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## Recommended Citation

Mascarenahs, D. R. D., Collins, D., & Mortimer, P. (2005) 'Elite Refereeing Performance: Developing a Modelfor Sport Science Support'. The Sport Psychologist, 19, 364-379

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## Elite Refereeing Performance: Developing a Model for Sport Science Support

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To identify a framework for referee training and selection, based on the key areas of effective performance, we conducted content analyses on Rugby Football Union referee assessor reports, referee training materials, performance profiles from a group of English premier league referees, and a review of published research on sports officiating. The Cornerstones Performance Model of Refereeing emerged, overarched by the psychological characteristics of excellence (see McCaffrey & Orlick, 1989) and featuring four key areas; (a) knowledge and application of the law; (b) contextual judgment; (c) personality and management skills; and (d) fitness, positioning and mechanics. Focus group interviews confirmed the usefulness of the model as an assessment and training tool, which the RFU now use to develop referees throughout England.

As team sports descend deeper into the professional era, players are becoming fitter, faster, more powerful, and cynical with regard to the laws of the game (Morrison, 2002). Thus, the pressure on sports officials to produce flawless performance is increasing and with media pundits attempting to create controversy, the spotlight is often cast upon the match referees. Clearly these referees have a crucial influence on the game, yet while sport science research literature holds many investigations into the enhancement of elite athletes (e.g., Farrow & Abernethy, 2002), there is a dearth of literature investigating the performance of match officials.

Early investigations primarily focused on the nature of officiating, with certain themes recurring, most commonly sources of stress amongst officials (e.g., Anshel & Weinberg, 1995; Rainey, 1995; Rainey & Hardy, 1997). The practical implication of such investigations would be to enhance performance through decreasing stress, perhaps through the use of relaxation and other self-regulation techniques. However, the vast majority of these studies suggest that sport officials experience no more than a moderate amount of stress (e.g., Rainey, 1995; Rainey & Hardy,

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02Mascarehas(364) 364 9/27/05, 12:12 PM

1997; Rainey & Winterich, 1995; Stewart & Ellery, 1996). Furthermore, many of these studies propose psychological interventions to reduce stress, despite the lack of any examination of the affect of stress upon performance (e.g., Rainey, 1995). As such, it seems that the potential importance of stress control as a key factor in referee performance is somewhat speculative.

In fact, the majority of studies into sports officials have considered avenues of psychological research such as stress, coping, judgment bias, and personality characteristics of referees, which could be described as "researching psychology through refereeing." While this might provide valuable insights into psychological phenomena, however, it does less to directly facilitate the performance of such sports officials; indeed this evolution seems to parallel much of the early work in sport psychology where research used sport to address pertinent issues, rather than providing a primary focus on performance enhancement per se. Even in apparently specific training texts on officiating (e.g., Weinberg & Richardson, 1990), advice is often somewhat generic, reflecting ideas that are appropriate for all performers but lacking detailed attention to the essential and determining components of sports officiating.

Encouragingly, the literature on officiating has recently investigated factors more closely related to performance, most notably studies of officials' decision making in soccer (e.g., Oudejans et al., 2000; Plessner & Betsch, 2001) and baseball (e.g., Ford, Gallagher, Lacy, Bridwell, & Goodwin, 1999; Rainey, Larsen, Stephenson, & Olson, 1993). Notably, such decision-making skills, termed "mastery of the rules" (Anshel, 1995), were deemed by referees to be the key component to effective refereeing. However, although Anshel's (1995) study admirably attempted to define competent referee performance, to date there is no published empirical research that has attempted to define and validate expertise for these individuals. Clearly, to promote effective officiating in a professional game, competency or "minimum standard" based assessments may not be sufficient. Accordingly, there is still a dearth of empirical investigations into refereeing performance, which could be used to underpin the design of a scientific support program and provide a curriculum for effective professional development.

From the national governing body's (NGBs) perspective, referee development typically involves passing some form of fitness test and a written test on the laws of the game. Clearly, these two attributes, physical fitness, and knowledge of the law are critical to the referee's performance. Yet, while generic fitness assessments such as the multi-stage fitness test (Ramsbottom, Brewer & Williams, 1988) may provide a crude measure of a referee's ability to keep up with play, and pencil and paper tests may examine knowledge of the written law, very little has been done to assess and develop the other, arguably more important aspects of referee performance, such as how to apply this knowledge of the law.

Recognizing the need for more comprehensive tools, NGBs have attempted to measure effective refereeing by classifying indicators of good performance, such as the Rugby Football Union's (RFU) Competence Based Referee Development System and the international Rugby Board's (iRB) notational-analysis based referee assessment forms. However, these attempts to collapse such a broad range of skills into criterion-based checklists may have simply delimited the performance into a skeleton of the actual task (cf. Lyle, 1999), leaving NGBs with an unclear appreciation of the demands required for expert performance.

02Mascarehas(364) 365 9/27/05, 12:12 PM

The literature on expertise in a variety of domains suggests that high standards are reached through deliberate practice totaling approximately 20 hours per week (Starkes, 2000). If NGBs are unaware of where to direct such practice, one may question whether expert referees are being developed at all. Furthermore, since scientific support incorporating a range of physiological, biomechanical, and psychological measures is now commonplace for elite athletes, it seems reasonable to provide similar support to referees. However, it is very difficult to support performance without a clear and justifiable understanding of its key components and contributory factors (see Taylor, 1995). In fact, Hardy and Parfitt (1994) suggest that an important feature of any sport psychology support is to identify the important psychological skills and teach them to the performer, and akin observations of Bloom's (1985) model for developing expertise, it is crucial to recognize not only the key areas of the model but also how each area relates to each other. Accordingly, as the first phase of a support program for the RFU Referee Department, we set out to develop a referee performance model as an essential part of the needs analysis, so that assessment and training programs could be developed in areas that directly contribute to performance on the field of play. Thus, referees and those responsible for training them would have a clear focus for deliberate practice interventions to improve refereeing performance (Ericsson, 2003).

## Method (Phase 1): Developing the Model

To accurately expose the components of referee performance in rugby union, thematic content analyses were conducted on four sets of literature. These were as follows.

- 1. A random selection of 20 assessor reports written for 10 English national panel referees.
- 2. All the RFU training literature presented to the English RFU national panel of referees, touch-judges, assessors, and referee coaches from January 1997 to December 2000 (n = 23).
- 3. Performance profiling of a group of top-20 nationally ranked referees (n = 14).
- 4. Published research articles taken from sport science journals (n = 58).

The assessor reports, RFU training literature, and performance profiles were analyzed through a grounded theory approach (Strauss & Corbin, 1998). Following Hayes' (2000) guidelines on inductive thematic analysis, the principal researcher read and reread all the reports, noting items of interest. All items that appeared to be dealing with similar topics were grouped together under prototype themes. Each theme was given a draft label and a working definition after examination of the data held within each. This researcher then systematically reread all the transcripts to ensure that themes or data had not been overlooked. When new potential themes emerged, the researcher searched back through the data to check if other phrases under the new theme had been missed. Next, selecting one theme at a time, all the data was reread to see if any data was relevant to the theme selected. To further

02Mascarehas(364) 366 9/27/05, 12:12 PM

validate this procedure, a second researcher read the reports several times and examined the allocation of themes. As described by Marshall and Rossman (1989), the second researcher served as a "devil's advocate" challenging the perceptions of the first researcher and any potential bias that may have been drawn in. Systematically, trawling through the data, the two researchers discussed the potential meanings of phrases used by the assessors and subsequently discussed each allocation to enhance trustworthiness and credibility. The two researchers then collectively labeled and defined each theme, paying particular attention to the choice of words used in each description.

In addition to consensus validation, to assist the reliability of this investigation, sources of data (a review of RFU and academic literature, performance profiles, and interviews) and sample groups (different groups of referees, referee development officers, and assessors) were triangulated, and "member checks" were used (see Eklund, 1996; Krane, Anderson, & Strean, 1997; Sparkes, 1998).

### **Assessor Reports**

Assessor reports, particularly for these elite referees, often focus on hard to quantify but very important factors that seem to make the difference between good and elite referee performance. The two most recent assessor reports were taken from 10 randomly selected referees from the RFU national panel of top 65 referees, ensuring that at least two referees were taken from each level of the game, from premier league, down to national league division three.

## **Review of RFU Training Literature**

The RFU training literature and the assessment system, known as the Competence Based Referee Development System, were content analyzed in the same fashion as the assessor reports, seeking cogent and consistent themes. Since training materials need to be clear and understandable, these publications exposed these more formal aspects of referee performance, offering a useful contrast to the first category of data, which is typically presented in a more relaxed, conversational style.

## **Performance Profiling**

14 of the top-20 RFU panel referees took part in performance profiling at the annual English RFU Referee National Conference. The remaining six referees from the top 20 who did not take part were either on holiday or on international duty. Strictly following the guidelines prescribed by Butler and Hardy (1992), the performance profiling process was introduced to the referees, who formed small groups of no more than five, to brainstorm and discuss ideas and then share them with the whole squad. The principal researcher then recorded a master list of constructs for the referees to rate their own performance, based on the group's suggestions and subsequent discussions. He was careful not to get in the way of participants expressing their opinions, experiences and suggestions, and encouraged all members to contribute. All the referees agreed that the final performance profile, containing 17 characteristics, represented an accurate, valid and valuable breakdown of refereeing skills, and many of the referees have since used the same

02Mascarehas(364) 367 9/27/05, 12:12 PM

list for personal development. Once again, these were content analyzed by the two researchers as described earlier.

### **Review of Empirical Literature**

During a period of over 6 months, a series of internet and Sports Discuss searches were conducted to locate empirical research articles focusing on refereeing, judging, umpiring, and sports officiating. In addition, the contents pages of The Sport Psychologist, the Journal of Sport and Exercise Psychology, the Journal of Applied Sport Psychology, the International Journal of Sport and Exercise Psychology, the Journal of Sport Sciences, and the Journal of Sport Behavior were inspected as these revealed the most articles following the initial searches. Each article that was found was checked for additional citations on sports officiating, revealing a total of 58 articles published between 1985 and 2003. However, in keeping with the arguments presented earlier, these data were only considered in cases when they or other empirical research justified the topic's direct contribution to refereeingl performance.

# Results and Discussion (Phase 1)

The inductive analysis of these four sources of data resulted in the emergence of five themes of refereeing performance. Four of the areas were largely psychological concepts and the other more physiologically based. Each theme was operationally defined by the two researchers and listed below.

- 1. Knowledge and Application of the Law: The underpinning knowledge of the law that allows referees to accurately interpret dynamic situations and penalize accordingly.
- Contextual Judgment: An appreciation of the tenor of the game and the referee's ability to alter his or her style of refereeing to suit the particular nuances of the game.
- 3. Personality and Game Management: The verbal and non-verbal interpersonal skills that allow referees to communicate appropriately with the players.
- 4. Fitness and Positioning: The physical attributes that allow referees to "stay-up-with-play," see the game from an appropriate perspective, and use the appropriate signals.
- 5. Psychological Characteristics of Excellence: The common elements of successful performance (cf., McCaffrey & Orlick, 1989; Orlick & Partington, 1988), including commitment, goal setting, imagery, planning, distraction control, responses to pressure situations, and realistic performance evaluations.

## **Assessor Reports**

The assessor reports presented the most widespread information, with approximately 90% of the raw data falling under all the themes identified. The Appendix

02Mascarehas(364) 368 9/27/05, 12:12 PM

herein shows a sample of the allocation to themes from the assessor forms. Without exception, each assessor's report made reference to psychological characteristics such as confidence, concentration, motivation, coping with pressure, and dealing with mistakes.

## **Review of RFU Training Literature**

Similar to the assessor report data, the RFU literature was replete with very specific details on law interpretations. For example, yearly conference packs given to all the national panel officials (referees, touch-judges, assessors, and coaches) had clear guidelines under specific parts of the game, (viz., tackle, ruck/maul, scrummage, lineout, advantage, kick-off and restarts, offside, and the sin bin). In addition to these instructions on how to interpret and apply the law, officials were also guided on positioning skills and training regimes to develop their fitness. Five of these reports (22% of the sample) gave a modicum of advice on how to manage and communicate with players and coaches, and one suggested the need for more communication between referees and coaches (Melrose, 1998). Another conference pack had a section entitled the "X-factor of refereeing," which described a performance factor that (apparently) eluded definition but which many super elite referees exhibit (Melrose, 1999). This appeared to embrace aspects of both game management and contextual judgment. For example, it was believed to be evident when "a referee has positive body language, especially at critical phases of the match" (p. 2), suggesting that top referees show "... the ability to recognize patterns of play and find appropriate solutions, whilst showing empathy for the players and the context of the game" (p. 4). This factor, although numerically small, was subsequently recognized as crucial by all participants (see phase 2 of this paper) and highlighted the importance of recognizing the interactions between the key areas as well as discrete analysis.

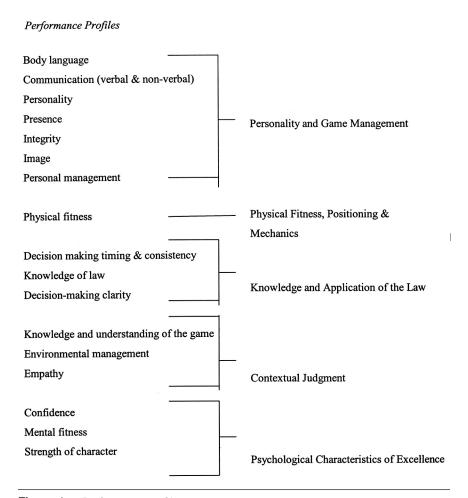
#### Performance Profiles

The performance profiling highlighted 17 characteristics of elite refereeing grounded within the referees' understanding. These seemed to emphasize the same five areas that arose from the analysis of assessor reports, and once again reinforced the need for an emphasis on psychological characteristics (see Figure 1).

## **Review of Empirical Literature**

The review of empirical research showed several recurring themes. Almost half of the articles focused on referee decision making and judgments, with 14 of these 25 studies exploring biases such as crowd influence and home advantage (e.g., Nevill, Balmer, & Williams, 2002), the effect of players' aggressive tendencies (e.g., Jones, Paull, & Erskine, 2002), normative rulings (e.g., Rainey & Larsen, 1998), and contingency effects (e.g., Plessner & Betsch, 2001). Three papers examined the effects of officials' positioning on their decisions (e.g., Oudejans et al., 2000) and eight looked at the efficacy of decisions and judgments (e.g., Craven, 1998). Other common themes emerged, including investigations into the physiological demands of refereeing (e.g., Krustrup & Bangsbo, 2001), and as discussed earlier,

02Mascarehas(364) 369 9/27/05, 12:12 PM



**Figure 1** — Performance profiles.

many articles explored psychological stressors, focusing on sources of anxiety, stress, coping, and assaults on sports officials (e.g., Anshel & Weinberg, 1999).

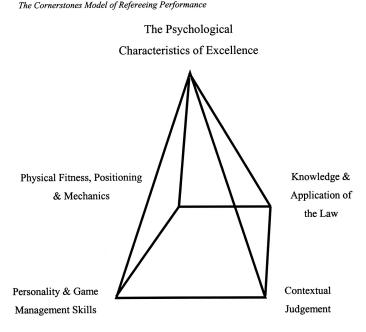
Unfortunately, as previously noted, many of this final category of research themes appeared to have used refereeing as the medium through which to explore psychological phenomena, rather than examining the factors that directly affect refereeing performance. Thus, despite some valuable findings, in cases where a psychological issue rather than performance was the dependent variable, such topics appeared to be distinct from performance characteristics, particularly since arguments for their salience to performance were rarely presented. Indeed, stress-related issues were not apparent in any of the data yielded by our other two sources.

This feature, researching through refereeing rather than for it, may provide an explanation for our failure to find empirical research that specifically examined

02Mascarehas(364) 370 9/27/05, 12:12 PM

communication skills in sports officials, despite the overwhelming evidence from all the other sources, suggesting that it is a crucial element of the job (e.g., Bunting, 1999). Given such circumstances, the "psychological stressors" component was not followed up, especially since skills such as coping were adjudged to be subsumed within the component of "psychological characteristics." The all-purpose nature of such psychological characteristics deems them crucial for development in all aspects of performance (Orlick, 2000), including refereeing, and as such, we felt that they should overarch all the other areas. For example, a referee who has no commitment or cannot set goals will be limited in their capacity to make a positive change in any of the key areas. Hence, the Cornerstones Performance Model of Refereeing emerged, featuring four, base areas of performance, and overarched by the psychological characteristics of excellence (see Figure 2).

Given very specific comments in the RFU literature, and subsequent characteristics identified in the performance profiles, we felt that the characteristics were best reflected as a model to indicate the relationship between the cornerstones. For example, although empathy might be based upon good contextual judgment skills, it would also be manifest in personality and management skills and may even impact upon the application of the law.



**Figure 2** — The cornerstones model of refereeing performance.

02Mascarehas(364) 371 9/27/05, 12:12 PM

## Method (Phase 2): Approving the Model

To approve the model it was presented to three independent groups of individuals representative of elite refereeing. These focus groups included a group of high potential referees who had been placed on a fast-track program, then ranked between 50 and 65 on the English national panel (n = 6); the three top ranked, full-time referees (n = 3), all of whom were also active at international level; and the full-time management staff at the RFU referee department (n = 7). The latter group comprised both development officers (n = 4) and referee development managers (n = 3). It was anticipated that studying developing referees, established referees, and the individuals responsible for training both groups would provide a balanced perspective (see Burgess, 1996) on the efficacy of the model. Individuals were given 5 min to independently critically analyze the model before discussing their comments amongst the group for a further 15 min. Specifically, they were asked if it accurately reflected all the key aspects of referee performance and to seek out improvements to the model. Once again, the researcher was careful not to lead the participants and encouraged all members to contribute (Kreuger, 1988).

# Data Analysis (Phase 2)

During the focus group interviews, the researcher made notes on ideas that generated discussion. Each of these was reported back to the group at the end of the discussion to clarify what they considered to be the most important ideas. The focus group discussions were recorded and transcribed to allow the researcher to check his understanding of the participant's meaning. The transcriptions of the discussion of key ideas that were generated were read and reread to by the researcher to clarify meaning. In addition a second researcher checked through the transcriptions to help reduce any bias that may have arisen in interpreting the data.

# Results and Discussion (Phase 2)

All three groups universally accepted the model as isomorphous to refereeing performance and as a valuable aid to referee development. High potential referees felt that it offered a clear focus for breaking down their performance. The full-time referees also believed it to be representative of refereeing rugby union, and highlighted that knowledge and understanding of the game formed the key underpinning to contextual judgment. The RFU referee management staff were equally supportive of the model and felt that recognizing the relationship between various cornerstones was critical in determining the "X-factor of refereeing." In fact, this group felt that contextual judgment's interaction with both the psychological characteristics and personality and management skills went a long way toward clarifying this X-factor, which they had previously been unable to define yet deemed critical for high-level refereeing. One participant who in describing a high-potential referee summed this up by saying,

02Mascarehas(364) 372 9/27/05, 12:12 PM

There was all sorts of shenanigans going on in the scrum, and the referee [name omitted] smiled and joked with the front rows players. They all laughed and the problem was solved. A classic example of saying the right thing at the right time—that's management and contextual judgment.

The only concerns expressed were in making various sections of the model operational. For example, all of the management staff felt that fitness, positioning, and mechanics together with law application skills would be considerably easier to train than contextual judgment and personality and management skills. After detailed discussions, the management team suggested that these more easily trained areas represent the robotic skills of refereeing in that there is a given standard of application, whereas the other more amorphous cornerstones, contextual judgment, and personality and management skills represent more humanistic elements of performance. One participant pointed out that "as referees progress, the focus shifts from developing the robotic factors to the humanistic factors. At the top end, they're all fit enough and they all know the law, but management and understanding of context become more important." The group unanimously agreed with these comments with another participant suggesting, "better referees become more able to use their individual style and management skills to deal with the nuances of each particular game." Nevertheless, despite the suggestions that some cornerstones might be easier to train than others, the model was accepted unanimously as a valuable tool in examining referee performance.

### **General Discussion**

The aim of this paper was to develop a framework for referee training and selection. Triangulating different sources of data from a variety of rugby union officials led to the emergence and subsequent approval of the Cornerstones Performance Model of Refereeing.

As a result of this investigation, the RFU have adopted the Cornerstones Performance Model of Refereeing to guide training for their elite referees. Furthermore, since its development, the model has received support from other bodies both in the UK and USA, such as the Rugby Football League, U.S. Major League Soccer, and the National Association of Sports Officials (e.g., Mascarenhas, Mortimer, & Collins, 2002). Accordingly, the model was the driver for our research and development-based support service offered to the RFU and is now used for the basis of in service training, coaching, talent identification and development, as well as for assessing referees to be put forward for iRB duties.

Concerns over how to make the model operational have been addressed. For example, to quantify the physical demands of refereeing, the sport science team completed a notational analysis of the movement patterns of premier league referees. Replicating the patterns associated with premier league refereeing, a rugby union referee specific fitness test was developed (Martin, Tolfrey, Smith, & Jones, 2002) to formally assess referee specific fitness.

In addition, a number of preliminary, naturalistic studies have been designed to replicate the demands of the real-world refereeing environment. If the model is capable of helping referee development it needs to be isomorphous with referee performance and as such present predictive validity. Law application assessment packages suggest that the model is indeed capable of discriminating between

02Mascarehas(364) 373 9/27/05, 12:12 PM

different performance levels since investigations have consistently shown differences between higher ranked and lower ranked referees (Mascarenhas, 2004) and also disparities between referees, touch-judges, and their assessor/coach groups (e.g., Mascarenhas, Collins, & Mortimer, in press). Furthermore, to compensate for performance disparities between different levels of referees, a law-application training package, designed to reduce this performance gap, revealed a 17% accuracy improvement in subelite referees from pre to posttest (Mascarenhas, Collins, Mortimer, & Morris, 2005).

Through the course of a 5-year support project with the RFU referees, numerous training interventions have been conducted to improve referees' "personality and game management skills," including personalized conflict-management training and in response to the increase in television coverage and microphone links to the match officials, high-pressure communication training designed to improve the officials' interpersonal communications.

Most recently, investigating the fourth cornerstone, verbal protocol methods have been developed to assess contextual judgment skills of the English elite group of referees, revealing considerable use of preventative refereeing techniques (Mascarenhas & Collins, 2005). This study revealed that although context rarely affected the referees' decisions per se, their verbal and non-verbal management of the game became harder as the consequences on scoreline and negative player behavior increased. Nevertheless, research is required to develop formal training procedures in contextual judgment, the skill that the RFU management group felt to be the key component in elite referee performance. Developing both declarative knowledge (understanding the "whats and whys") and procedural knowledge (information on "how to" perform a task; Anderson, 1995) seem to be crucial skills displayed by the best referees, allowing them to anticipate and control the factors that often incite "flashpoints" in the game. Typically, this knowledge has developed through years of experience, with scientifically rigorous attempts to develop these skills not yet emerging. This remains a consideration for future research.

One of the key strengths of the present paper is that the sample of referees studied was truly elite, including several international and ex-international referees. Most of the literature on sports officials has investigated samples of referees merely described as qualified. This paper highlights findings, which may be more reliably generalized to elite officials responsible for arbitrating professional sports. Also, the multiple methods approach, while not without its critics, provides one solution to enhancing trustworthiness and validity (Sparkes, 1998). In addition, we feel it is important to recognize that the themes we developed represent a starting point for support work; in short, a dearth of effective empirical data on the performance environment should direct practitioners to this type of approach.

In summary, at the start of any structured support program there is a clear need to understand the environment in which the performers are operating (Anderson, 2000). The program of research in this paper set out to understand rugby union referee performance and accordingly developed the Cornerstones Performance Model of Refereeing for supporting, assessing, and training referees. The model has received widespread acceptance from referees, their coaches, advisers, and management staff both in rugby union and in other sports. It is hoped that this article may encourage more performance-related sports official research and lead to investigations that explore ways to advance successful refereeing performance.

02Mascarehas(364) 374 9/27/05, 12:12 PM

#### References

- Anderson, J.R. (1995). Cognitive psychology and its implications (4th ed.). New York: W.H. Freeman and Company.
- Anderson, M.B. (2000). Doing sport psychology. Champaign, IL: Human Kinetics.
- Anshel, M.H. (1995). Development of a rating scale for determining competence in basketball referees: Implications for sport psychology. The Sport Psychologist, 9, 4-28.
- Anshel, M.H., & Weinberg, R.S. (1995). Sources of acute stress in American and Australian basketball referees. Journal of Applied Sport Psychology, 7, 11-22.
- Anshel, M.H., & Weinberg, R.S. (1999). Re-examining coping among basketball referees following stressful events: Implications for coping interventions. Journal of Sport Behavior, 22(2), 141-161.
- Bloom, B.S. (1985). Developing talent in young people. New York: Ballantyne.
- Bunting, N.J. (1999). Allied Dunbar premiership game management instructions for referees, players and coaches. (Rugby Football Union Referees, Tech. Rep).
- Burgess, J. (1996). Focusing on fear. Area, 28(2), 130-136.
- Butler, R.J., & Hardy, L. (1992). The performance profile: Theory and application. The Sport Psychologist, 6, 253-264.
- Craven, B.J. (1998). A psychophysical study of leg-before-wicket judgments in cricket. British Journal of Psychology, 89, 555-578.
- Eklund, R. (1996). Preparing to complete: A season-long investigation with collegiate wrestlers. The Sport Psychologist, 10, 111-131.
- Ericsson, K.A. (2003). Development of elite performance and deliberate practice. In J.L. Starkes & K.A. Ericsson (Eds.), Expert performance in sports: Advances in research on expertise (pp. 49-83). Champaign, IL: Human Kinetics.
- Farrow, D., & Abernethy, B. (2002). Can anticipatory skills be learned through implicit video-based perceptual training? Journal of Sports Sciences, 20, 471-485.
- Ford, G.G., Gallagher, S.H., Lacy, B.A., Bridwell, A.M., & Goodwin, F. (1999). Repositioning the home plate umpire to provide enhanced perceptual cues and more accurate ball-strike judgments. Journal of Sport Behavior, 22(1), 28-44.
- Hardy, L., & Parfitt, G. (1994). The development of a model for the provision of psychological support to a national squad. The Sport Psychologist, 8, 126-142.
- Hayes, (2000). Doing psychological research. Suffolk, UK. Open University Press.
- Jones, M.V., Paull, G.C., & Erskine, J. (2002). The impact of a team's aggressive reputation on the decisions of association football referees. Journal of Sports Sciences, 20, 991-1000.
- Krane, V., Anderson, M.B., & Strean, W.B. (1997). Issues of qualitative research methods and presentation. Journal of Sport and Exercise Psychology, 19, 213-218.
- Kreuger, R.A. (1988). Focus groups: A practical guide for applied research. London: Sage.
- Krustrup, P., & Bangsbo, J. (2001). Physiological demands of top-class soccer refereeing in relation to physical capacity: Effect of intense intermittent exercise. Journal of Sports Sciences, 19, 881-891.
- Lyle, J. (1999). Coaching and management of performance systems. In N. Cross, & J. Lyle (Eds), The coaching process (pp. 233-254). Oxford, UK: Butterworth-Heinemann.
- Marshall, C., & Rossman, G.B. (1989). Designing qualitative research. Newbury Park, CA: Sage.
- Martin, J.A., Tolfrey, K., Smith, N.C., & Jones, A.M. (2002). Development and validation of a referee-specific fitness test. Proceedings of Commonwealth Games/BASES Conference, Manchester, p. 242.
- Mascarenhas, D.R.D. (2004). The psychology of refereeing: Rugby Football League coherence training results (Tech. Rep.). University of Edinburgh, PESLS Department.

02Mascarehas(364) 375 9/27/05, 12:12 PM

- Mascarenhas, D.R.D., & Collins, D. (2005). Referee decision-making: It's not what you give it's the way that you give it! Manuscript submitted for publication.
- Mascarenhas, D.R.D., Collins, D., Mortimer, P., & Morris, R.L. (2005). Training accurate and coherent decision making in rugby union referees. The Sport Psychologist, 19, 131-147.
- Mascarenhas, D.R.D., Collins, D., & Mortimer, P. (in press). Assessing the accuracy and coherence of decision making in rugby union officials. Journal of Sport Behavior.
- Mascarenhas, D.R.D., Mortimer, P., & Collins, D. (2002). The 'four cornerstones' model. Referee, 27(4), 38.
- McCaffrey, N., & Orlick, T. (1989) Mental factors related to excellence among top professional golfers. International Journal of Sport Psychology, 20, 256-278.
- Melrose, A. (1998). More jaw/jaw, less war/war: Coach and referee communication. RFU Journal, 12-13.
- Melrose, A. (1999, March). Rugby football union regional development officer. Paper presented at the south west national panel referees' meeting, Taunton, UK.
- Morrison, E. (2002, August). Rugby football union elite referee development manager. Paper presented at Inaugural Elite Referee Unit Conference, Huddersfield, UK.
- Nevill, A.M., Balmer, N.J., & Williams, M. (2002). The influence of crowd noise and experience upon refereeing decisions in football. Psychology of Sport and Exercise, 3(4), 261-272.
- Orlick, T. (2000). In pursuit of excellence (3rd ed.) Champaign, IL: Human Kinetics.
- Orlick, T., & Partington, J. (1988). Mental links to excellence. The Sport Psychologist, 2, 105-130.
- Oudejans, R.R.D., Verheijen, R., Bakker, F.C., Gerrits, J.C., Steinbruckner, M., & Beek, P.J. (2000). Errors in judging 'offside' in football. Nature, 404, 33.
- Plessner, H., & Betsch, T. (2001). Sequential effects in important referee decisions: The case of penalties in soccer. Journal of Sport and Exercise Psychology, 23, 254-259.
- Rainey, D.W. (1995). Sources of stress among baseball and softball umpires. Journal of Applied Sport Psychology, 7, 1-10.
- Rainey, D.W., & Hardy, L. (1997). Ratings of stress by rugby referees. Perceptual and Motor Skills, 84, 728-730.
- Rainey, D.W., & Larsen, J.D. (1988). Balls, strikes, and norms: Rule violations and normative rules among baseball umpires. Journal of Sport and Exercise Psychology, 10, 75-80.
- Rainey, D.W., Larsen, J.D., Stephenson, A., & Olson, T. (1993). Normative rules among umpires: The "phantom tag" at second base. Journal of Sport Behavior, 16, □.
- Rainey, D. W., & Winterich, D. (1995). Magnitude of stress reported by basketball referees. Perceptual and Motor Skills, 81, 1241-1242.
- Ramsbottom, R., Brewer, R., & Williams, C. (1988). A progressive shuttle run test to estimate maximal oxygen uptake. British Journal of Sports Medicine, 22, 141-144.
- Sparkes, A.C. (1998). Validity in qualitative inquiry and the problem of criteria: Implications for sport psychology. The Sport Psychologist, 12, 363-386.
- Starkes, J. (2000). The road to expertise: Is practice the only determinant? International Journal of Sport Psychology, 31, 431-451.
- Stewart, M.J., & Ellery, P.J. (1996). Amount of psychological stress reported by high school volleyball officials. Perceptual and Motor Skills, 83, 337-338.
- Strauss, A., & Corbin, J. (1998) Basics of qualitative research: Techniques and procedures for developing grounded theory. London: Sage.
- Taylor, J. (1995). A conceptual model for integrating athletes' needs and sport demands in the development of competitive mental preparation strategies. The Sport Psychologist, 9, 339-357.
- Weinberg, R.S., & Richardson, P.A. (1990). The psychology of officiating. Champaign, IL: Human Kinetics.

02Mascarehas(364) 376 9/27/05, 12:12 PM

#### **Acknowledgments**

We gratefully acknowledge the financial support from the Rugby Football Union and contributions made by Nick Bunting at the RFU Referees Center of Excellence and Colin High and the full-time referees at the RFU Elite Referee Unit.

Manuscript submitted: September 1, 2004

Revision received: July 3, 2005

## **Appendix**

## **Assessor Reports**

## Knowledge and Application of the Law

This was a good display of punitive measures.

A yellow card was correctly given for continual backchat.

A 2nd yellow card should have been given.

You penalized the no. 3.

Two penalties given but another seven should have been given.

You penalized the first and second offence.

Four penalties were given.

The collapsed maul was penalized.

The knock-ons and forward passes were seen.

You only had to award 3 penalties.

I agree with the penalty try.

A yellow card was needed as well.

Punish any early engage quickly.

There were only two penalties.

Advantage was played consistently throughout the game.

You only missed a minor barge.

One possible "not straight" was missed.

There were nine collapsed scrums in this game.

Offside players were correctly penalized.

Two yellow cards were properly used.

There was a high penalty count.

A free-kick resolved the problem.

02Mascarehas(364) 377 9/27/05, 12:12 PM

### Contextual Judgment

Andrew very quickly demonstrated his empathy with the players' intentions.

The challenge was to maintain your consistency while showing empathy to the changing fortunes of the teams.

Andy gave no indication of increasing his intensity to reflect this critical stage.

You were right to rein it in when players got overexcited.

It seemed that the balance between prevention and punishment had swung.

Richard was well aware of the changing tempo of the game.

An appreciation of changing moods is necessary, together with a perception of what teams are trying to do as circumstances change.

Keeping a balance between continuity and administering the law was not always easy.

The throwing was dreadful and Richard kept a balance between letting play go on and blowing for not straight. Very sensible.

## **Personality and Management Skills**

This was a good display of preventative measures.

You were shouting clear instructions.

When delivering lectures...

There were no persistent infringements due to your communication,

You developed a good rapport.

There was one flash of temper, which you calmly defused.

Excellent preventative communication.

A sympathetic smile.

Andrew demonstrated a high standard of management.

You communicated well with the players.

Your short, sharp preventative instructions got excellent response from the players.

You spoke to the player in 17th minute.

You again warned the player.

Your management lacked assertiveness.

You like to adapt a low-key approach.

Your use of voice was adequate.

Andy remains an excellent communicator using clear, concise phrases.

Together with his smile ensure an easy rapport.

He needs to ensure that he demonstrably engages with his team.

He had been quietly advising both sides at deadball situations.

02Mascarehas(364) 378 9/27/05, 12:12 PM

His communication was very good.

Good vocal interaction.

He looked calm and remained unflustered all game.

Offside players were warned away.

Your whistle was clear and distinctive.

Your voice could be heard above the general noise.

Your effective communication went a long way toward establishing a productive interaction with the players.

A very unobtrusive manner.

Good oral communication.

Needs to improve his body language in terms of eye contact.

## Physical Fitness, Positioning & Mechanics

Advantage was signaled with the arm.

When giving a penalty you stay at the spot and don't watch the ball.

You moved to the blind side.

You were drawn in too close and the offsides were behind your back.

You were very fast around the field and took up good positions.

You moved around the maul well.

Your signals were adequate.

You arrive quickly but then become static rather than moving around.

You gave clear signals to the backs to keep them onside.

Andy had trouble refereeing the tackle from his chosen position.

I proposed that he change his approach line.

He missed a number of signals.

He turned his back on the play.

Andy proved to be fit and found an extra gear when needed.

Correct signaling.

Signals were informative and correctly given.

## The Psychological Characteristics of Excellence

Lacked the confidence.

Maintained his concentration throughout.

The match overwhelmed him.

Daryl's confidence was dented by this experience.

How hungry are you to reach the next level?

02Mascarehas(364) 379 9/27/05, 12:12 PM