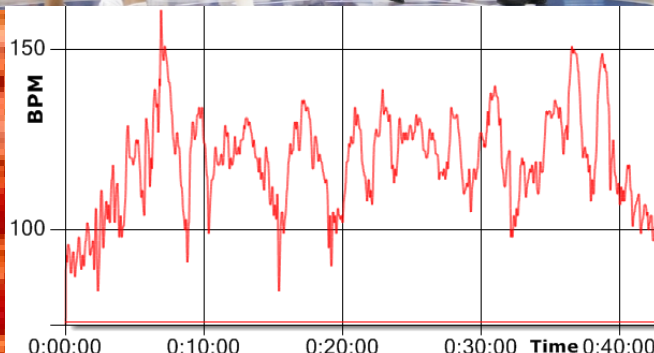
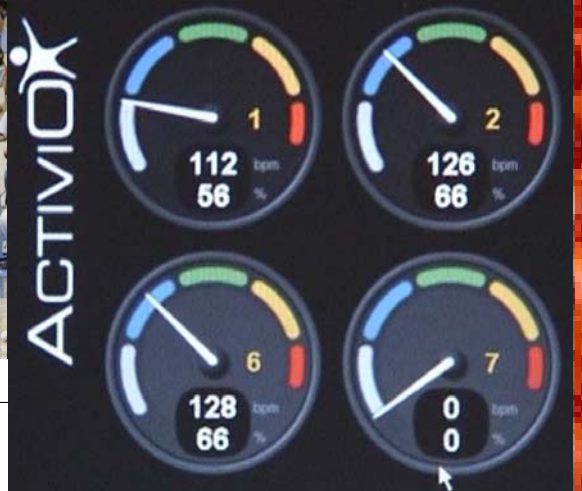


Studying Basketball Officiating

Brane Dežman and Simon Ličen
Editors



University of Ljubljana
Faculty *of Sport*
Institute for Kinesiology
Basketball Department



Studying Basketball Officiating

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PSYCHOLOGICAL DIMENSIONS OF BASKETBALL OFFICIATING

Simon Ličen

Summary

The population of sports officials amounts to approximately 0.1-0.2% of a country's population. Even though they have an important role in the game, their small number is the main reason for the modest attention they receive by researchers and scholars.

In this article we studied the officials' motives for engaging in basketball officiating. By analyzing past researches and implementing the cybernetic model of personality we present the cognitive and conative characteristics of basketball officials. After defining some of their roles and tasks during a match we describe the factors that most strongly influence their decision-making.

There are two predominant motives for engaging in officiating: the first is the love of the sport and each individual's pronounced feeling of justice, while the second is the need to fulfill an individual's authoritarian-dictatorial tendencies.

Successful basketball officiating requires an at least average level of activity of perceptive, cognitive, motor and functional mechanisms. Overdeveloped perceptive abilities can negatively affect an official's performance (he "sees too much"). The most important cognitive traits are long-term memory and the ability to simultaneously process information.

An official ought to have a harmoniously developed personality, should behave normatively and must be very adaptive to the different situations that surround him. Composure is also required, especially in critical situations.

Key words: psychology, cognitive characteristics, conative characteristics, motives, personality

STUDYING BASKETBALL OFFICIATING AND BASKETBALL OFFICIALS

Brane Dežman, Simon Ličen

Summary

Basketball officials supervise the course of a competition and assure the game is played according to the rules. Their task is thus difficult, demanding, complicated and responsible. They must constantly strive for improvement, while their organization has to follow their progress and rank officials according to their quality and performances.

The quality of an official can be assessed indirectly (we evaluate his *potential for success*) or directly (we evaluate his actual rate of success or *efficiency* while officiating a match). The successfulness of an official comprises the evaluation of the factors that most influence the quality of officiating; whereas his efficiency is determined by an expert evaluation of every single call the official has made during a match. An official's efficiency is less informative, but more objective than his successfulness.

Key words: basketball, officiating, quality, potential, successfulness, efficiency

A SOCIODEMOGRAPHIC PROFILE OF ELITE SLOVENIAN BASKETBALL OFFICIALS

Simon Ličen

Summary

In this chapter we present a longitudinal study of sociodemographic factors of Slovenian basketball officials working in 1A and 1B leagues. We took into consideration data from studies conducted in 2000, 2006 and 2009.

Throughout the entire period, officials working in the 1A league were on average older, they had more years of officiating experience and had officiated more matches than 1B league officials. The last study demonstrated an increase in average age and number of matches officiated among officials working the 1B league; this has been attributed to the increased drop-out rate among all officials in the last years (new talent is seldom recruited) and the introduction of new competitions in the U-10 and U-12 age groups.

The educational structure of elite basketball officials is improving; the number of officials who successfully completed at least a three-year higher education program is rising. In the last years, the number of officials from the Ljubljana area has dropped, while the number of officials from the Maribor area has risen. Thus, the assumption that most successful officials come from well developed basketball centers is not fully supported.

The officials have relatively extensive playing experience; on average, it amounts to between 6 and 8 years. Most officials cease with their playing activity at the U-18 or even senior level. However, the number of officials with coaching experience is dropping. This can be an alarming sign, as the lack of coaching experience can negatively affect an official's ability to anticipate the course of a match.

Key words: basketball, officials, sociodemographic factors, differences, playing and coaching experience

ASSESSING AN OFFICIAL'S AEROBIC ENDURANCE WITH A MODIFIED CONCONI TEST

Frane Erčulj

Summary

In this study we assessed the aerobic endurance of basketball officials with a modified Conconi test that can be conducted in a gym or on a basketball playground.

On a sample of 35 elite Slovenian basketball officials we established there were no statistically significant differences in aerobic endurance between officials when grouped with regard to their quality. The officials' aerobic endurance declined with their age, but differences between age groups were not statistically significant. All groups reach the anaerobic threshold (according to the Conconi test criterion) at approximately 90% of their maximum heart rate. We can thus conclude that officiating poses an aerobic demand on the official, but the aerobic intensity of this activity is not very high.

Slovenian FIBA officials managed to complete on average 84.5 20-meter laps at the required speed (with the speed regularly increasing after ten 20-meter laps)

Key words: basketball, officiating, Conconi test, anaerobic threshold, conditioning training

DIFFERENCES IN DISTANCE COVERED BY AND MOVEMENT SPEED OF OFFICIALS IN TWO-PERSON AND THREE-PERSON OFFICIATING

Mateja Lončar, Brane Dežman, Simon Ličen

Summary

Basketball became faster after the rule changes adopted in 2000 and 2003. Two officials could not cope anymore with the increasingly demanding tasks posed upon them in elite competitions; as a consequence, three-person officiating was introduced.

In this study we wanted to ascertain the differences in time of rest and movement, distance covered, and average speed of movement of an official in two-person and three-person officiating.

To this end, we tracked all officials' movements during two play-off matches of the Slovenian 1A league in the 2002/03 season. The first match was officiated by two officials and the second by three. On both occasions we tracked the distance covered, as well as time and movement speed of all officials. We also measured the time they stood still. Their speed of movement was divided into five speed categories: standing still (0.0 m/s), walking (0.0 through 1.4 m/s), slow running (1.4 through 3.0 m/s), fast running (3.0 through 5.2 m/s) and very fast running (5.2 m/s and faster).

Data was gathered with the SAGIT software for tracking and analyzing athletes' and officials' movements during a match. Video recordings of both matches were digitized and tracked with the SAGIT system. Data was then processed with Microsoft Excel.

We found out that an official in the two-person crew covered on average a distance of 6773 meters (not including movements during intervals of play); he walked 2196 meters and ran at different paces 4577 meters. An official in the three-person crew covered on average 5291 meters (intervals of play excluded); he walked 1982 meters and ran at different paces 3309 meters. Officials in the two-person crew also covered a greater distance in all three running categories. The largest difference was measured in the 'fast running' speed category, where officials in the two-person crew covered on average 776 more meters than their counterparts in the three-person crew.

Similar results were found in the time spent performing the afore-mentioned movements. An official in the two-person crew spent 85.1 minutes moving and 4.5 minutes standing still, whereas an official in the three-person crew spent 78.9 minutes moving and stood still for 9.9 minutes. Officials in the two-person crew spent more time running (29.4 minutes) than officials in the three-person crew (22.9 minutes). The same applies to time spent in all other speed categories.

The results have confirmed the hypothesis that officiating in two-person mode is physically more demanding than officiating in three-person mechanics.

Key words: basketball, officiating, two-person and three-person officiating, distance covered, time and speed of movement, differences

COMPARING DISTANCE COVERED, TIME AND SPEED OF MOVEMENT OF BASKETBALL OFFICIALS IN TWO-PERSON AND THREE-PERSON OFFICIATING

Mateja Lončar, Frane Erčulj

Summary

The aim of this research was to compare distances covered, time of movement and average movement speed of officials working in two-person and three-person crews. To this end we recorded and tracked all officials' movements in five matches of the Slovenian 1A league; three of them were officiated in two-person crews and two of them in three-person mode. Data about distance covered, time and speed of movement was obtained by the SAGIT tracking system.

We found out that an official in a three-person crew covered on average 4879 meters, while an official in two-person officiating covered on average 6134 meters. The average movement speed of officials in a two-person team was 1.22 m/s, while the speed of an official in three-person crews was 0.95 m/s. An official working in two-person crews spent on average 202 seconds standing still, while his colleague in three-person officiating stood still for 545 seconds. All differences were statistically significant.

We can conclude that an official in three-person officiating covered a shorter distance, spent more time moving at a slower pace, and his average movement speed was lower than an official in a two-person crew. The addition of a second umpire thus relieves the other two officials, so the introduction of three-person officiating was adequate.

Key words: basketball, two-person officiating, three-person officiating, movement analysis, movement speed, distance covered

AN OFFICIAL'S HEART RATE IN TWO-PERSON AND THREE-PERSON OFFICIATING

Mateja Lončar, Simon Ličen

Summary

In this pilot study we wanted to obtain basic information regarding the differences in the reactions of an official's organism while officiating two matches in a two-person crew and one match in a three-person team.

When comparing the number of possessions played by both teams, the second and third match were more similar and slightly above the average of the 2003 European Championship. The first match (officiated in two-person mode) yielded approximately 9 percent less possessions than the second and third match.

While officiating in two-person mode, the official in both matches (t_1 and t_2) covered a greater distance than while working in a three-person crew (t_3). ($t_1 = 5623$ m, $t_2 = 6573$ m and $t_3 = 5329$ m). The considerably greater distance covered in the second match is most likely a consequence of the greater number of possessions played by both teams.

The official's average movement speed during the two matches he worked in a two-person team was higher than the average speed in the match officiated by the three-person crew ($t_1 = 1.13$ m/s, $t_2 = 1.22$ m/s, $t_3 = 1.0$ m/s). Data include all official's movements during game-time and during intermissions (violations, fouls, time outs); it does not include movements during intervals of play.

The official's average heart rate while officiating in three-person mode was considerably lower than the average heart rate during the second match; further, it was nearly the same as his heart rate during the first match officiated by a two-person team ($t_3 = 147.2$ bpm, $t_2 = 157.2$ bpm and $t_1 = 148.2$ bpm). This also applies to the relative loading/level of intensity, expressed in relation to his maximum heart rate ($t_3 = 76.7\%$ HRmax, $t_2 = 81.8\%$ HRmax and $t_1 = 77.2\%$ HRmax). The official thus experienced less fatigue in the first match he worked in a two-person crew.

The official's average heart rate was lower in the second half of all three matches. In all matches, the second half lasted longer than the first as the stoppages of play were more frequent and lengthier (i.e. tactical fouls in the closing minutes of each match).

The official's relative loading was high (between 70 and 89% HRmax) between 74.3 and 81.2% of all matches. During the second match he spent the least time on this level of loading, yet he also spent more time on a very high level of fatigue (approximately 12% more time than in the other two matches).

The small sample prevented us from determining whether the differences were statistically significant. These findings can be very helpful in formulating hypotheses for future research conducted on a greater sample of matches.

Key words: basketball, officials, two-person officiating, three-person officiating, loading, effort, heart rate

DISTANCE COVERED/FATIGUE AND HEART RATE/ FUNCTIONAL LOADING OF A BASKETBALL OFFICIAL IN THREE-PERSON OFFICIATING

Simon Ličen

Summary

In this pilot study conducted on a one-match sample we explained some of the characteristics of a basketball official's effort in three-person officiating.

The distances covered by the three officials in each of the four quarters of the match were very similar. All three officials were experienced and had been officiating in three-person mode for several years, so they had already internalized three-person officiating mechanics.

The structure of distance covered in different speed categories was very similar for all three officials. They covered between 34.3 and 39.9% of the total distance while walking, and between 30.4 and 36.9% of the distance while slowly running. They covered in fast run between 23.0 and 25.1% of the entire distance, and they ran very fast between 3.9 and 6.7% of the entire path.

We also measured the functional loading (heart rate) for both umpires officiating the match. The first umpire's functional loading (expressed as the relative share of his maximum heart rate) was considerably higher than that of the second umpire. The latter was eight years younger, 5 centimeters shorter, and 14.1 kilograms lighter than the former; he also had less adipose tissue and achieved a better result at the Conconi fitness test.

The second umpire performed at a moderate fatigue level (between 55 and 69% HRmax) for 82% of the game; further, he spent only 7.9% of game-time performing at a high fatigue level (between 70 and 89% HRmax). On the other hand, the first umpire spent 21.5% of time performing at a moderate level and 78.2% of time at a high fatigue level. None of them performed at very high fatigue levels (over 90% HRmax). Results thus show that an official's functional loading during a match depends on his physical characteristic and the level of his physical fitness, and can greatly vary between individuals.

The diagram displaying the officials' heart rates during the match shows that an official's functional loading is highly correlated to the events happening on court.

Key words: basketball, officials, three-person officiating, distance covered, fatigue, functional loading, heart rate

AN ANALYSIS OF REFEREE AND UMPIRE CALLS IN BASKETBALL

Simon Ličen, Brane Dežman, Rafael Plut

Summary

Officials in two-person officiating can assume different roles and sub-roles. They can be referees or umpires: their decisions during game-time are equivalent, and referees have to decide when officials disagree or there is a dispute. They can also be lead or trail officials: lead officials move ahead of the play, while trail officials move with/behind the play. An official can also be active, meaning he is the one making the call or administering the throw-in or a free throw.

In this study we analyzed whether referees and umpires differed with regard to the quantity of infraction calls while in lead/trail position; while close to/away from the basket; concerning violations and fouls; and against home/away teams.

We analyzed the performance of eleven officials who worked eight matches of the 1B Slovenian league. A trained coder examined the videotaped matches and classified all calls according to the criteria mentioned above. We gathered data from 32 game quarters. Differences between categories were established using one-way analysis of variance (ANOVA).

We found out that referees and umpires did not differ in any of the categories listed – they would achieve very similar scores in all quantitative categories. This is probably because all officials/officiating teams were very similar in terms of experience and quality.

Key words: basketball, officiating, infractions, efficiency, referee, umpire, differences

AN ANALYSIS OF OFFICIALS' INFRACTION CALLS IN TWO-PERSON OFFICIATING

Brane Dežman, Simon Ličen, Rafael Plut

Summary

In this study we analyzed the efficiency (rate of correct calls) of violation and foul calls made by officials in eight matches of the 1B Slovenian league. After each call, a trained coder reviewing the videotaped matches recorded the identity of the official making the call (referee/umpire); his on-court position (lead/trail official); the type of violation (out of bounds, travelling, illegal or double dribbling, intentional kick, backcourt violation, violation of time limits, other violations) or the type of foul (personal, unsportsmanlike, technical, disqualifying); the adequacy of the call (correct, incorrect, disputable, missing); the area of the court where the infraction occurred (1-6, backcourt); and the team that committed the infraction (home/away).

The structure of violation and foul calls, as well as the share of correct calls and the areas on court where the infractions occurred, are presented in diagrams.

Most of the violations were players or ball out of bounds (65.6%) followed by travelling calls (17.3%). The efficiency rate (share of correct calls) for violation calls was 91.6%.

The majority of foul calls related to personal fouls (97%). The efficiency rate for foul calls was 75.7%.

Lead officials made 72% of all calls, while trail officials made only 28% of calls. Most infractions occurred in area 5 immediately below the basket (48.1%), followed by areas 4 (13.6%) and 6 (13.8%)—that is, areas immediately right and left of area 5 in the direction of play, respectively.

Key words: basketball, officiating, infractions, efficiency, structure

THE STRUCTURE OF INFRACTION CALLS IN THREE-PERSON OFFICIATING WITH REGARD TO THE OFFICIALS' ON-COURT POSITION

Brane Dežman, Simon Ličen

Summary

In this study we analyzed 20 game quarters from five matches played at the U20 European Championship for Men and recorded all calls made by officials in lead, centre, and trail position.

A trained coder examined the videotaped matches and classified all calls according to the position of the official making the call. We established that three officials called on average six violations and 12 fouls in a quarter. Most infractions were called by the lead official (63.46% of all calls in a quarter). Centre and trail officials made statistically significantly less calls in each quarter—17.03% and 19.51%, respectively.

Most infractions were called in the area between the end line and the free throw line extended (area A)—especially in the area immediately under the basket (area 5): 4.8 violations (80%) and 8.55 fouls (70.1%) occurred there in each quarter. The area between the free throw line extended and the centre line (area B) yielded on average 0.95 violation calls (15.83%) and 1.95 foul calls (15.98%). Very few infractions were called in a team's backcourt (area C): 0.25 violations (4.17%) and 1.7 fouls (13.93%) per quarter.

Most violations were called by lead officials (4.55, or 75.83% of all violations called in a quarter). The same applied for the fouls called (7.0/57.38%). Most violations and fouls occurred in area A (4.45/74.17% of all violations and 6.55/53.69% of all fouls in a quarter); 3.4 violations (56.67%) and 6.05 fouls (49.59%) were called in area 5 under the basket alone.

Centre and trail officials called considerably less infractions; most of them occurred in areas B and C.

Players or ball out of bounds was the most common violation called—it was called on average 4.35 (72.5%) times in each quarter. In most occasions, the ball passed through the end line. Travelling calls (0.9/15%) and violations of time limits (0.55/9.17%) were less common; other violations were called very rarely, if ever.

Most foul calls were personal fouls followed by free throws (50.58% of all fouls within a quarter). Slightly less frequent were personal fouls when no free throws were awarded (39.22%). Offensive fouls comprised of 7.75% of all fouls called. All other fouls combined yielded only 2.65% of all foul calls.

Key words: basketball, officiating, three-person officiating, efficiency

VIOLENCE EXERTED ON BASKETBALL OFFICIALS

Simon Ličen, Jure Turk, Mojca Doupona Topič

Summary

Violence is a common phenomenon in sport. There are different forms of violent or aggressive behavior; most often, they are divided into verbal and physical violence. Virtually all participants in sport can be a target for violence: athletes, coaches, even fans, and of course officials.

The aim of this study was to analyze how often Slovenian basketball officials experienced different types of abuse or violent behavior. To this end, we compiled a 111-item questionnaire. 117 Slovenian basketball officials working at different competition levels and of different levels of experience took part in this study. Differences between categories were established using one-way analysis of variance (ANOVA).

The most common form of violence experienced by basketball officials is verbal abuse; all responding officials reported having already experienced such type violent behavior.

Officials claim that the most violent actors are single fans and organized fan groups, while the least violent are (in order) team captains, assistant coaches, team representatives and team followers.

Officials all accept violence, but their reactions to it vary. Some are motivated by perceived violent behavior and their performance is thus enhanced, while other get confused (on a conscious or even sub-conscious level) and start committing errors.

More experienced officials have also experienced more verbal abuse from players, substitutes, fans, and team representatives, but not from coaches.

Officials believe coaches often behave in a violent manner to put officials under pressure; according to them, this is especially true for younger and less experienced officials calling a match.

Key words: basketball, officiating, officials, violence in sport

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