.

²Cardiff School of Sport, Cardiff Metropolitan University, Cyncoed Campus, Cardiff, UK.

Introduction

Network analysis has been used to describe player co-operation in team games including soccer (Clemente et al., 2015). The purpose of the current investigation was to compare passing activity during 3 critical matches played by England and their opponents during the 2014 Commonwealth Games.

Methods

Network graphs were produced for all 6 team performances and Table 1 summarises the main variables.

Results

Chi square tests of independence revealed no significant difference in player touches ($\chi^2_{12} = 19.9$, $p = 0.068$) or passing interactions ($\chi^2_{16} = 23.2$, $p = 0.107$). However, there were significant differences between England's opponents for both touches ($\chi^2_{12} = 38.0$, $p < 0.001$) and passing interactions ($\chi^2_{16} = 36.7$, $p = 0.002$). This suggests that tactical approaches used differ between the World's top 4 international netball teams.

Table 1. Touches and pass interactions for England and their opponents.

Variable	England Performances			Opposition Performances		
	v Australia	v N Zealand	v Jamaica	Australia	N Zealand	Jamaica
<u>Touches</u>						
GS	54	45	37	24	51	35
GA	52	29	42	108	80	104
WA	84	61	73	105	89	80
C	135	107	126	118	138	141
WD	71	56	54	34	72	42
GD	58	69	47	46	48	53
GK	38	44	23	20	26	14
Total	492	411	402	455	504	469
Succ pass %	94.7±3.1	93.7±9.8	92.8±3.4	93.8±2.9	94.0±5.3	95.1±2.9
<u>Passes</u>						
C > GA	28	22	34	55	48	55
C > GS	37	31	28	18	30	30
WA > GA	19	13	19	46	43	27
C > WA	34	16	27	34	26	25
GA > C	21	8	17	35	23	34
GA > WA	13	8	13	43	25	31
WA > GS	24	28	21	23	18	19
GS > C	30	19	12	9	19	9
Other	286	266	231	192	272	239

Discussion & Conclusion

Network analysis of opposing teams may provide useful information for defence coaches of international netball squads.

References

Clemente, F.M., Martins, F.M.L., Wong, D.P., Kalamaras, D. and Mendes, R.S. (2015), Midfielder as the prominent participant in the building attack: A network analysis of national teams in FIFA World Cup 2014, *International Journal of Performance Analysis in Sport*, 15, 704-722.