

# A Study of Rugby Punts in Japan's Top Level League : Case Studies of Winning Teams

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**The purpose of this study was to quantitatively and qualitatively evaluate the use of punts in top-level rugby games to clarify their practical use by winning teams. Subjects were punts (n=4737) in the Japan Rugby Top League 2016–2017 season. Punts were first categorized into Time, Area, Start of Possession, R/Ms (Rucks and Mauls) and Position. They were then classified qualitatively into “Effective” or “Ineffective”.**

**Results reveal that punts achieved greater statistical significance in winning teams in Half Way to Opp 22 ( $t=5.17$ ,  $p<.01$ ) , Opp 22 to TRY Line ( $t=5.18$ ,  $p<.01$ ) , TURNOVER ( $t=3.30$ ,  $p<.01$ ) , RESTART ( $t=6.91$ ,  $p<.01$ ) , and 1 R/Ms ( $t=2.89$ ,  $p<.01$ ) than in losing teams. They have a better point from the qualitative perspective. Results suggest that the use of punts in these situations is effective from the quantitative and qualitative viewpoints; and it is expected that this research will contribute to rugby in that it focuses on top-level rugby games and is based on a significant number of punts.**

**Keywords:** rugby, punt, kicking, Japan Rugby Top League

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## 1. Introduction

Diversity is a characteristic of plays in rugby (Yamamoto and Fujimori, 2017). For example, there are throwing, kicking and running plays, and players are required to choose the most appropriate play according to the phase of the game.

In addition to selecting the most appropriate play in each phase, players also select plays based on team tactics. Tactics are defined as specific and practical actions taken individually and in cooperation with team members in response to opponent actions and phases to achieve strategic goals in the most rational manner. Some tactics in rugby involve assigning players to positions over a series of phases to create numerical and spatial advantages in a future phase (The Japan Society of Coaching Studies, 2017).

Here, I introduce two tactics developed by Eddie Jones, the former head coach of the Japanese national team, and Jamie Joseph, the current head coach. The former advocated possession rugby, which minimizes punts that risk surrendering the ball to the opponent with the goal of increasing offensive possession

and disrupting the opponent. The latter advocated territory rugby, which actively employs punts that give possession of the ball to the opponent with the goal of shifting play to advantageous territory and exerting pressure on the opponent. These two tactics are major elements that determine the play style of the team; however, we cannot judge which is superior. Therefore, these two tactics have caused a dichotomization of current world rugby styles.

It is important to evaluate the effectiveness of punts to clarify this and promote the further development of rugby. In fact, Yoshida et al. (2017) reported basic research on the efficacy of tactical punts. Higher-ranked teams are also reported to employ punts significantly more than do lower-ranked teams (P.H. Vandenberg and D.D.J. Malan, 2010). However, the majority of research applies kinematic approaches and few studies evaluate the effectiveness of punts.

Therefore, this study was conducted to quantitatively and qualitatively evaluate the use of punts in Japan rugby top league games. This study also examined the use of punts by winning teams to consider effective punts inductively.

## 2. Subjects and Method

### 2.1. Subjects

Subjects were 119 among 120 games in Japan rugby top league 2016–2017 season games, excluding one tie game.

### 2.2. Method

This study applied notational analysis (Nakagawa, 2011), which is a quantitative analytic method, using SportsCode (Version 10.3.36) software. Analysis of data was conducted by one researcher.

### 2.3. Analysis Subjects and Categories

Subjects of analysis were 4737 punts, excluding kicks after penalty, drop kicks, place kicks and hack kicks<sup>1</sup>. The Time, Zone, Start of Possession, number of phases (R/Ms), and Position were set as major categories. R/Ms were determined to start from

the time a ball in rucks and mauls<sup>2</sup> was moved out. Minor categories were also set under each major category to summarize the quantitative difference of each (Table 1). We then conducted a qualitative evaluation of punts in minor categories as “Effective” and “Ineffective” based on the definition of analysis shown in Figure 1 using the ratio of effective punts (“Quality”).

Finally, we categorized the calculated data based on Table 1 and Figure 1 into winning and losing teams.

### 2.4. Processing Method of Analysis Results

One-sample t-test was conducted for the difference in punt occurrence between winning and losing teams for each qualitative analysis category: Time, Zone, Start of Possession, R/Ms, and Position. Significance level was set at 5% (two-sided test).

**Table 1** Items and definitions of quantitative analysis

	Categories of analysis	Additional explanations of definition
①Time	0-20min	Start of game to 20min.
	20-40min	1st 20min to end of 1st half.
	40-60min	Start of 2nd half to 20min of 2nd half.
	60-80min	From 20min of 2nd half to end of game.
②Zone	Own 22	Area from own goal line to own 22.
	Own 22 to Half Way	Area from own 22 to halfway line.
	Half Way to Opp 22	Area from halfway line to opponent 22.
	Opp 22 to Try Line	Area from opponent 22 to opponent goal line.
③Start of Possession	LINEOUT	Situation after winning ball from lineout.
	SCRUM	Situation after winning ball from scrum.
	TURNOVER	Situation when possession has changed from one to the other. It includes set piece turnover as well.
	KICK	On attack, it means kick counter. On defence, it means kick chase.
	RESTART	Kick off or drop out
	PEN & FK	Quick tap from penalty or free kick
④R/Ms	0 R/Ms	"1st phase".
	1 R/Ms	"2nd phase".
	2 R/Ms	"3rd phase".
	3+ R/Ms	Over "4th phase".
⑤Position	Front row	Prop, Hooker
	Second row	Lock
	Back row	Flanker, Number 8
	Scrum Half	-
	Fly Half	Stand Off
	Centre	-
	Wing	-
Full Back	-	

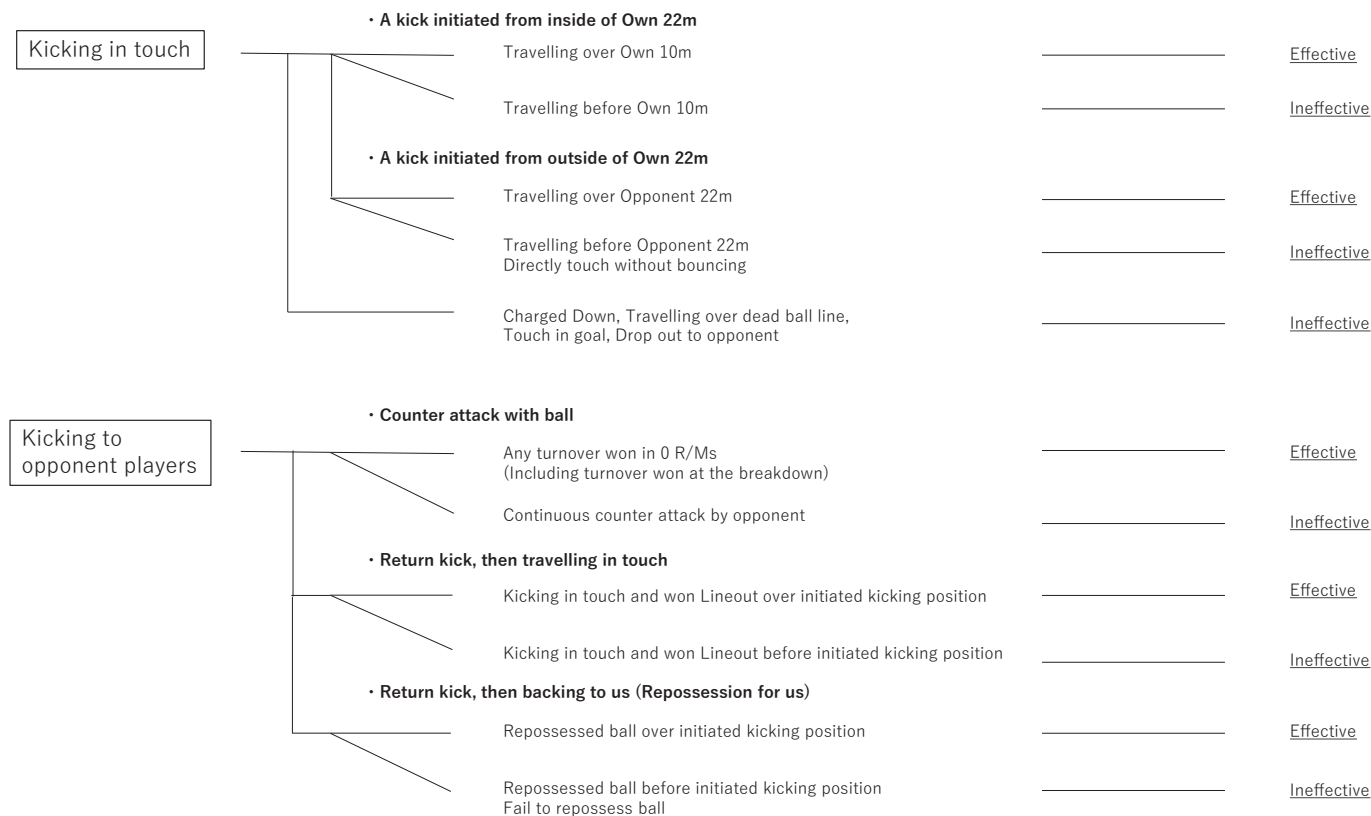


Fig 1 Definitions of qualitative analysis

### 3. Results

Results are shown in Table 2.

### 4. Discussion

In regard to Time, number of punts during 60–80 minutes showed a significant difference between winning and losing teams ( $4.41 \pm 2.40$  times and  $3.23 \pm 2.06$  times). This was thought to be due to the influence of score differences. For example, losing teams are prompted to attempt to possess the ball as much as possible to increase scoring opportunities. On the other hand, winning teams often prioritize the advantage of area rather than ball possession by punting to shift play to the opponent’s area as a means of preventing the opponent from scoring. These factors may have led to the difference in the number of punts during 60–80 minutes. The number of punts during 60–80 minutes was fewer than during other Time periods (Koyanagi, 2017). Results suggest that score difference by time point may have had a significant influence on this. However, regarding

Quality, winning teams revealed 34%, which was lower than losing teams by 2%. Compared with other time periods of the same winning teams, the quality of punt use during 60–80 minutes was lower than during other time periods of winning teams, which does not prove effectiveness. Although winning teams punted more during 60–80 minutes compared with losing teams, quality was not secured, which suggested that the use of punts during 60–80 minutes was not necessarily effective.

In regard to Zone, results show that number of punts by winning teams was significantly more than those by losing teams in the Own 22 to Half Way, Half Way to Opp 22, and Opp 22 to Try Line (Own 22 to Half Way:  $9.30 \pm 4.14$  times vs  $7.96 \pm 3.65$  times, Half Way to Opp 22:  $2.92 \pm 1.87$  times vs  $1.82 \pm 1.38$  times, Opp 22 to Try Line:  $0.82 \pm 0.83$  times vs  $0.34 \pm 0.57$  times). Punts, in general, are used to remove the opponent from defensive area, prevent point loss, and apply psychological pressure to the opponent in return for surrendering ball possession. Because this gives the opponent a scoring opportunity, however, it is considered a negative option and use is often limited to the defensive area. Yoshida et al. (2017)

**Table 2** Result of analysis

		Winning team (n=119)			Losing team (n=119)			t-test	
		MEAN	SD	Quality(%)	MEAN	SD	Quality(%)	t	p
①Time	0-20min	5.97	2.77	45%	5.56	2.58	39%	1.19	0.24
	20-40min	5.25	2.39	45%	4.80	2.40	38%	1.46	0.15
	40-60min	5.38	2.31	42%	5.20	2.50	38%	0.57	0.57
	60-80min	4.41	2.40	34%	3.23	2.06	36%	4.28**	0.00
②Zone	Own 22	7.97	2.95	44%	8.67	3.18	40%	-1.75	0.08
	Own 22 to Half Way	9.30	4.14	39%	7.96	3.65	35%	2.66**	0.01
	Half Way to Opp 22	2.92	1.87	47%	1.82	1.38	43%	5.17**	0.00
	Opp 22 to Try Line	0.82	0.83	35%	0.34	0.57	33%	5.18**	0.00
③Start of Possession	LINEOUT	3.34	1.81	35%	3.04	2.03	34%	1.18	0.24
	SCRUM	2.25	1.70	37%	2.38	1.61	35%	-0.59	0.56
	TURNOVER	4.21	2.63	44%	3.22	1.96	38%	3.30**	0.00
	KICK	6.82	3.39	45%	7.17	3.35	37%	-0.79	0.43
	RESTART	4.19	1.90	43%	2.64	1.55	44%	6.91**	0.00
	PEN & FK	0.20	0.48	42%	0.34	0.59	49%	-2.05*	0.04
④R/Ms	0 R/Ms	8.71	4.14	46%	8.12	3.90	41%	1.13	0.26
	1 R/Ms	7.02	3.18	38%	5.89	2.82	33%	2.89**	0.00
	2 R/Ms	2.92	1.77	41%	2.68	1.85	39%	1.00	0.32
	3+ R/Ms	2.38	1.35	41%	2.10	1.54	37%	1.48	0.14
⑤Position	Front row	0.04	0.20	67%	0.03	0.18	25%	0.34	0.74
	Second row	0.08	0.30	25%	0.03	0.18	50%	1.32	0.19
	Back row	0.17	0.42	35%	0.14	0.42	41%	0.47	0.64
	Scrum Half	3.62	2.53	34%	2.87	2.33	33%	2.37*	0.02
	Fly Half	8.79	3.82	43%	8.26	4.28	38%	1.01	0.32
	Centre	2.07	2.24	44%	1.87	1.97	43%	0.74	0.46
	Wing	1.38	1.37	42%	1.39	1.61	36%	-0.09	0.93
	Full Back	4.87	3.50	45%	4.18	3.39	39%	1.54	0.12

\*\* : p<.01 \* : p<.05

also reported that punts are often used in the Own 22 to Half Way. The results of this study also show more punts in the defensive area than those in the offensive area regardless of whether the team was winning or losing. Important here is that punts in Own 22 and after were observed more in winning teams than in losing teams, and similar significant difference was also observed in Half Way and after. Regarding this point, Tanaka, the first Japanese Super Rugby player, pointed out the effectiveness of punts employed according to situation (Saito, 2015). Jim Greenwood (1991) stated that the primary purpose of kicking is not to expand the defensive area, but to interfere with the opponent's progress. This suggests that winning teams do not consider the surrender of ball possession even in the opponent's area as negative, but as a way to create scoring opportunities by carrying the ball using punts and exerting pressure on the opponent. In fact, the "Quality" of Half Way to Opp 22 and Opp 22 to Try Line were 47% and 35%, respectively, which are higher than those in losing teams. In particular,

the use of punts in Half Way to Opp 22 was close to 50%. These facts clarified that winning teams use punts effectively in the Half Way and after, which is the opponent's area. This means, paradoxically, that using punts in the opponent's area lead to the increase of offensive capability and potential wins.

In regard to the start of possession, a significant difference was observed in the use of punts from TURNOVER, RESTART, PEN & FK between winning and losing teams (TURNOVER: 4.21±2.63 times vs. 3.22±1.96 times, RESTART: 4.19±1.90 times vs. 2.64±1.55 times, PEN & FK: 0.20±0.48 times vs 0.34±0.59 times). In TURNOVER, it is often the case that the opponent's formation was collapsed, which significantly increased the possibility of scoring (Doi, 2015), and coaches direct players to move the ball forward as much as possible. Coaches direct players, for example, to pass the ball more than once. However, results of this study showed that the number of punts from the point of origin was more in winning teams than in losing teams.

Regarding Quality, winning teams showed 44%, which is 6% more than losing teams. This suggested the importance of effective offense in the space by observing the formation of the opponent and considering the option of punts without prioritizing ball possession for offense. Therefore, it is necessary to segmentalize the TURNOVER phase and select the most effective options. For example, Jean Bidal (2003) classified the areas of TURNOVER into the 1st line of defense, 2nd line of defense, and 3rd line of defense<sup>3</sup> to clarify the effective point of offense. Furthermore, Doi (2015) reported the need to select effective offensive plays for TURNOVER based on the location of the FW<sup>4</sup> and involvement of the opposing Wing and Full Back. However, these reports recommended punts as prioritized options only when the Full Back was involved in TURNOVER. Results of this study suggested that, in addition to the above-mentioned situations, punts for TURNOVER were effective; therefore, punts may be effective in TURNOVER in which ball possession changes quickly and the Full Back has difficulty returning to 3rd line of defense and in TURNOVER that occurs during kick counter. Regarding the use of punts from RESTART, offense plays are mainly from the defensive area in this phase; therefore, winning teams may use punts without risk. In addition, there was no significant difference between winning and losing teams in regard to Quality. Losing teams also recorded higher values than Start of Possession. Punts in RESTART were effective from the quantitative viewpoint of winning teams. During PEN & FK, there were significantly fewer punts in winning teams while the Quality of losing teams showed 49%, which was higher than in winning teams. Therefore, the absence of punts in PEN & FK was not necessarily effective. This, however, requires further examination.

Results showed a significant difference between the use of punts by winning and losing teams only in 1 R/Ms ( $7.02 \pm 3.18$  times and  $5.89 \pm 2.82$  times). The Quality of the winning teams was 38%, which was higher than losing teams at 33%. These data suggested that winning teams used punts effectively in the space generated by moving the ball and controlling the 1st and 3rd line of defenses of the opponent tactically rather than the 0 R/Ms in which the opponent's formation was effective. This use of punts is often emphasized by instructors; however, the actual use of such punts, not only a theoretical understanding of their use, may be one of the elements required to win

games.

There was a significant difference in position in Scrum Half only between winning and losing teams ( $3.62 \pm 2.53$  times and  $2.87 \pm 2.33$  times). However, the Quality of winning teams was 34% and losing teams was 33%, both of which were lower compared with the Quality of Fly Half and Full Back. These results showed that although there was a significant difference in number of punts in Scrum Half, they were not always effective.

## 5. Conclusion

This study was conducted to quantitatively and qualitatively evaluate the use of punts in Japan rugby top league games. This study also examined the use of punts by winning teams to consider effective punts inductively. Results showed that punts used in Half Way to Opp 22, Opp 22 to Try Line, TURNOVER, RESTART, 1 R/Ms were effective. Although we attempted to clarify the effectiveness of punts from the viewpoint of winning teams, it is necessary to consider the types of punts in greater detail and examine the validity of the qualitative analysis. However, results suggested that the use of punts in these situations is effective from the quantitative and qualitative viewpoints; and it is expected that this research will contribute to rugby in that it focuses on top-level rugby games and is based on a significant number of games.

## Notes

1. Hack kick means to kick the ball rolling on the ground without picking it up.
2. Ruck is the state in which the ball is on the ground. Maul is the state in which a player possesses the ball in a ball steal by more than one player on both teams.
3. The 1st line of defense is the defensive formation made between two teams around or near the ball. The 2nd line of defense is used to defend against a player who has broken through the 1st line of defense and to handle short punts beyond that. The 3rd line of defense is to handle long punts and protect the goal line from the deepest area.
4. FW means Prop, Hooker, Lock, Flanker, and Number 8.



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