3. MATCH ANALYSIS IN FOOTBALL GAMES

O-014 Profile of position movement demands in elite junior Australian Rules Football

James. P. Veale 🖂, Alan J. Pearce and John. S. Carlson

¹Centre for Aging, Rehabilitation, Exercise and Sport. Victoria University, Australia

OBJECTIVE Australian Rules Football (ARF) is Australia's most popular football code. However, there is no published research in literature regarding movement activities and demands in match play at the junior level. To analyse movement data in elite junior ARF positions, comparing the activities, intensities and durations between players filling the various positions. The aim of the study was to analyse position characteristics rather than individual player performance.

METHODS Thirty athletes (17.07±0.89 years) participated in the study. Using the methodology from elite senior ARF research (Dawson et al. 2004) all on-field positions were videotaped on 3 separate occasions over 7 home games during the 2006 Victorian U18 season. Post match analyses involved reviewing each tape, calculating number of efforts, duration of efforts, and distance covered for each position.

RESULTS Comparisons showed the mean number of efforts over the 7 matches ranged between 752 ± 107 to 942 ± 62 (midfield). For all positions, the majority of effort durations were reported to last between 0-3sec. Comparison of mean distances completed between ranged between 10419m (range 9811-10774m) to 16691m (range 16167-17012m).

DISCUSSION These results suggest that movement activity differences occur between positions in ARF. However, further research must continue in this area to assist junior elite ARF coaches to plan position specific training programs whilst overall developing their players as well-rounded athletes.

REFERENCES

Dawson et al. (2004) *J Sci Med Sport* **7**, 278-291. Fogelholm (1994) *J Sports Sci* **12**, 23-27.

KEY WORDS Junior athletes, Movement analysis, Positional differences.

O-015 Scoring profiles in rugby union: difference of league and tournament systems

Koh Sasaki ¹ , Takuo Furukawa³, Jun Murakami², Hironobu Shimozono⁵, Masaki Nagamatsu⁴, Masahiko Miyao⁶, Takumi Yamamoto⁷, Ichiro Watanabe¹¹, Hiroshi Yasugahira⁸, Taketoshi Saito⁹, Takashi Katsuta¹⁰, Ichiro Kono³

¹Nagoya University, JAPAN, ² Fukuoka University, JAPAN, ³Tsukuba University, JAPAN, ⁴Osaka Kyoiku University, JAPAN, ⁵Kyusyu Kyoritsu University, JAPAN, ⁶Toyota Corporation, JAPAN, ⁷National Defense Academy, JAPAN, ⁸Kokusai Budo University, JAPAN, ⁹Hakuoh University, JAPAN, ¹⁰Sendai University, JAPAN, ¹¹Musashi Institute of Technology, JAPAN

OBJECTIVE Senior league of Japanese Rugby Union introduced 'a Top 12 league system' (66 games in each season) form 2003, aiming for expanding opportunities of more competitive games in the country. The structures of the games played in three seasons (2003-2005) were analyzed based on the IRB game analysis system. The purpose of this study was to discuss the differences and analyze the changing structure of the scoring profiles and performances of the defences in Rugby Union games between 'the knockout tournament system MicroCup:MC' and 'the league system Top League:TL'.

METHODS Hand notation system was used to gather data from digital video recording by cooperating with Japanese Sky TV program. 10 experienced operators analyzed the games through the three seasons. To ensure acceptable reliability, an intra-operator reliability test was calculated with percentage errors for each variable.

RESULTS The scoring of points decreased in the values through the three seasons. Occurrence ratio of the source of try (Scrum, Lineout, PK/FK, Counter Attack from pant catch, Counter attack from handling error, Counter attack from tackle turnover have changed through three seasons (TL; Chi-squared=48.5, df=5, p < 0.01, MC; Chi-squared=31.3, df=5, p < 0.05).

DISCUSSION When data of the two data gathering systems were compared, the values of 'PK/FK' and 'CA-TO' both increased, which suggested that under competitive and continuity situations like PK and , turnover occurrences appeared to be important facets of the tries. This suggests that the defence performances should be connected to the successive quick attack by various strategies

KEY WORDS Notation analysis, scoring profiles, defence performance, turnover.

O-016 Patterns of play in men's elite 7-a-side rugby union

Mike Hughes ¹ And Rhys Jones ²

¹Cpa, Uwic, Cyncoed, Cardiff Cf23 6xd, Dublin, ² Irb, Dublin

OBJECTIVE Very little research in notational analysis has been carried out in 7-a-side rugby. The aim of this study was to extend the work of Hughes and Jones (2005) and define performance indicators (PI's) in 7-a-side rugby, and to make comparisons between the relative values of these PI's of 11 competing nations and correlate this with their final ranking position and ultimately with winning and losing.

METHODS Matches from the 2005/2006 World Sevens Series tournaments in Dubai, South Africa, New Zealand, USA, Singapore, England and France (n=308) were analyzed. Among 30 teams competed in the 2004/05 World Sevens Series, 11 of them were analysed who participated in each tournament analyzed. Table 1 shows the final standings.

RESULTS The average number of points scored by a team was 18 but there were major variations around this figure between the teams. It can be seen that New Zealand for example, scored 15 more than the average points scored and gave away 10 points less than the average points conceded. Canada, Scotland and Kenya all were below the average points scored and above the average points conceded.

TEAM	RANK	POSS (min.)	PTS For	PTS against	Tries/ Game	% Racks With 1	% restart Success	Passes / game	Racks / game	Yellow cards/
						player				season
NZ	1	3.65	33	9	5.2	87	18.5	37	6	17
ENG	2	4	25	10	3.9	50	34.5	43	9	12
FIJ	3	3.3	26	13	4.1	78	22.7	34	3	18
SA	4	3.6	26	13	4	68	33.3	36	5	16
ARG	5	3.75	22	12	3.7	72	41.7	36	9	9
SAM	6	3.95	21	13	3.3	74	28.6	48	7	23
AUS	7	3.6	20	16	3.3	64	27.2	38	6	15
FRA	8	3.8	19	16	3	43	31.25	38	7	28
CAN	9	3.7	16	19	2.6	70	21.7	39	11	17
SCO	10	3.4	16	19	2.6	72	29.4	37	6	13
KEN	11	3.15	13	21	2	76	10.5	32	6	19

Table 1. Final team position and average values/match of some of the performance indicators.

DISCUSSION A regression of the variables, Table 1, with the respective ranking accounted for 99.3% of the variance. A correlation showed a number of variables were inter-dependent, so the PI's could be reduced to tries/match, racks/match and passes/match (R=0.963). The results of the study suggest that performance indicators of 7-a-side rugby can be determined by these variables, and the validity of PIs could be tested in this way in other sports.

REFERENCES

Hughes and Jones (2005) In: Science and Football V. Eds: T. Reilly et al. London: E. & F. Spon. 247-252.

KEY WORDS Patterns of play, elite men's 7-a-side rugby, performance indicators.

O-017 Perturbation in game rhythms of elite male rugby union

Duncan Locke¹, Mike Hughes² and David Reed¹

¹English Institute of Sport, UK, ²University of Wales, Institute Cardiff, UK

OBJECTIVE Match play sports exhibit rhythms when competitors perform at equal levels. A perturbation exists where the usual stable rhythm of play is disturbed by extreme elements of high or low skill. Research confirming the existence of perturbations by McGarry and Franks (1995) in squash identified particularly weak or strong shots that place one player at a recognised disadvantage to another. With the successful transition of perturbation methodologies from dyadic to team sports established within previous literature (McGarry and Perl, 2004), the aim of this study was to try and reliably identify and categorise perturbations within another team sport, namely Rugby Union.

METHODS A hand notation system was developed which classified perturbations using 18 variables from 4 separate categories. Following extensive training using the system, six expert rugby coaches were asked to identify if and when perturbations occurred within the build-up to tries (N=60) in Rugby Union matches.

RESULTS The results of this study show that transitions in phase stability could be reliably identified by experts within the sport (Mean Kappa Coefficient = 0.715). Furthermore a strong agreement on the timing of perturbations (82% paired level of agreement), further validated the consistency and accuracy with which perturbations were identified.

DISCUSSION Following an acceptable level of reliability being obtained from reliability studies, it was possible to develop performance profiles for the teams analysed. These results helped to form a comprehensive description of when, where, how and who is most likely to produce perturbations – a process which highlighted the capacity for such research to aid the coaching process.

REFERENCES

McGarry and Franks (1995) *Human Performance* **8**, 113-129. McGarry and Perl (2004) In: *Notational analysis of sport.* 2nd edition. EdS: M. Hughes and I.M. Franks. London: Routledge. 205-226.

KEY WORDS Perturbations, rugby union, performance profiling.

O-018 Time motion analysis of elite footballers in European cup competitions

Valter Di Salvo¹ , Ramon Baron² and Marco Cardinale³

¹The Rome University of Movement Science, Italy, ²Faculty for Sports Science and University Sports, Italy, ³Olympic Medical Institute, Harrow

OBJECTIVE Performance of soccer players has attracted a lot of attention from sports scientists in the last two decades. Match-analyses of soccer games have been performed with the aim of understanding the physiological demands of elite soccer. We have recently conducted a study on elite soccer players to identify distinct patterns of activities between players' positions and compare the results to previous findings in the literature. In this study time motion characteristics of elite soccer players in European Cup competitions were analysed. The aims of the study were to determine timemotion characteristics according to playing position and identify differences in motion characteristics in 1st and 2nd halves of the games.

METHODS We analysed 68 European games, including 58 teams and 791 players (Champions League, UEFA Cup) with Prozone ® a new computerised video system. The system uses the following parameters: Walking (0.2-7.2km/h), Jogging (7.3-14.4km/h), Run (14.5-19.8km/h), High Speed run (19.9-25.2km/h) and Sprint (>25.3km/h). High Intensity was defined as the sum of high speed run and sprint distance (>19.9km/h).

RESULTS Professional soccer players cover a total distance of 11.01 ± 1.12 km during a game. Central defenders ran less (p < 0.001) both in total distance 10.02 ± 0.653 km and at high intensity 0.571 ± 0.209 km. The central midfielders ran a higher total distance 11.57 ± 0.986 km (p < 0.001). During the 2nd half the players walked 4.8% more (p < 0.001) but had less jog, run and high speed distance (p < 0.001).

DISCUSSION The results of this study suggested that further consideration should be given to elite soccer performance with particular consideration to the playing positions. It seems clear that much has changed in soccer in the last decade and it is also quite clear that elite performance differs between players in different positions. Therefore, since it is clear that performance demands are different between positions, we believe that is very important to introduce specific training sessions which take into account such differences.

KEY WORDS Football, soccer, positional role, match analysis, activity profile, specific training.

O-019 Research informing practice: Implications of rule changes to modified rugby league

Donna O'Connor

University of Sydney, Australia

OBJECTIVE Modified Games is a vital area of the Australian Rugby League (ARL) operations. It is the grassroots of the game and involves children in the 6-12 years age group. In recent years some regions (i.e. Queensland Rugby League) have piloted several law alterations for different age groups. There is much debate as to which laws should now be adopted universally. The aim of this study was to evaluate modified rugby league and provide the ARL with scientific evidence in relation to the impact of the various law alterations on children's participation and performance levels during scheduled games.

METHODS This project involved the match analysis of 120 modified rugby league games under different laws (point score system; when the defensive line can move forward at the play-the-ball; mandatory number of passes performed by the attacking team in their 10/20m zone) in NSW and Old. To reduce the impact of individual team play teams were video taped on no more than three occasions.

RESULTS The following significant differences occurred in relation to the different rules: tackles executed; number of change of possessions on the 1st and 5th tackle; line-breaks; mistakes by 1st receiver; dummy-half runs; dropped balls, total passes and passes at play-the-ball 1,2 and 3. There was no difference in completed sets; when, where and how tries were scored, 1st receiver runs and tackles.

DISCUSSION The scoring system has no impact on the number of tries scored, passes thrown prior to a try, when the try is scored or where on the field the try was initiated. However results suggested attacking players were put under additional pressure when defenders were allowed to move once the ball had cleared the ruck and were may be more fatigued by the end of the game. The following recommendations were made:

- 4 point try to be adopted as it does not impact on participation and performance levels and will be 'easier' for the referee and administrators
- The defensive line is allowed to move once the first receiver makes contact with the ball. Defenders moving prior
- to this placed attacking players under additional pressure and players appeared more fatigued by the end of the game.
- Minimum of one pass within own 20m.

KEY WORDS Match analysis, junior sport participation, football.