

GOOD GAME![®]
NEW DEAL FOR SPORT

Report REF-EVAL[®] Level 2

Palmeiras 1-0 Vasco da Gama
2023/08/27

Competition: Brazil Serie A 2023

Report Publication Date: 2023/11/15

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GLOSSARY

CRD: Correct Referee Decision

IRD: Incorrect Referee Decision

AI: Artificial Intelligence

1-REF-EVAL[®] METHOD

The REF-EVAL[®] method is the exclusive property of the GOOD GAME![®] company. The REF-EVAL[®] method uses multifactorial analysis of player physiological, biomechanical and tactical performance combined with all refereeing decisions.

The REF-EVAL[®] method, developed over 15 years of analysing players and referees performance data, provides more than 99% correct answers on all refereeing situations. The REF-EVAL[®] method leverages complex algorithms from artificial intelligence (AI) to identify all what are called IRD (Incorrect Referee Decision) to be opposed to CRD (Correct Referee Decision).

We then distinguish between IRD High, i.e. referee errors that directly influence the score (e.g. an invalid penalty whistled...) or the number of players (e.g. a red card not given...) and IRD Low, i.e. referee errors that do not directly influence the score (e.g. a foul not whistled...). In the same way we distinguish the CRD Low when the referee makes the right decision on a simple decision, from the CRD High when the referee makes a right decision on a complex situation (a penalty rightly whistled for example).

Furthermore the REF-EVAL[®] distinguish the unintentional IRD that occur in all football matches from intentional IRD to also identify potential match-fixing related to referees. The REF-EVAL[®] method is today the most advanced tool to secure competitions results and evaluate referees.

2-MATCH INFORMATION

General Information

Date	2023/08/27	
Time	18:30	
Country	Brazil	
City	Sao Paulo	
Stadium	Allianz Parque	
Field length (m)	/	
Field width (m)	/	
	Wind	Rain
	/	/

Referees

Position	NAME	First name
Referee	PEREIRA SAMPAIO	Wilton
Assistant referee	IMAZU DOS SANTOS	Victor Hugo
Assistant referee	CARVALHO ROCHA	Leone
Fourth official	MARQUES DAS FLORES	Douglas
Video Assistant Referee	BENEVENUTO DE OLIVEIRA	Igor Junio
Assistant Video Assistant Referee	SOARES VILARINHO	Frederico



Video Assistant Referee

YES

3-REFEREEING SITUATIONS (from chrono)

First Half: 0 to 15min

ORDER	PERIOD	TYPE	VAR	TEAM CODE	CHRONO	VIDEO TIME	WHISTLED / NOT	DECISION	CRD/IRD* Type	CRD/IRD Classification	IRD team benefit
1	First Half	Start first half	Non	Palmeiras	000:00		Whistled	Correct		CRD Low	
2	First Half	Foul (from)	Non	Palmeiras	000:08		Whistled	Correct		CRD Low	
3	First Half	Foul (from)	Non	Vasco da Gama	000:29		Whistled	Correct		CRD Low	
4	First Half	Throw-in (for)	Non	Vasco da Gama	002:26		Whistled	Correct		CRD Low	
5	First Half	Throw-in (for)	Non	Palmeiras	003:03		Whistled	Correct		CRD Low	
6	First Half	Foul (from)	Non	Vasco da Gama	003:24		Not Whistled	Incorrect	Valid Foul Not Whistled (VFNW)	IRD Low	Vasco da Gama
7	First Half	Corner kick (for)	Non	Palmeiras	003:34		Whistled	Correct		CRD Low	
8	First Half	Corner kick (for)	Non	Palmeiras	004:18		Whistled	Correct		CRD Low	
9	First Half	Goal kick (for)	Non	Vasco da Gama	005:58		Whistled	Correct		CRD Low	
10	First Half	Throw-in (for)	Non	Vasco da Gama	006:12		Whistled	Correct		CRD Low	
11	First Half	Throw-in (for)	Non	Palmeiras	007:09		Whistled	Correct		CRD Low	
12	First Half	Goal kick (for)	Non	Vasco da Gama	007:40		Whistled	Correct		CRD Low	
13	First Half	Throw-in (for)	Non	Vasco da Gama	008:54		Whistled	Correct		CRD Low	
14	First Half	Throw-in (for)	Non	Palmeiras	010:05		Whistled	Correct		CRD Low	
15	First Half	Throw-in (for)	Non	Palmeiras	011:48		Whistled	Correct		CRD Low	
16	First Half	Other	Non	Palmeiras	011:55		Whistled	Correct		CRD Low	
17	First Half	Corner kick (for)	Non	Palmeiras	012:13		Whistled	Correct		CRD Low	
18	First Half	Throw-in (for)	Non	Vasco da Gama	012:52		Whistled	Correct		CRD Low	
19	First Half	Throw-in (for)	Non	Vasco da Gama	014:52		Whistled	Correct		CRD Low	

*CRD(Correct Referee Decision) / IRD (Incorrect Referee Decision)

First Half: 15 to 30min

ORDER	PERIOD	TYPE	VAR	TEAM CODE	CHRONO	VIDEO TIME	WHISTLED / NOT	DECISION	CRD/IRD* Type	CRD/IRD Classification	IRD team benefit
20	First Half	Offside (from)	Permitted	Vasco da Gama	015:32		Whistled	Incorrect	Invalid Offside Whistled (IOW)	IRD Low	Palmeiras
21	First Half	Goal canceled (for)	Permitted	Vasco da Gama	018:30		Whistled	Incorrect	Valid Goal Canceled (VGC)	IRD High	Palmeiras
22	First Half	Goal kick (for)	Non	Palmeiras	019:50		Whistled	Correct		CRD Low	
23	First Half	Throw-in (for)	Non	Vasco da Gama	021:01		Whistled	Correct		CRD Low	
24	First Half	Foul (from)	Non	Palmeiras	021:30		Whistled	Correct		CRD Low	
25	First Half	Throw-in (for)	Non	Palmeiras	021:51		Whistled	Correct		CRD Low	
26	First Half	Foul (from)	Non	Palmeiras	022:31		Whistled	Correct		CRD Low	
27	First Half	Corner kick (for)	Non	Palmeiras	023:32		Whistled	Correct		CRD Low	
28	First Half	Goal kick (for)	Non	Vasco da Gama	024:13		Whistled	Correct		CRD Low	
29	First Half	Goal kick (for)	Non	Palmeiras	025:17		Whistled	Correct		CRD Low	
30	First Half	Foul (from)	Non	Vasco da Gama	025:30		Whistled	Not Assessed		CRD Low	
31	First Half	Throw-in (for)	Non	Palmeiras	026:17		Whistled	Correct		CRD Low	
32	First Half	Other	Non	Palmeiras	026:25		Whistled	Correct		CRD Low	
33	First Half	Goal kick (for)	Non	Vasco da Gama	026:52		Whistled	Correct		CRD Low	
34	First Half	Throw-in (for)	Non	Vasco da Gama	027:26		Whistled	Correct		CRD Low	
35	First Half	Goal kick (for)	Non	Palmeiras	028:07		Whistled	Correct		CRD Low	
36	First Half	Throw-in (for)	Non	Palmeiras	028:45		Whistled	Correct		CRD Low	

*CRD(Correct Referee Decision) / IRD (Incorrect Referee Decision)

First Half: 30min to half time

ORDER	PERIOD	TYPE	VAR	TEAM CODE	CHRONO	VIDEO TIME	WHISTLED / NOT	DECISION	CRD/IRD* Type	CRD/IRD Classification	IRD team benefit
37	First Half	Throw-in (for)	Non	Vasco da Gama	030:23		Whistled	Correct		CRD Low	
38	First Half	Foul (from)	Non	Palmeiras	030:45		Whistled	Correct		CRD Low	
39	First Half	Goal kick (for)	Non	Palmeiras	031:36		Whistled	Correct		CRD Low	
40	First Half	Foul (from)	Non	Vasco da Gama	032:58		Whistled	Correct		CRD Low	
41	First Half	Throw-in (for)	Non	Vasco da Gama	033:51		Whistled	Correct		CRD Low	
42	First Half	Foul (from)	Non	Vasco da Gama	034:34		Whistled	Correct		CRD Low	
43	First Half	Goal kick (for)	Non	Vasco da Gama	035:22		Whistled	Correct		CRD Low	
44	First Half	Foul (from)	Non	Vasco da Gama	036:00		Whistled	Correct		CRD Low	
45	First Half	Other	Non	Palmeiras	037:34		Whistled	Correct		CRD Low	
46	First Half	Drop ball	Non	Vasco da Gama	039:16		Whistled	Correct		CRD Low	
47	First Half	Foul (from)	Non	Palmeiras	039:51		Whistled	Correct		CRD Low	
48	First Half	Throw-in (for)	Non	Palmeiras	040:41		Whistled	Correct		CRD Low	
49	First Half	Corner kick (for)	Non	Palmeiras	041:25		Whistled	Correct		CRD Low	
50	First Half	Throw-in (for)	Non	Vasco da Gama	042:05		Whistled	Correct		CRD Low	
51	First Half	Substitution (for)	Non	Palmeiras	042:30		Whistled	Correct		CRD Low	
52	First Half	Throw-in (for)	Non	Palmeiras	042:59		Whistled	Correct		CRD Low	
53	First Half	Goal kick (for)	Non	Vasco da Gama	043:30		Whistled	Correct		CRD Low	
54	First Half	Foul (from)	Non	Palmeiras	043:56		Whistled	Correct		CRD Low	
55	First Half	Other	Non	Palmeiras	044:01		Whistled	Correct		CRD Low	
56	First Half	Corner kick (for)	Non	Vasco da Gama	045:31		Whistled	Correct		CRD Low	
57	First Half	Goal kick (for)	Non	Palmeiras	046:06		Whistled	Correct		CRD Low	
58	First Half	Corner kick (for)	Non	Palmeiras	047:13		Whistled	Correct		CRD Low	
59	First Half	Goal kick (for)	Non	Vasco da Gama	047:38		Whistled	Correct		CRD Low	
60	First Half	Throw-in (for)	Non	Vasco da Gama	049:34		Whistled	Correct		CRD Low	
61	First Half	End first half	Non	Palmeiras	050:00		Whistled	Correct		CRD Low	

*CRD(Correct Referee Decision) / IRD (Incorrect Referee Decision)

Second Half: 45 to 60min

ORDER	PERIOD	TYPE	VAR	TEAM CODE	CHRONO	VIDEO TIME	WHISTLED / NOT	DECISION	CRD/IRD* Type	CRD/IRD Classification	IRD team benefit
62	Second Half	Start second half	Non	Vasco da Gama	045:00		Whistled	Correct		CRD Low	
63	Second Half	Throw-in (for)	Non	Vasco da Gama	045:06		Whistled	Correct		CRD Low	
64	Second Half	Throw-in (for)	Non	Vasco da Gama	045:20		Whistled	Correct		CRD Low	
65	Second Half	Foul (from)	Non	Vasco da Gama	045:53		Not Whistled	Correct	Advantage	CRD Low	
66	Second Half	Throw-in (for)	Non	Vasco da Gama	047:33		Whistled	Correct		CRD Low	
67	Second Half	Yellow card (for)	Non	Vasco da Gama	047:48		Whistled	Correct		CRD Low	
68	Second Half	Other	Non	Vasco da Gama	048:09		Whistled	Correct		CRD Low	
69	Second Half	Throw-in (for)	Non	Vasco da Gama	048:36		Whistled	Correct		CRD Low	
70	Second Half	Foul (from)	Non	Vasco da Gama	049:10		Whistled	Correct		CRD Low	
71	Second Half	Foul (from)	Non	Palmeiras	050:44		Whistled	Correct		CRD Low	
72	Second Half	Throw-in (for)	Non	Palmeiras	051:31		Whistled	Correct		CRD Low	
73	Second Half	Throw-in (for)	Non	Palmeiras	051:50		Whistled	Correct		CRD Low	
74	Second Half	Throw-in (for)	Non	Palmeiras	052:03		Whistled	Correct		CRD Low	
75	Second Half	Foul (from)	Non	Vasco da Gama	053:14		Whistled	Correct		CRD Low	
76	Second Half	Foul (from)	Non	Palmeiras	054:39		Whistled	Correct		CRD Low	
77	Second Half	Foul (from)	Non	Palmeiras	054:56		Whistled	Correct		CRD Low	
78	Second Half	Yellow card (for)	Non	Palmeiras	055:01		Whistled	Correct		CRD Low	
79	Second Half	Foul (from)	Non	Palmeiras	055:20		Whistled	Correct		CRD Low	
80	Second Half	Corner kick (for)	Non	Palmeiras	056:39		Whistled	Correct		CRD Low	
81	Second Half	Offside (from)	Non	Palmeiras	057:01		Whistled	Correct		CRD Low	
82	Second Half	Throw-in (for)	Non	Palmeiras	058:28		Whistled	Correct		CRD Low	
83	Second Half	Throw-in (for)	Non	Palmeiras	059:44		Whistled	Correct		CRD Low	
84	Second Half	Foul (from)	Non	Vasco da Gama	059:58		Whistled	Correct		CRD Low	

*CRD(Correct Referee Decision) / IRD (Incorrect Referee Decision)

Second Half: 60 to 75min

ORDER	PERIOD	TYPE	VAR	TEAM CODE	CHRONO	VIDEO TIME	WHISTLED / NOT	DECISION	CRD/IRD* Type	CRD/IRD Classification	IRD team benefit
85	Second Half	Throw-in (for)	Non	Palmeiras	061:12		Whistled	Correct		CRD Low	
86	Second Half	Goal kick (for)	Non	Vasco da Gama	061:37		Whistled	Correct		CRD Low	
87	Second Half	Throw-in (for)	Non	Vasco da Gama	062:03		Whistled	Correct		CRD Low	
88	Second Half	Throw-in (for)	Non	Palmeiras	062:34		Whistled	Correct		CRD Low	
89	Second Half	Foul (from)	Non	Vasco da Gama	063:00		Whistled	Correct		CRD Low	
90	Second Half	Yellow card (for)	Non	Vasco da Gama	063:18		Whistled	Correct		CRD Low	
91	Second Half	Goal (for)	Non	Palmeiras	064:32		Whistled	Correct		CRD Low	
92	Second Half	Substitution (for)	Non	Vasco da Gama	065:50		Whistled	Correct		CRD Low	
93	Second Half	Substitution (for)	Non	Vasco da Gama	065:55		Whistled	Correct		CRD Low	
94	Second Half	Throw-in (for)	Non	Vasco da Gama	066:15		Whistled	Correct		CRD Low	
95	Second Half	Foul (from)	Non	Palmeiras	066:35		Whistled	Correct		CRD Low	
96	Second Half	Corner kick (for)	Non	Vasco da Gama	066:56		Whistled	Correct		CRD Low	
97	Second Half	Goal kick (for)	Non	Palmeiras	067:23		Whistled	Correct		CRD Low	
98	Second Half	Goal kick (for)	Non	Vasco da Gama	069:08		Whistled	Correct		CRD Low	
99	Second Half	Foul (from)	Non	Palmeiras	069:55		Whistled	Correct		CRD Low	
100	Second Half	Throw-in (for)	Non	Vasco da Gama	070:14		Whistled	Correct		CRD Low	
101	Second Half	Foul (from)	Non	Palmeiras	070:56		Whistled	Correct		CRD Low	
102	Second Half	Substitution (for)	Non	Palmeiras	071:37		Whistled	Correct		CRD Low	
103	Second Half	Substitution (for)	Non	Palmeiras	071:38		Whistled	Correct		CRD Low	
104	Second Half	Foul (from)	Non	Palmeiras	072:03		Whistled	Correct		CRD Low	
105	Second Half	Throw-in (for)	Non	Vasco da Gama	072:48		Whistled	Correct		CRD Low	
106	Second Half	Other	Non	Vasco da Gama	073:31		Whistled	Correct		CRD Low	

*CRD(Correct Referee Decision) / IRD (Incorrect Referee Decision)

Second Half: 75min to end second half

ORDER	PERIOD	TYPE	VAR	TEAM CODE	CHRONO	VIDEO TIME	WHISTLED / NOT	DECISION	CRD/IRD* Type	CRD/IRD Classification	IRD team benefit
107	Second Half	Corner kick (for)	Non	Palmeiras	075:03		Whistled	Correct		CRD Low	
108	Second Half	Offside (from)	Non	Palmeiras	075:46		Whistled	Correct		CRD Low	
109	Second Half	Foul (from)	Non	Vasco da Gama	076:53		Not Whistled	Correct	Advantage	CRD Low	
110	Second Half	Foul (from)	Non	Vasco da Gama	077:49		Whistled	Correct		CRD Low	
111	Second Half	Foul (from)	Non	Palmeiras	079:59		Whistled	Correct		CRD Low	
112	Second Half	Foul (from)	Non	Vasco da Gama	081:07		Whistled	Correct		CRD Low	
113	Second Half	Foul (from)	Non	Palmeiras	081:41		Whistled	Correct		CRD Low	
114	Second Half	Foul (from)	Non	Vasco da Gama	082:30		Whistled	Correct		CRD Low	
115	Second Half	Goal kick (for)	Non	Vasco da Gama	084:37		Whistled	Correct		CRD Low	
116	Second Half	Foul (from)	Non	Vasco da Gama	085:46		Whistled	Correct		CRD Low	
117	Second Half	Foul (from)	Non	Palmeiras	086:56		Whistled	Correct		CRD Low	
118	Second Half	Substitution (for)	Non	Vasco da Gama	087:15		Whistled	Correct		CRD Low	
119	Second Half	Substitution (for)	Non	Vasco da Gama	087:20		Whistled	Correct		CRD Low	
120	Second Half	Foul (from)	Non	Vasco da Gama	089:02		Whistled	Correct		CRD Low	
121	Second Half	Throw-in (for)	Non	Palmeiras	089:54		Whistled	Correct		CRD Low	
122	Second Half	Corner kick (for)	Non	Palmeiras	090:21		Whistled	Correct		CRD Low	
123	Second Half	Foul (from)	Non	Palmeiras	090:50		Whistled	Correct		CRD Low	
124	Second Half	Other	Non	Vasco da Gama	091:02		Whistled	Correct		CRD Low	
125	Second Half	Foul (from)	Non	Vasco da Gama	092:39		Not Whistled	Correct	Advantage	CRD Low	
126	Second Half	Goal kick (for)	Non	Vasco da Gama	093:04		Whistled	Correct		CRD Low	
127	Second Half	Substitution (for)	Non	Palmeiras	093:45		Whistled	Correct		CRD Low	
128	Second Half	Substitution (for)	Non	Palmeiras	093:47		Whistled	Correct		CRD Low	
129	Second Half	Foul (from)	Non	Palmeiras	094:31		Whistled	Correct		CRD Low	
130	Second Half	Throw-in (for)	Non	Vasco da Gama	095:23		Whistled	Correct		CRD Low	
131	Second Half	Foul (from)	Non	Vasco da Gama	095:42		Whistled	Correct		CRD Low	
132	Second Half	Foul (from)	Non	Palmeiras	096:28		Whistled	Correct		CRD Low	
133	Second Half	Yellow card (for)	Non	Palmeiras	096:30		Whistled	Correct		CRD Low	
134	Second Half	End second half	Non	Vasco da Gama	098:03		Whistled	Correct		CRD Low	
135	Second Half	Yellow card (for)	Non	Vasco da Gama	098:03		Not Whistled	Correct		CRD Low	

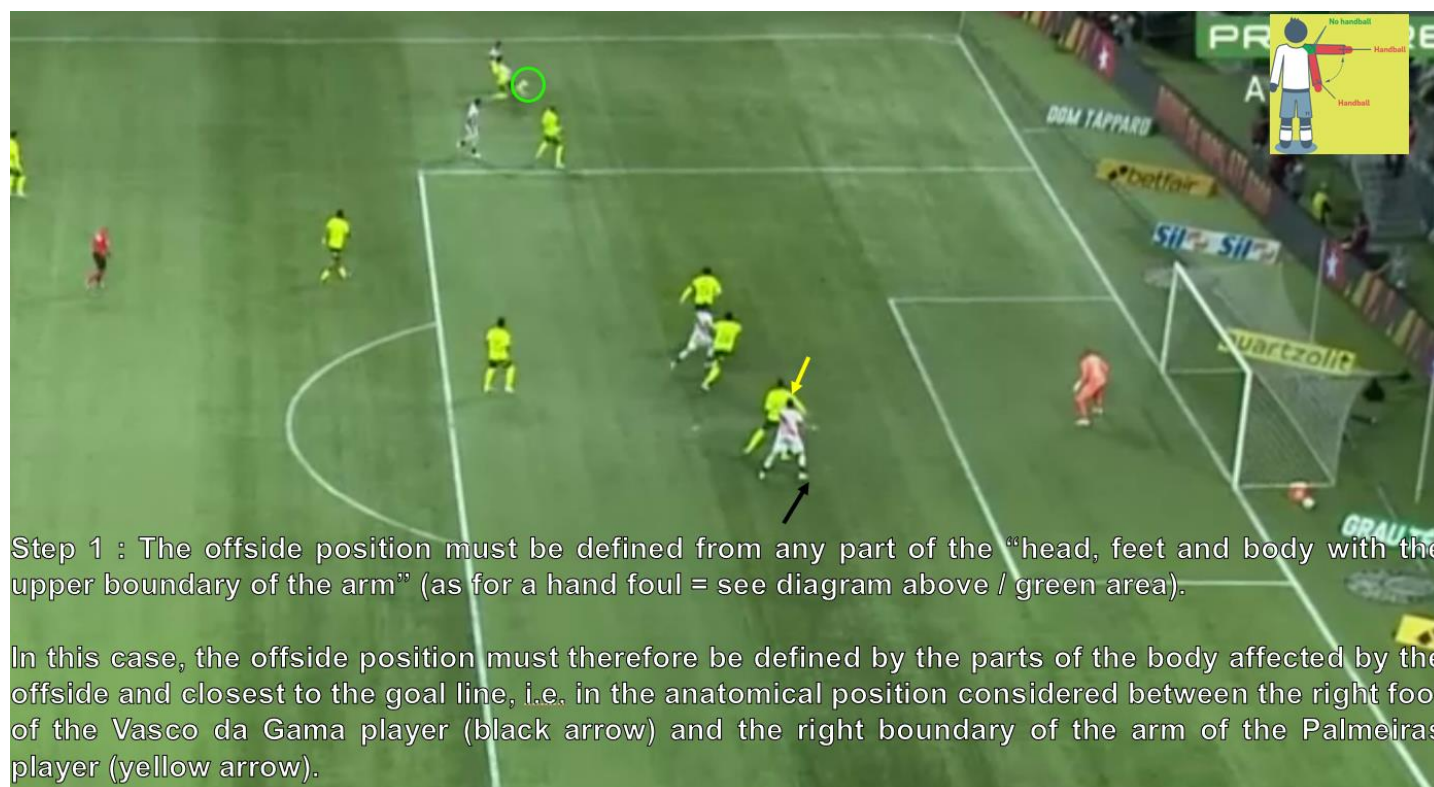
*CRD(Correct Referee Decision) / IRD (Incorrect Referee Decision)

4-LIVE IRD & CRD High AI results

1534 IRD High: Valid Goal Canceled (VGC)

The screenshot shows the 'GOOD GAME! VAR-ASSIST AI' interface. At the top left is the logo 'GOOD GAME! NEW DEAL FOR SPORT'. On the right, it says 'VAR-ASSIST AI'. Below the logo, it says 'Final result'. There are two links: 'GOAL VALIDATION REPORT - Download >>' and 'Back to the Menu >>'. Below these is a large green button with the word 'GOAL' in white. At the bottom, the AI code 'GV9-10Y11N12N13N14N-G' is displayed.

Unique analysis AI code: GV9-10Y11N12N13N14N-G

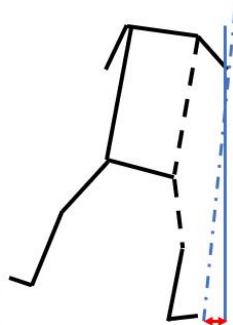
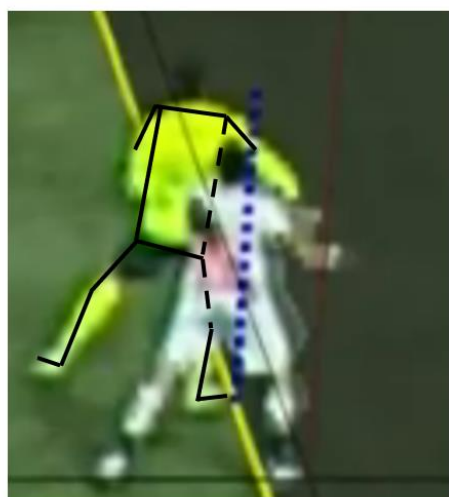


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Step 2 : The black line on the ground is perfectly positioned to identify the position of the Vasco da Gama player's right foot.

On the other hand, the shoulder line projection on the ground (blue dotted line on the yellow line) is completely erroneous, as demonstrated later by a simple analysis of the player's anatomical position. This ground projection is exactly on the line of the Palmeiras player's right foot.

cbf VAR **LANCE EM REVISÃO**



Step 3: projection of the kinogram to a frontal plane, integrating the image distortion (solid blue line) versus that used by the VAR (dotted blue line) from a calibration on the vertical plane of the cage without taking into account the image distortion in the translation of this vertical vector to the analysis area.

More simply, in the anatomical position of the Palmeiras player (clockwise rotation and tilt of the trunk to the right in the sagittal plane) it is impossible for the projection of the axis of the right boundary of the arm to be at the same level as the right foot on a horizontal plane.

In red (double arrow), the error in projecting the yellow line on the ground for the Palmeiras player. This yellow line should be shifted forward to demonstrate the absence of offside. The final VAR correction (blue line for the Palmeiras player and red line for the Vasco da Gama player) alters the erroneous position of the Palmeiras player's line.

5-REFEREEING DECISIONS ASSESSMENT

Half time note

/

Full time note

/

REFEREEING SITUATIONS	Total	%
Total number of refereeing situations	135	/
Whistled	130	96
Not whistled	5	4
Correct	131	97
Incorrect (IRD)	3	2
Not assessed	1	1

IRD Distribution	Total	%
Benefits for Palmeiras	2	67
Benefits for Vasco da Gama	1	33

IRD Palmeiras	Total
Total number of IRD High with benefit	1
Total number of IRD Low with benefit	1
Total number of IRD High with deficit	0
Total number of IRD Low with deficit	1

IRD Distribution with benefits for Palmeiras	Total
Reverse team	/
Valid goal canceled	1
Invalid goal accepted	/
Valid penalty not whistled	/
Invalid penalty whistled	/
Invalid penalty goal	/
Valid foul not whistled	/
Invalid foul whistled	/
Valid offside not whistled	/
Invalid offside whistled	1
Valid corner kick not whistled	/
Invalid corner kick whistled	/
Valid throw-in not whistled	/
Invalid throw-in whistled	/
Valid yellow card not given	/
Invalid yellow card given	/
Valid red card not given	/
Invalid red card given	/

IRD Vasco da Gama	Total
Total number of IRD High with benefit	0
Total number of IRD Low with benefit	1
Total number of IRD High with deficit	1
Total number of IRD Low with deficit	1

IRD Distribution with benefits for Vasco da Gama	Total
Reverse team	/
Valid goal canceled	/
Invalid goal accepted	/
Valid penalty not whistled	/
Invalid penalty whistled	/
Invalid penalty goal	/
Valid foul not whistled	1
Invalid foul whistled	/
Valid offside not whistled	/
Invalid offside whistled	/
Valid corner kick not whistled	/
Invalid corner kick whistled	/
Valid throw-in not whistled	/
Invalid throw-in whistled	/
Valid yellow card not given	/
Invalid yellow card given	/
Valid red card not given	/
Invalid red card given	/

6-CONCLUSION

The presence of 1 IRD (Incorrect Referee Decision) High (with direct influence on the score and/or number of players) with benefits for Palmeiras in the match between Palmeiras and Vasco da Gama on 2023/08/27, part of the Brazil Serie A 2023, has completely changed the official score and points for each team.

POINTS	OFFICIAL	REAL
Palmeiras	3	1
Vasco da Gama	0	1

RESULTS	OFFICIAL	REAL
Palmeiras - Vasco da Gama	1-0	1-1

Furthermore all the technical and scientific elements assessed and presented in this expert report show that the refereeing is NORMAL related to match-fixing.

On November 15, 2023,

SP, Ph.D.

