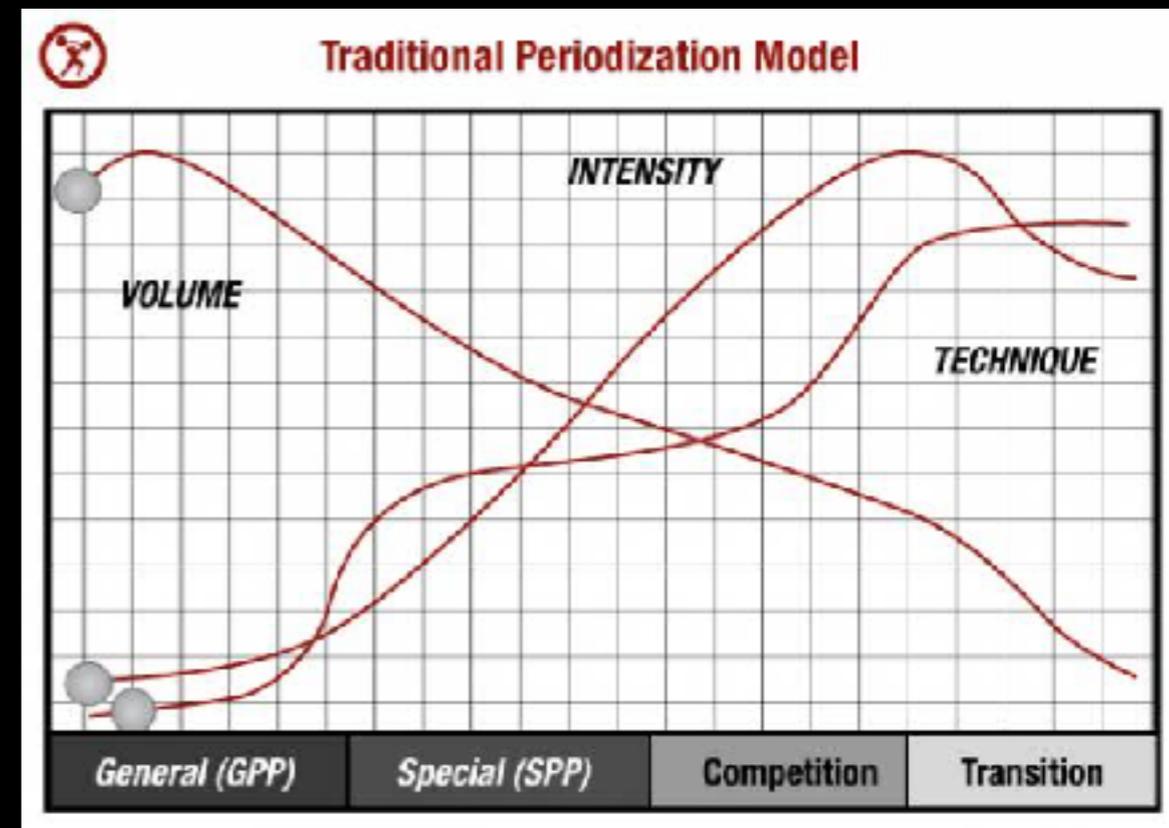


Running-based pre-season



Principle of Specificity



You must do *specific* exercises to improve *specific* components of physical fitness in *specific* body parts.

Football-based pre-season



Prepare the first 2 matches!

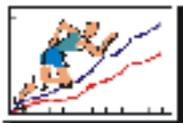
REVIEW ARTICLE

Sports Med 2011; 41 (2): 199-209
 1119-3293/11/0000-0000-0000
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Physiology of Small-Sided Games Training in Football A Systematic Review

Stephen V. Hill-Haas,¹ Brian Dawson,¹ Franco M. Impellizzeri^{2,3} and Aaron J. Coutts⁴

- 1 School of Sports Science, Exercise & Health, University of Western Australia, Perth, Western Australia, Australia
- 2 Neuromuscular Research Laboratory, Schultess Clinic, FIFA Centre of Excellence, Zurich, Switzerland
- 3 Research Centre for Sport, Mountain and Health (CSMS) of Rovereto, University of Verona, Verona Italy
- 4 School of Leisure, Sport & Tourism, University of Technology, Lindfield, New South Wales, Australia



Journal of Human Kinetics volume 33/2012, 103-113
 Section III – Sports Training DOI:10.2478/v10078-012-0049-z

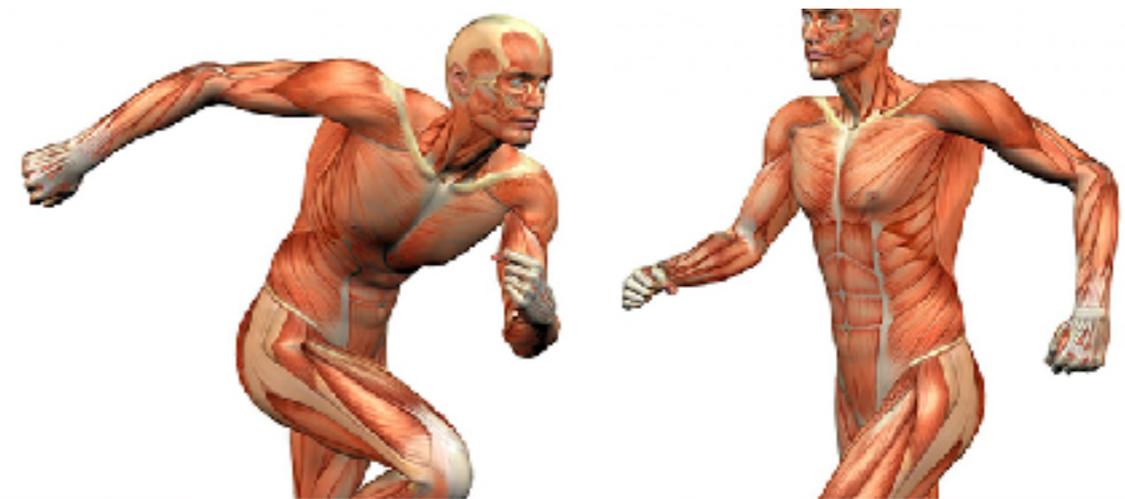
A Review on the Effects of Soccer Small-Sided Games

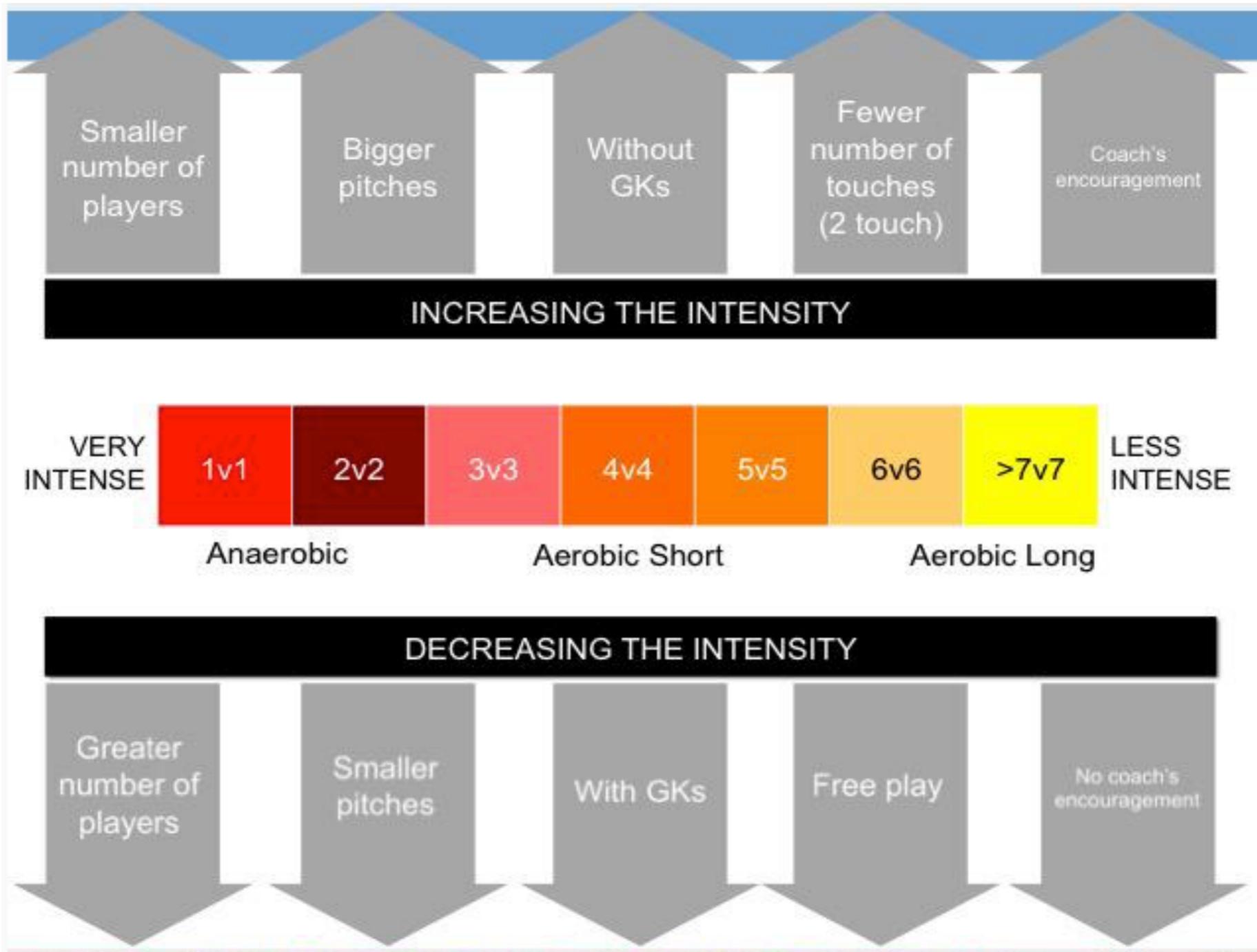
by
 Marco Aguiar², Coreti Botelho², Carlos Lago³, Victor Maças²,
 Jaime Sampaio²

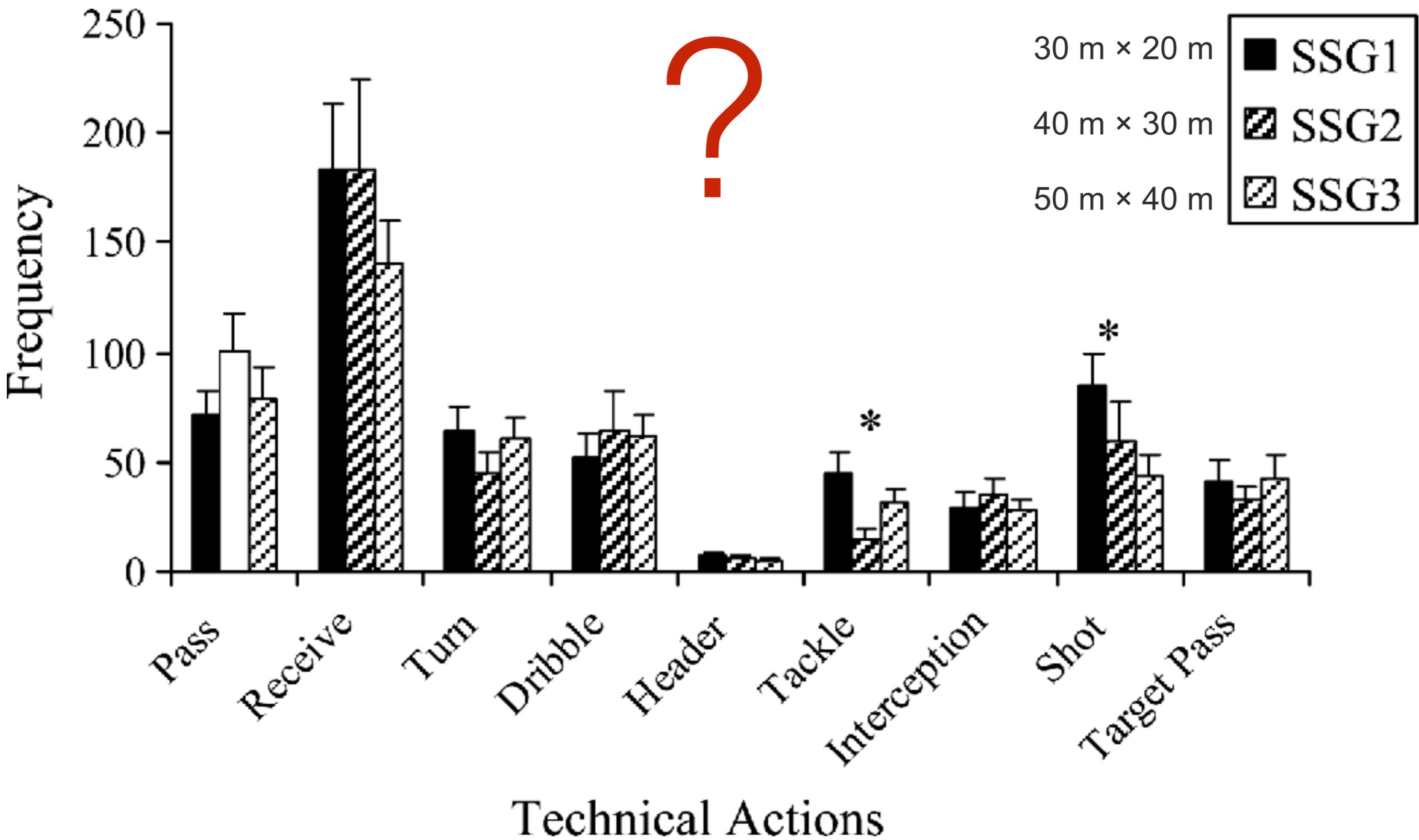
BRIEF REVIEW

SMALL-SIDED GAMES IN TEAM SPORTS TRAINING: A BRIEF REVIEW

JAMEL HALOUANI,¹ HAMDI CHYTOUROU,^{1,2} TIM GABBETT,^{3,4} ANIS CHADOUACHI,¹ AND KARIM CHADIAH⁵







4 x 4

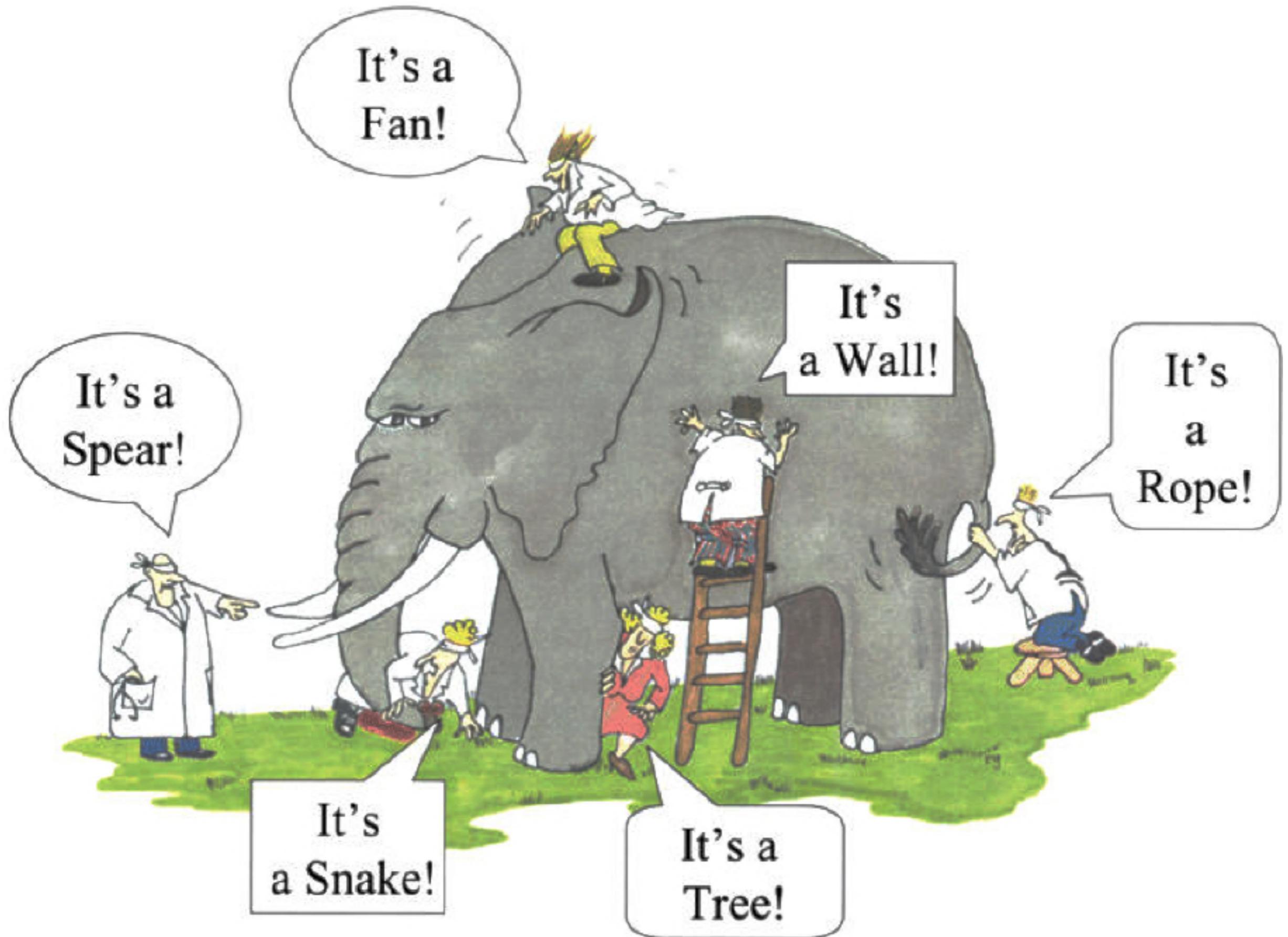
Tactical dependency

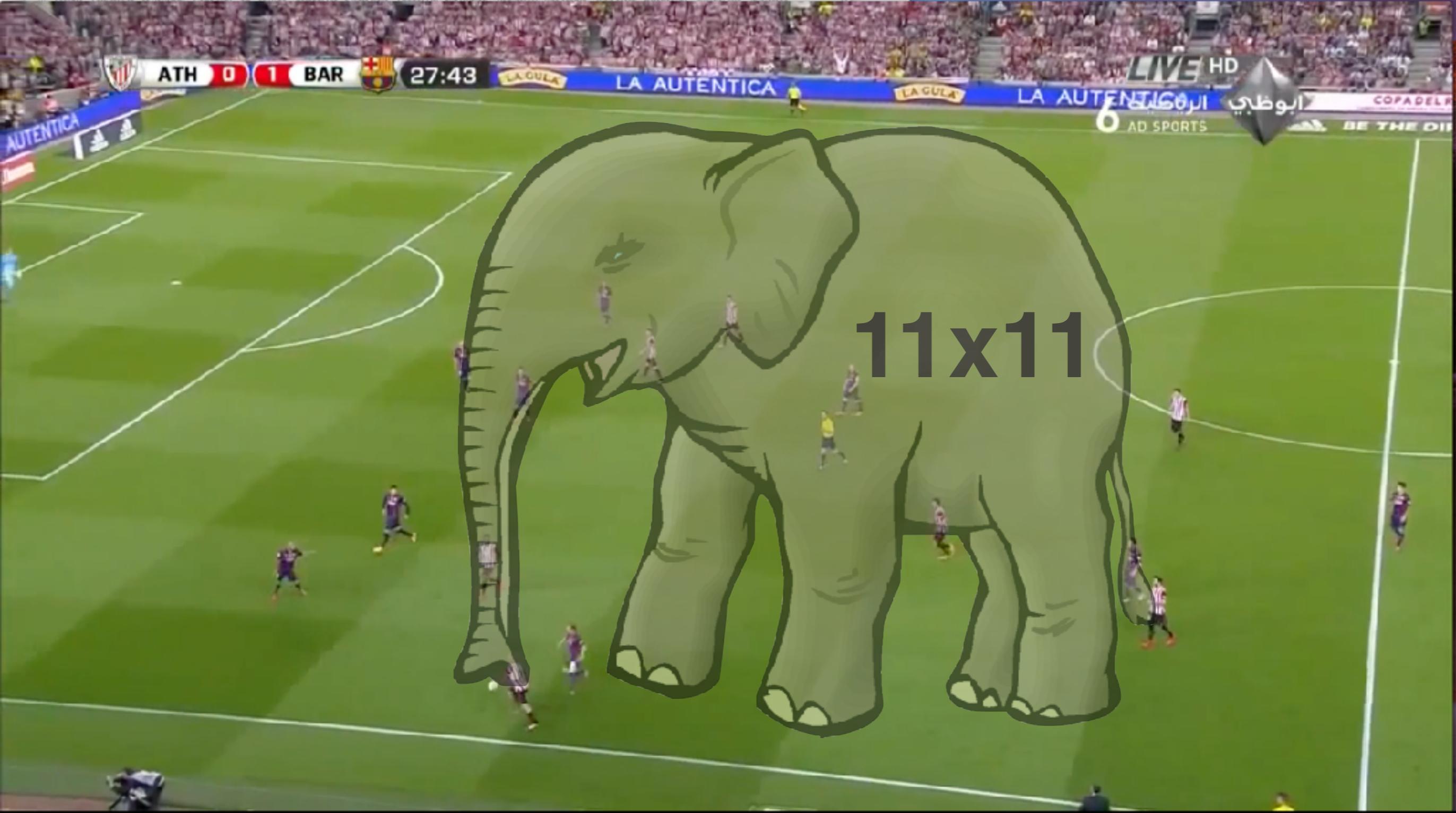


**Can the small-sided games
also be used to improve
tactical performance?**



The blind men and the elephant





ATH 0 1 BAR 27:43

LIVE HD

LA GULA LA AUTENTICA

LA GULA

LA AUTENTICA

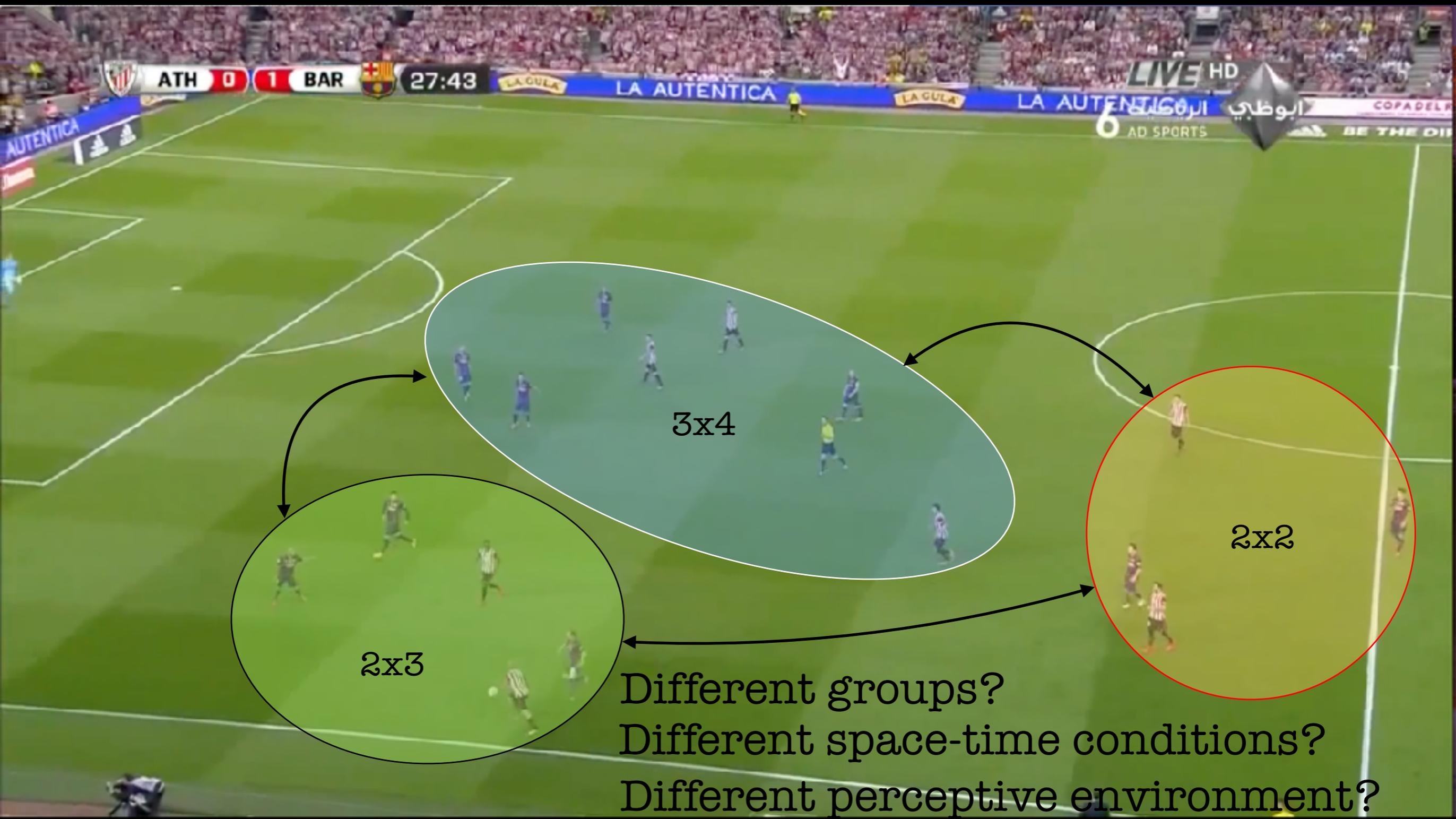
ابوظبي

AD SPORTS

COPA DEL REY

BE THE DRAGON

11x11



ATH 0

1 BAR

27:43

LA AUTENTICA

LIVE HD

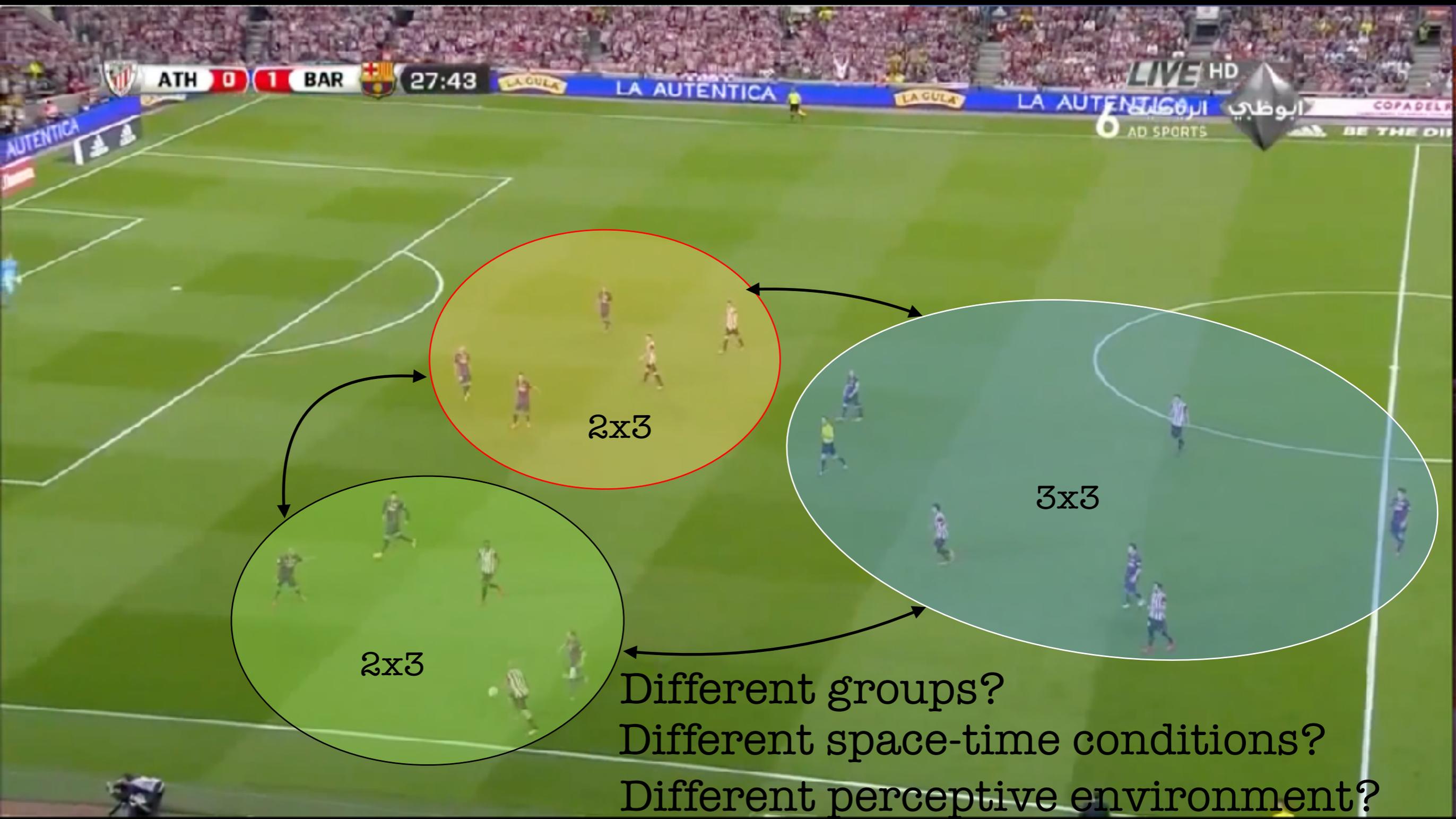
ابوظبي

3x4

2x3

2x2

Different groups?
Different space-time conditions?
Different perceptive environment?



ATH 0

1 BAR

27:43

LA AUTENTICA

LIVE HD

ابوظبي

AD SPORTS

COPA DEL REY

BE THE DR

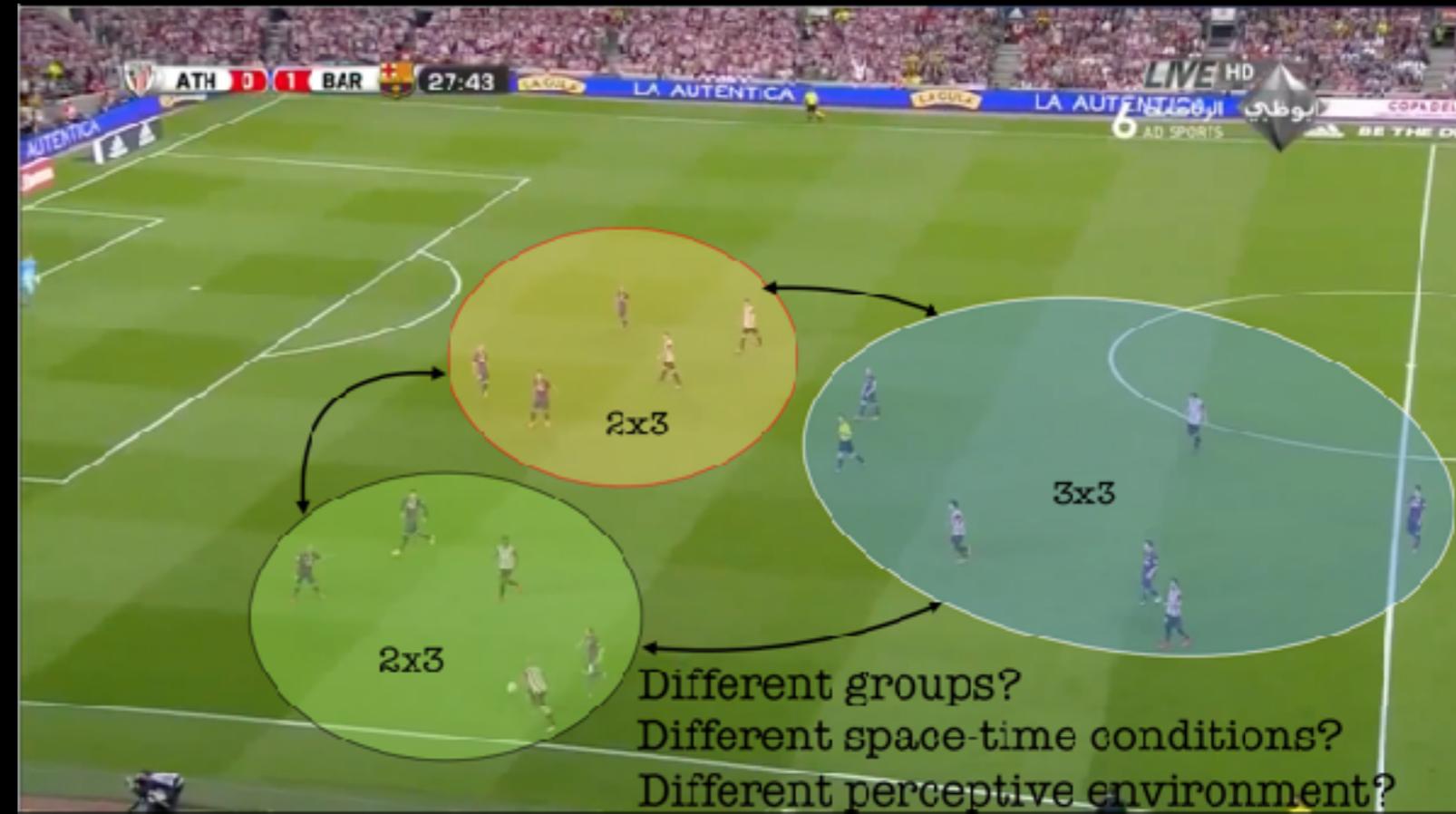
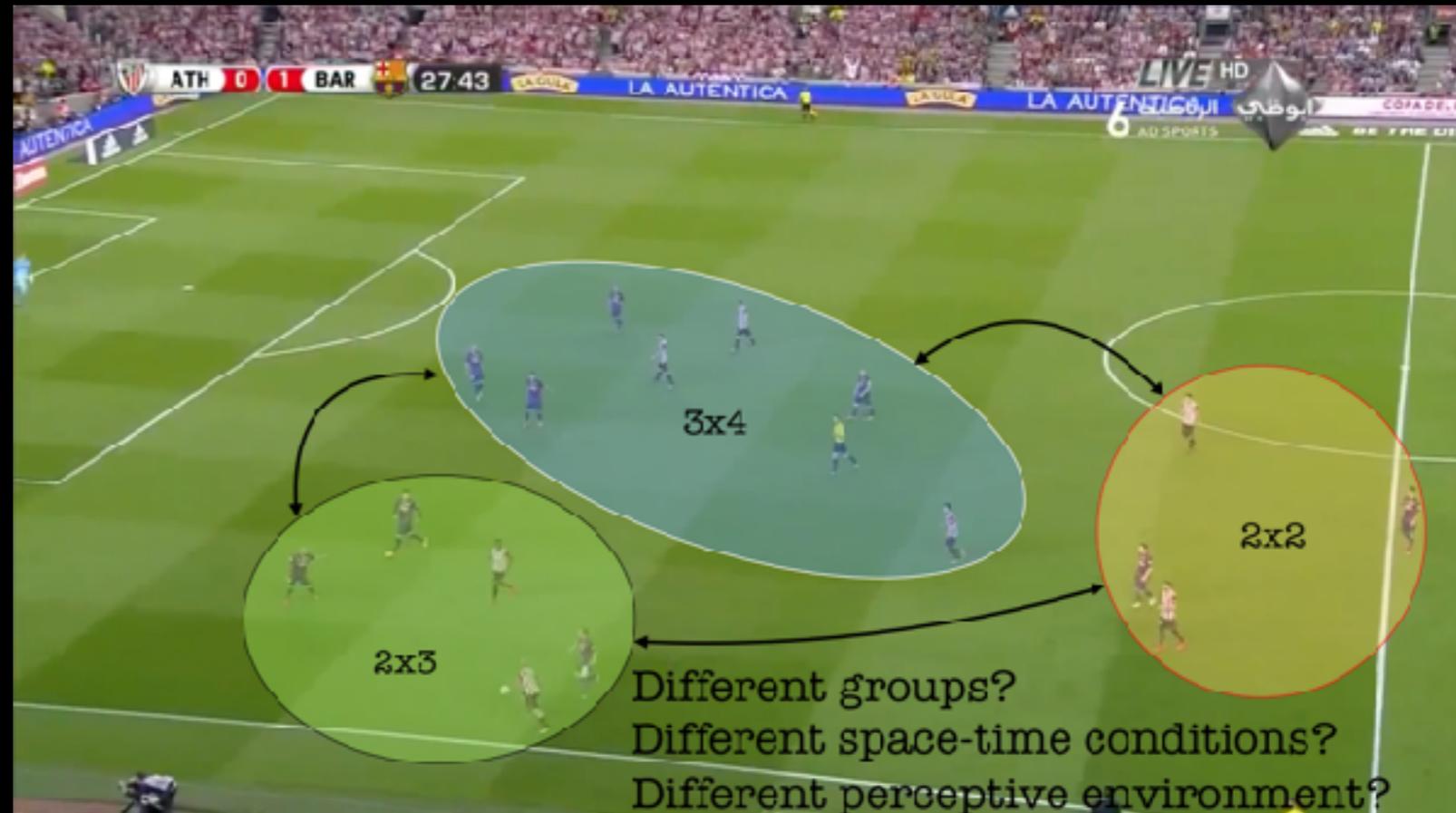
2x3

3x3

2x3

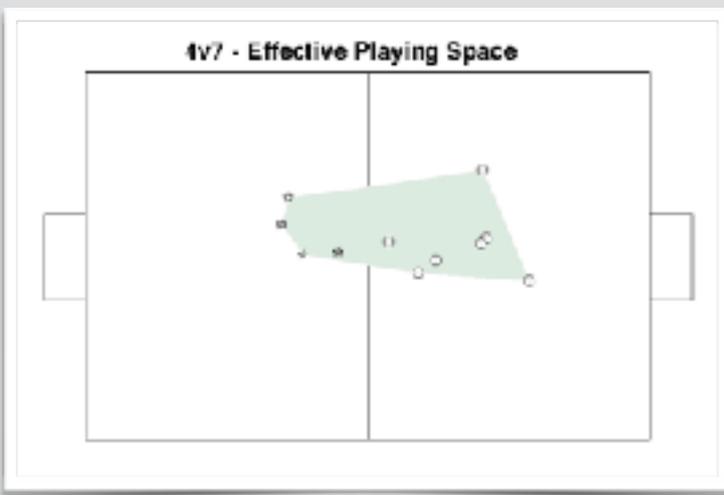
Different groups?
Different space-time conditions?
Different perceptive environment?

Several perspectives

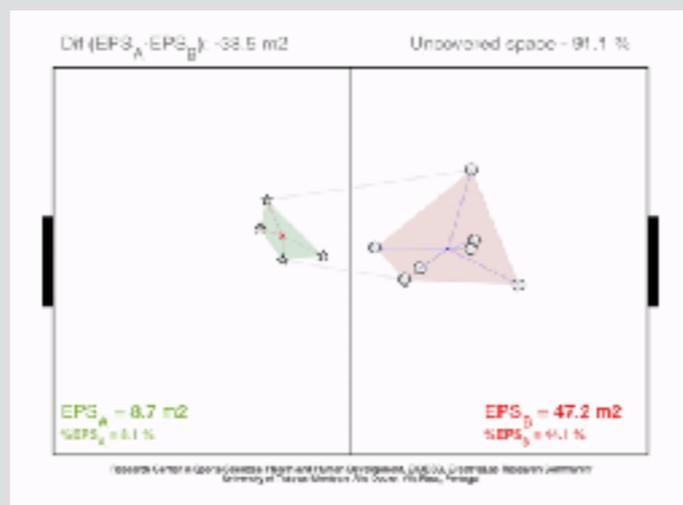


MESO TASKS

AGENTS AS UNIT

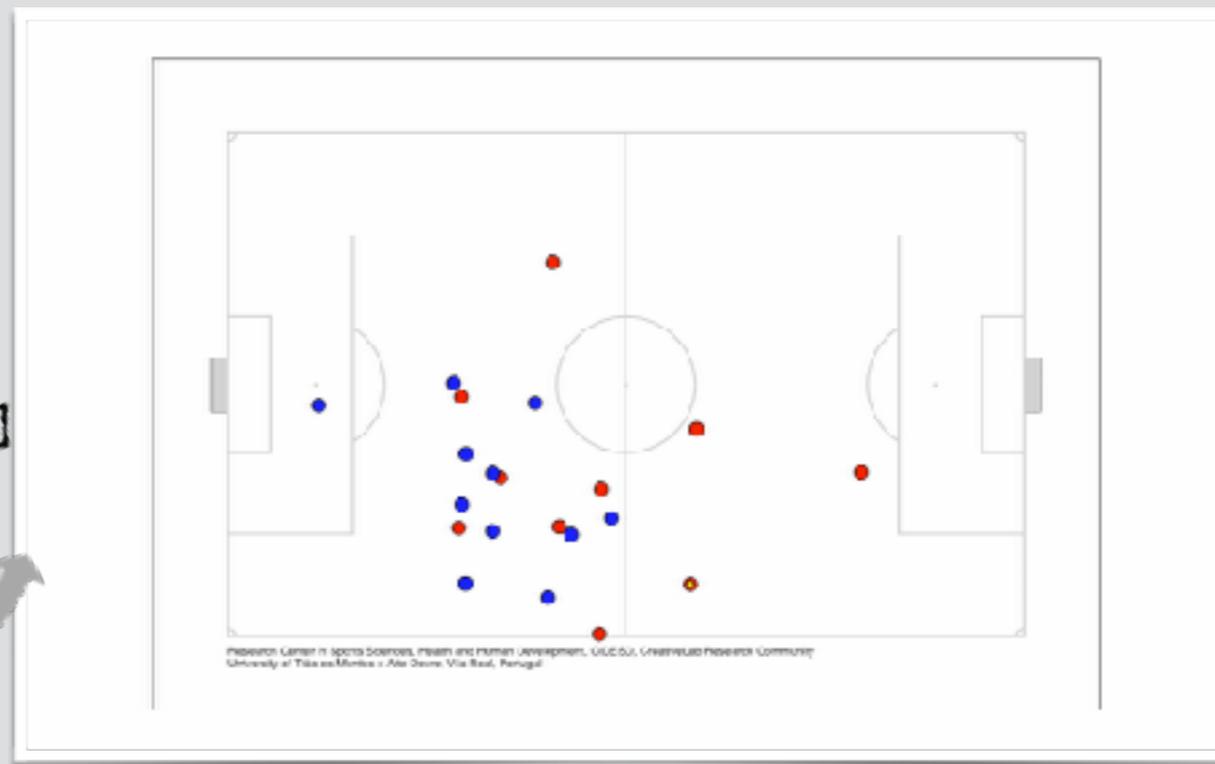
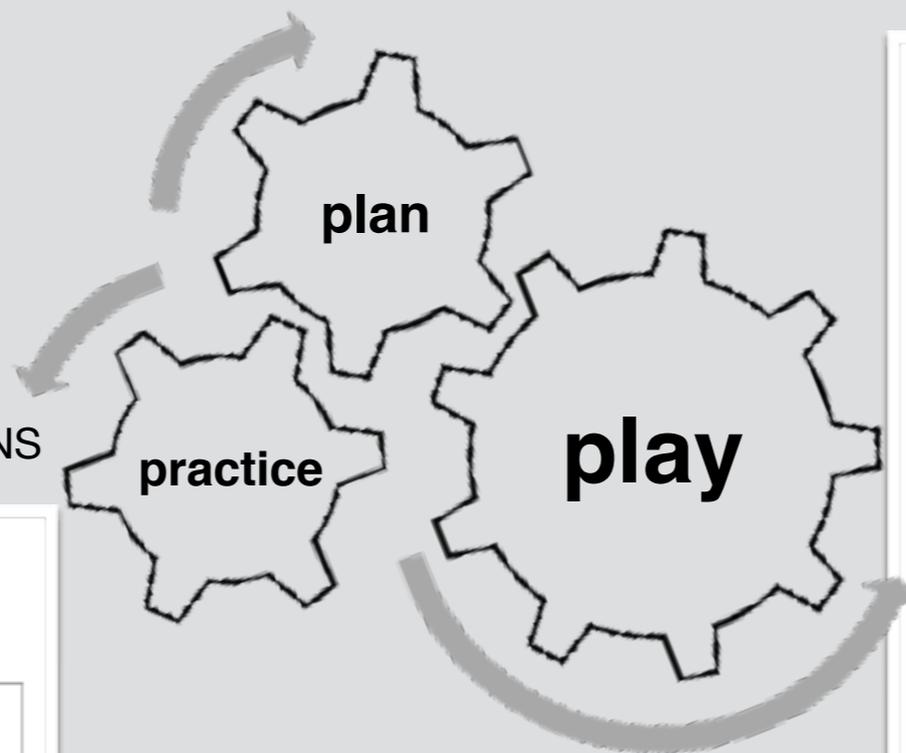
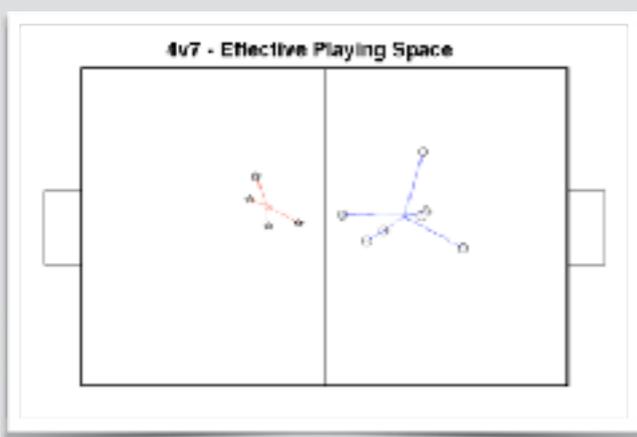


CONFRONTATIONS



COMPETITION 11x11 MACRO TASK

INDIVIDUAL CONTRIBUTIONS



MICRO TASKS

REPRESENTATIVENESS

TACTICAL REPRESENTATIVENESS



Running

More controlled physiological responses

Organizational Drills



Fine-tune how environmental information is perceived



Technical Drills

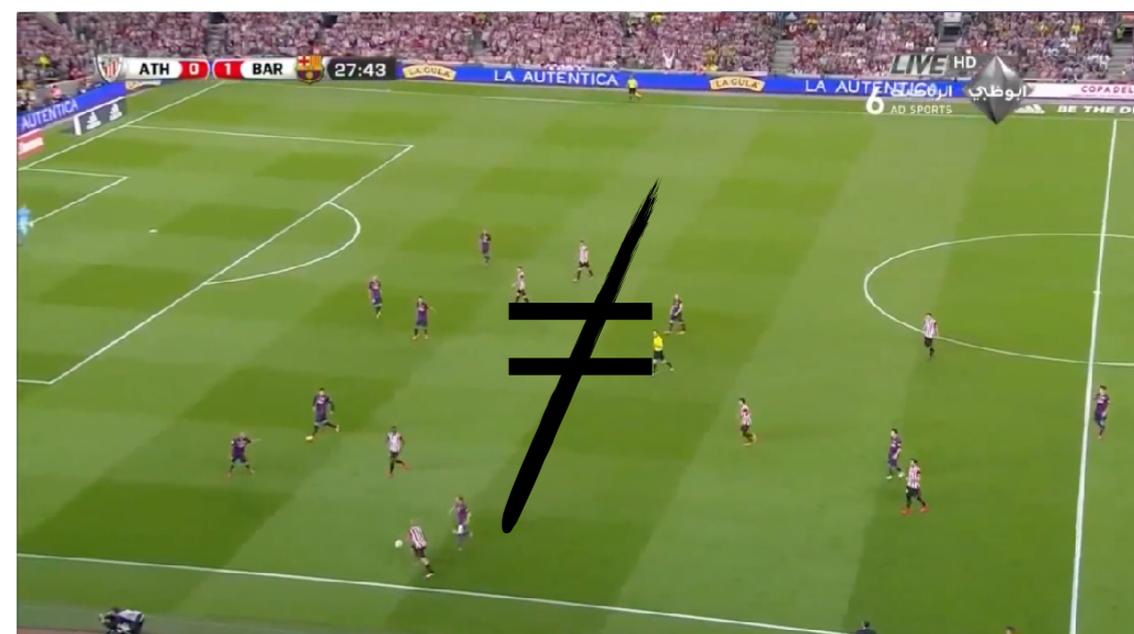
More technical actions executed

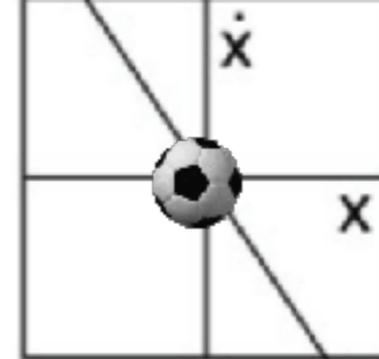
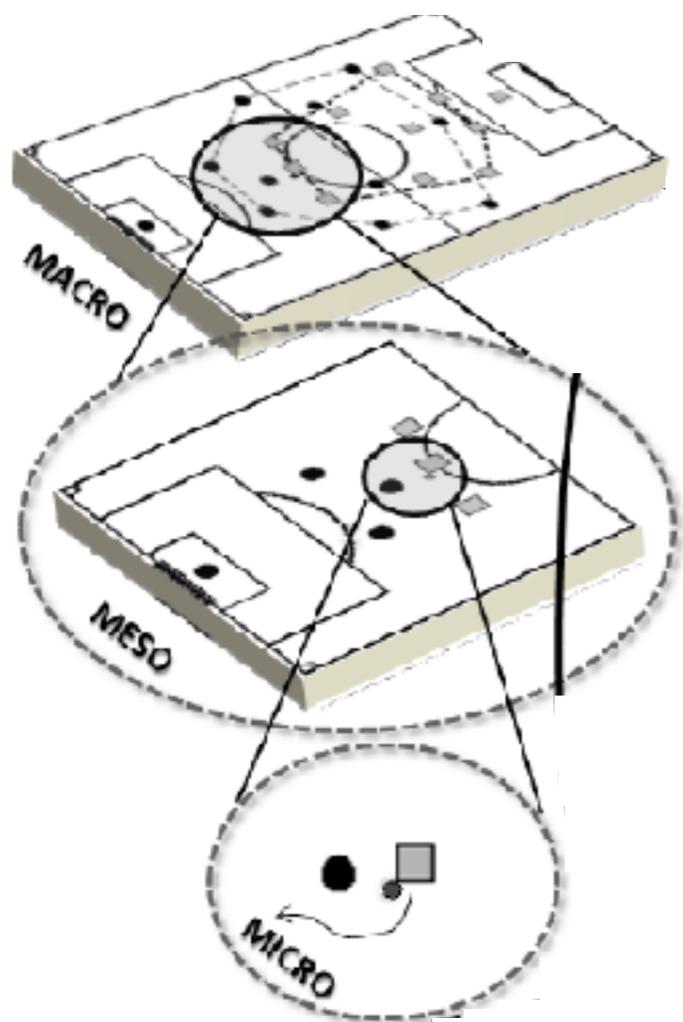
11x11



SSG

Increase the quantity/specificity of environment information





behavioral dynamics

information

$$i = \lambda(e)$$

emerge

capture

Environment

$$\dot{e} = \phi(e, F)$$

Agent

$$\dot{a} = \psi(a, i)$$

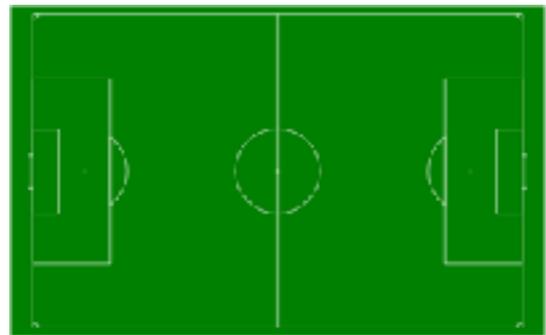
action

$$F = \beta(a)$$





Number
Size
....



Size
Shape
....



Number
Size
Weight
....



Allow
Forbid
....

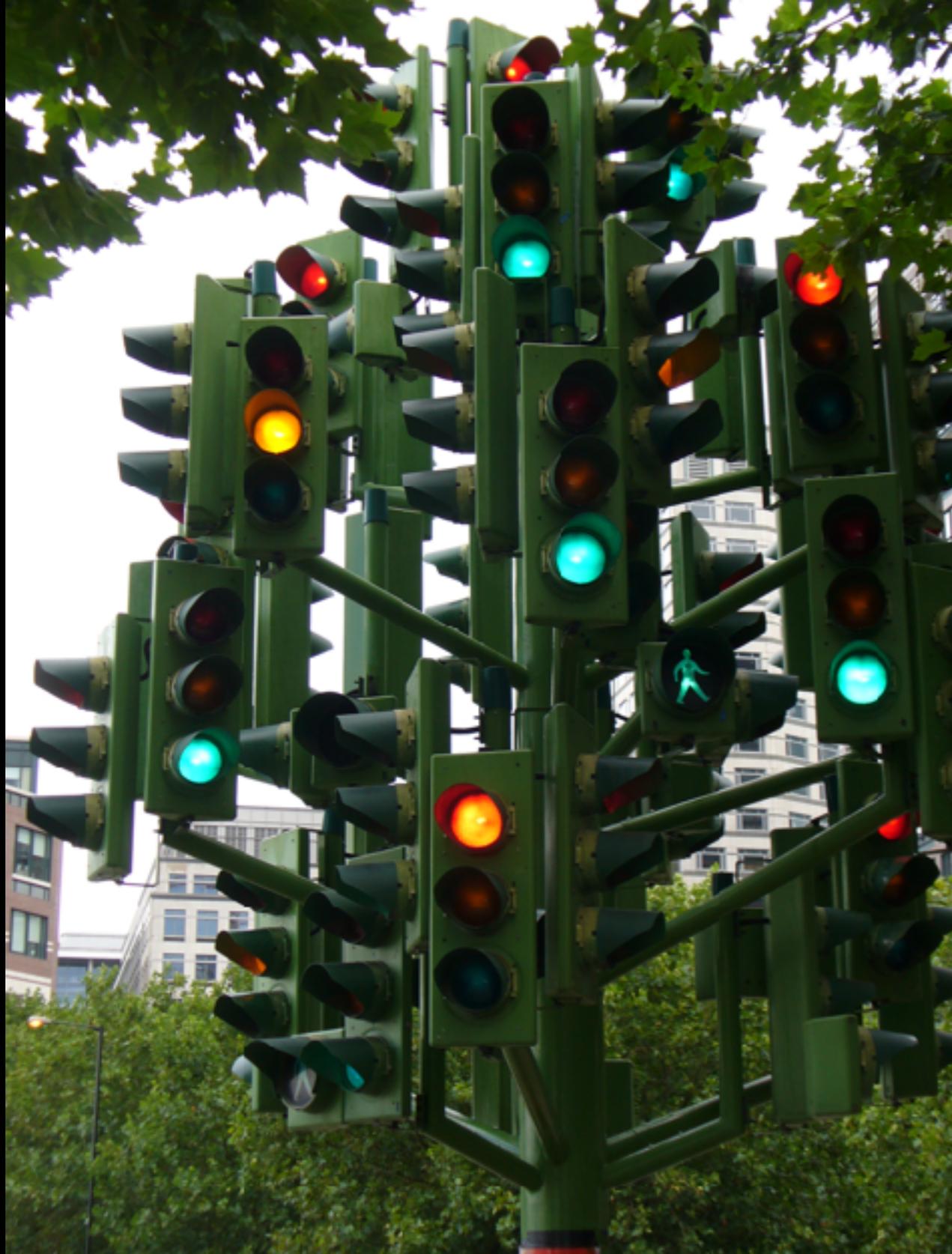
Number
Opposition
....





Predictable meant defeat

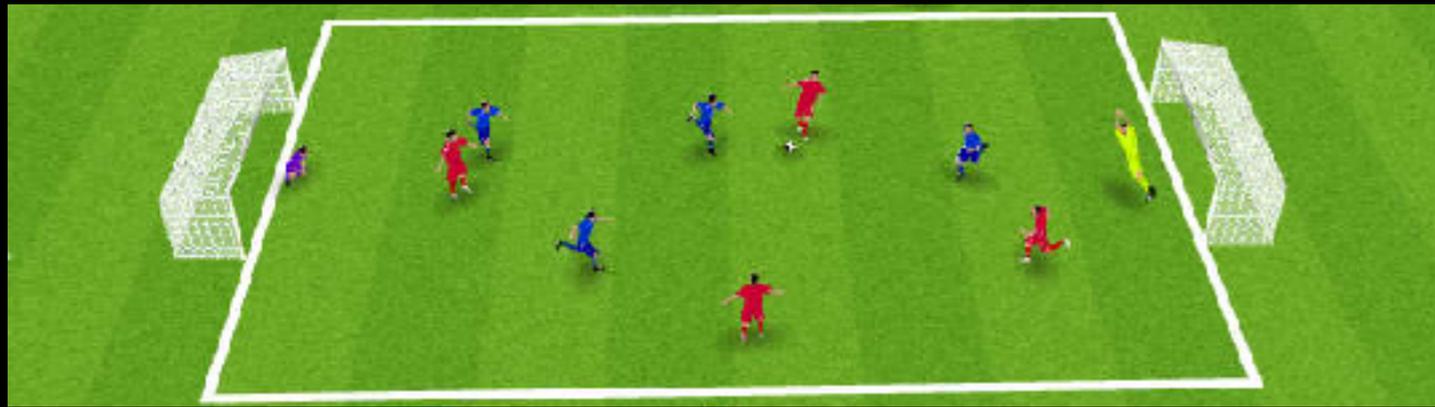
Unpredictable?



improving the adaptation to
...probably not by repeating
learned behaviours



Small-sided games



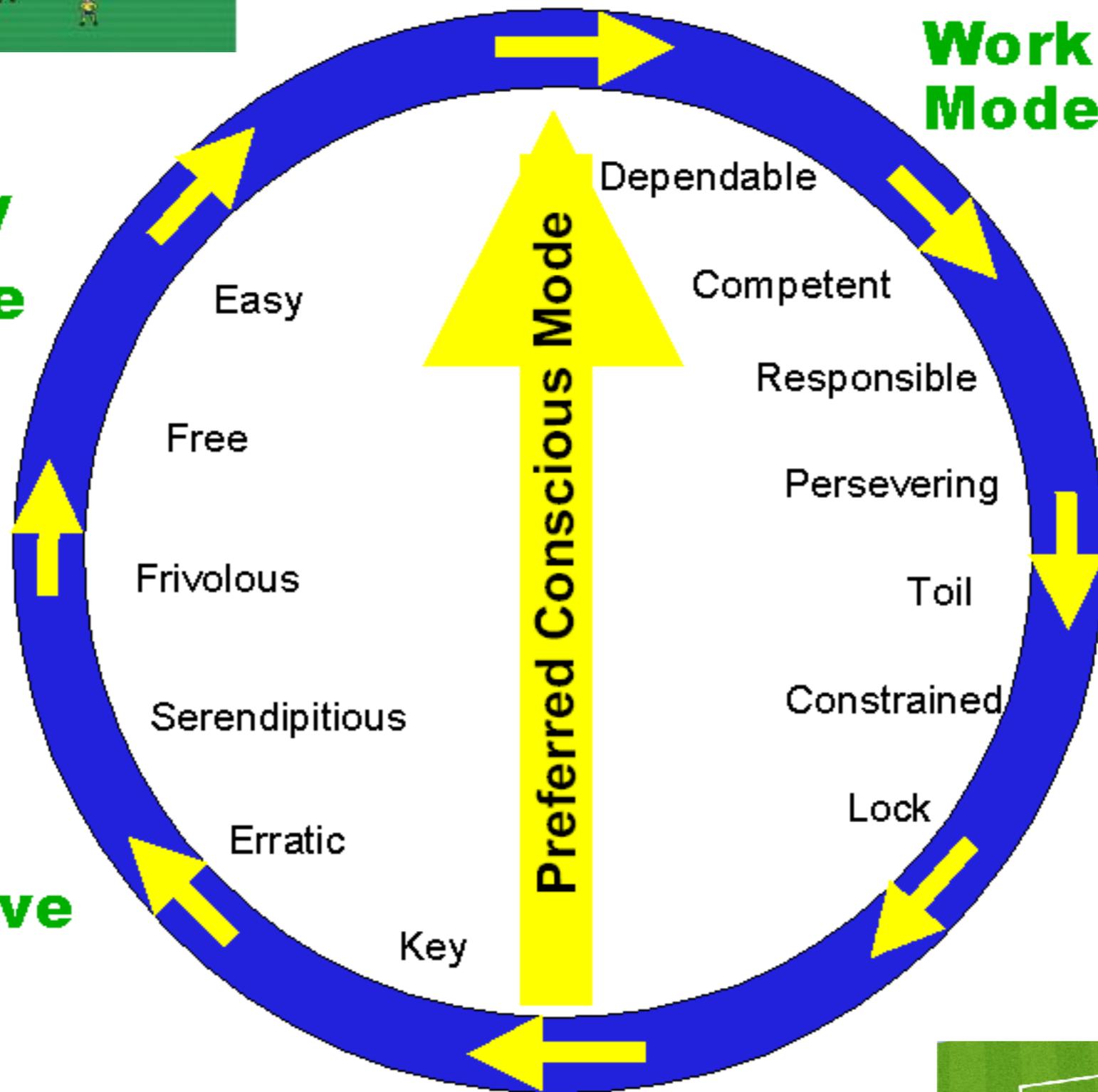
Complex, dynamic, non-linear, non-specific constraints...quite open tasks and possibilities



Order (low entropy)

**Secondary
Work Mode
(Talent)**

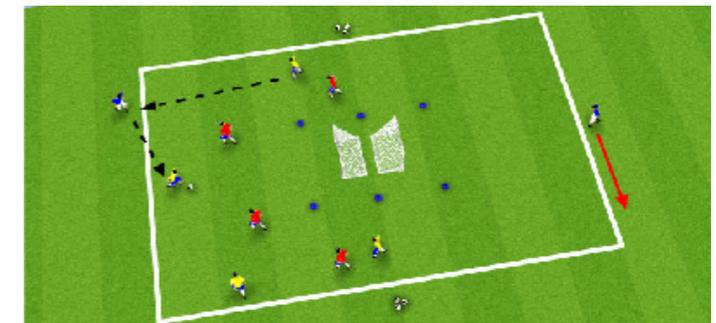
**Work
Mode**

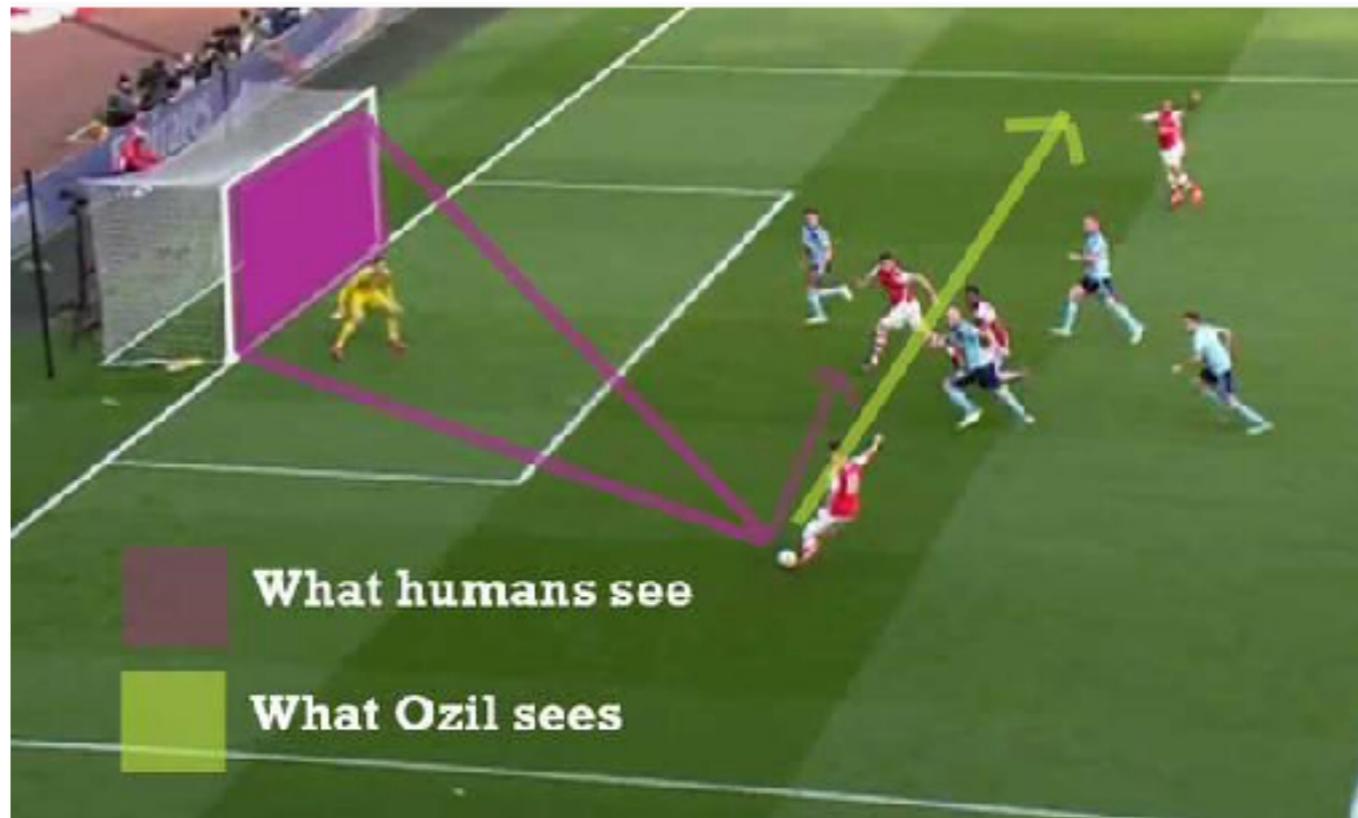
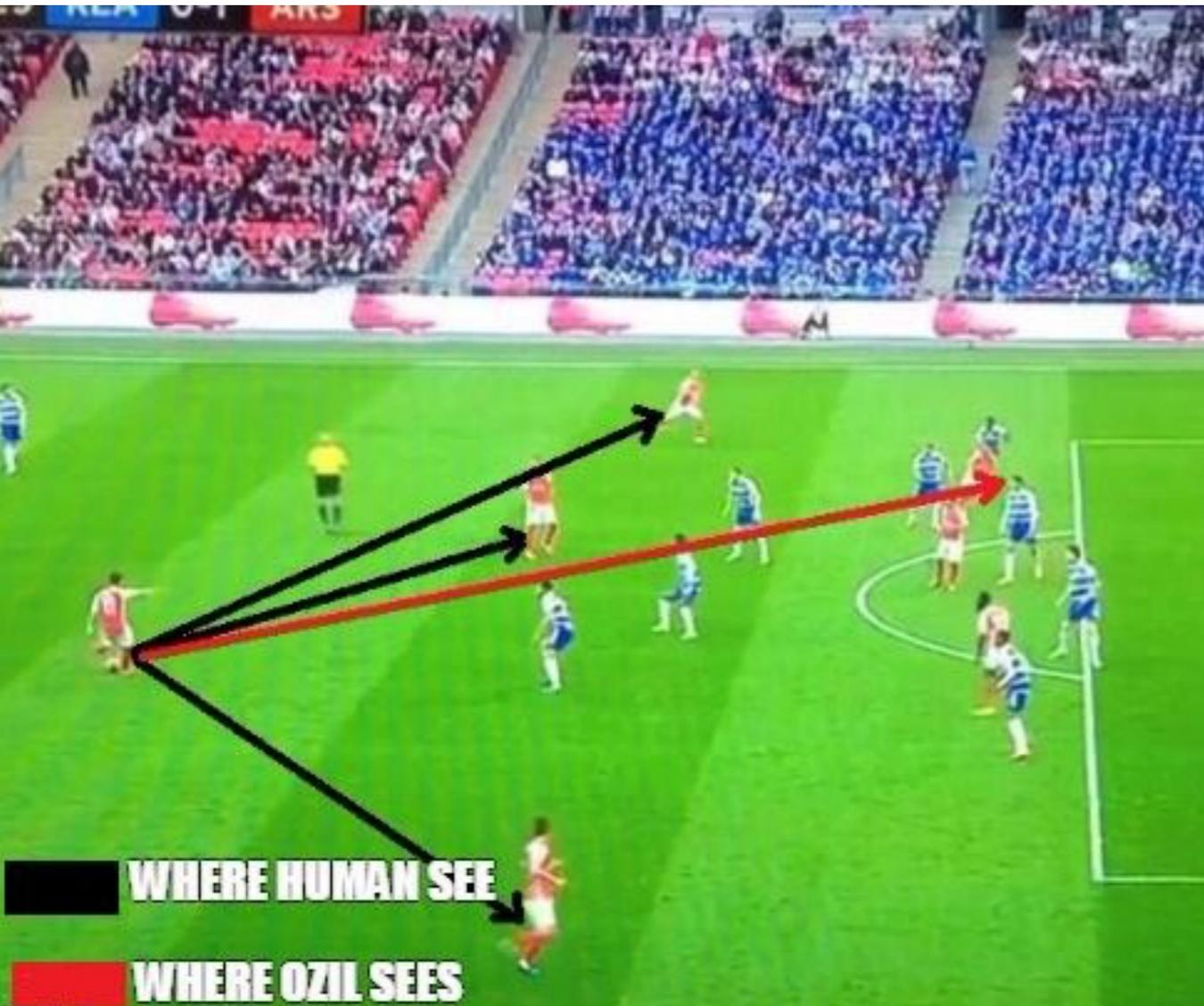


**Challenge
Mode**

**Creative
Mode**

Disorder (high entropy)





Ability to explore, perceive and act with ordered and disordered environments

Creativity

...is not a talent it's a way of operating.

Practice....
Practice....
Practice....
Practice....
Practice....
Practice....
Practice....
Practice....



Step 1: Be Curious



'Curiosity is one of the permanent and certain characteristics of a vigorous intellect.'

Samuel Johnson



be curious:

Play



be curious:

Suspend
Judgement



be curious:



Ask (lots of) Questions

Step 2:

Make

Connections



'Creativity is the power
to connect the seemingly
unconnected.'

William Plomer



make connections:



Talk to
People in
Different
Fields

Try Something
(Anything) New



make connections:

Step Sideways &
See Another Angle



make connections:

Step 3:

Challenge Yourself



challenge yourself:



Take Risks

challenge yourself:



“Freedom is not worth if it does not include the freedom to make mistakes.”
Mahatma Gandhi

Accept Failures

challenge yourself:

Question Assumptions



Step 4: Cultivate
Your Ideas



'Courage does not always roar. Sometimes, it is the quiet voice at the end of the day saying, I will try again tomorrow.' Unknown



cultivate:

Daydream

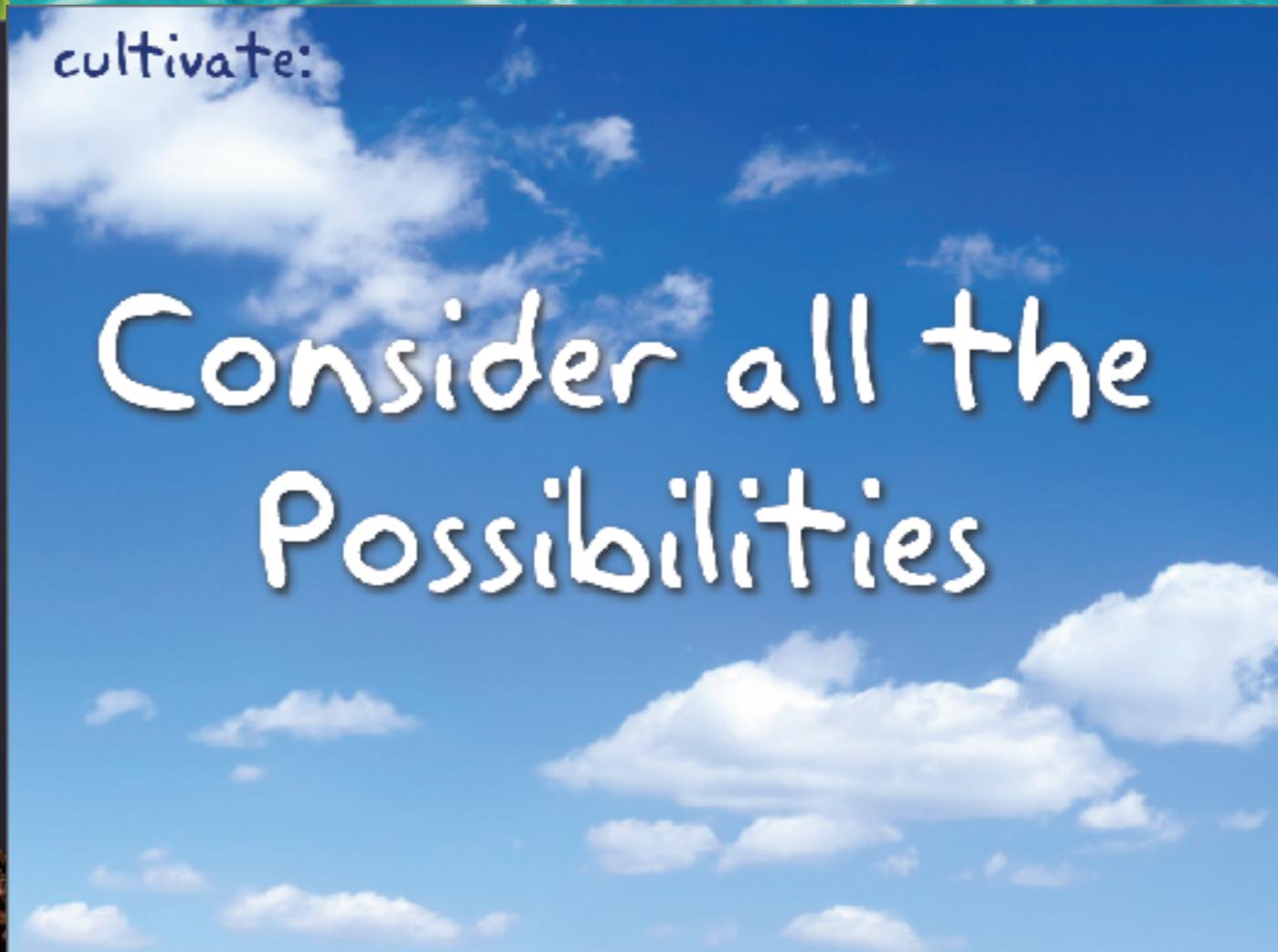
cultivate:

Give Ideas
Time to
Grow



cultivate:

Consider all the
Possibilities



More traditional training approaches also kill
creativity!

Eliminate errors...no risks...

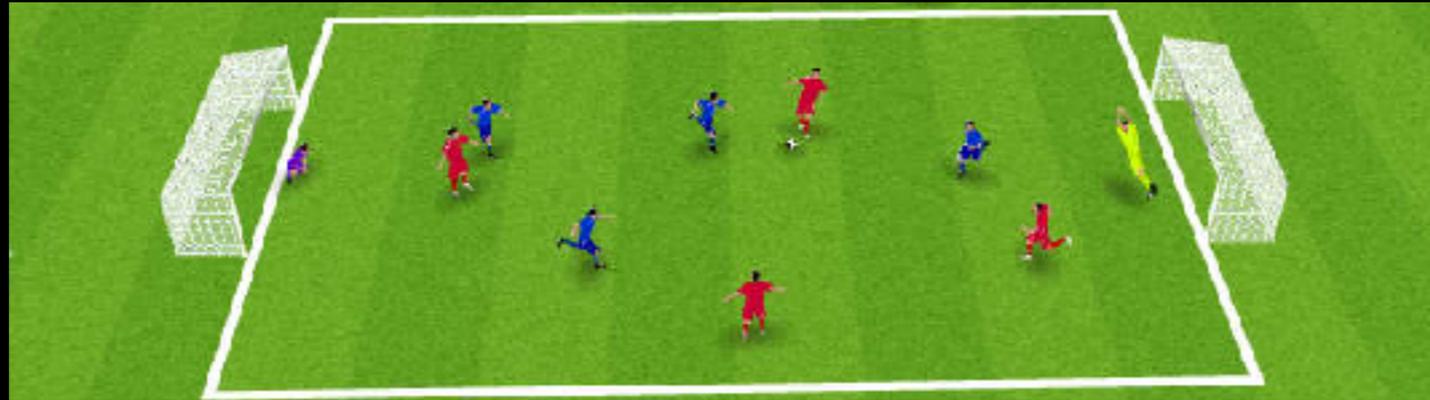
Low variability...low adaptation...

Too much specificity...

Too much predictability...



Small-sided games



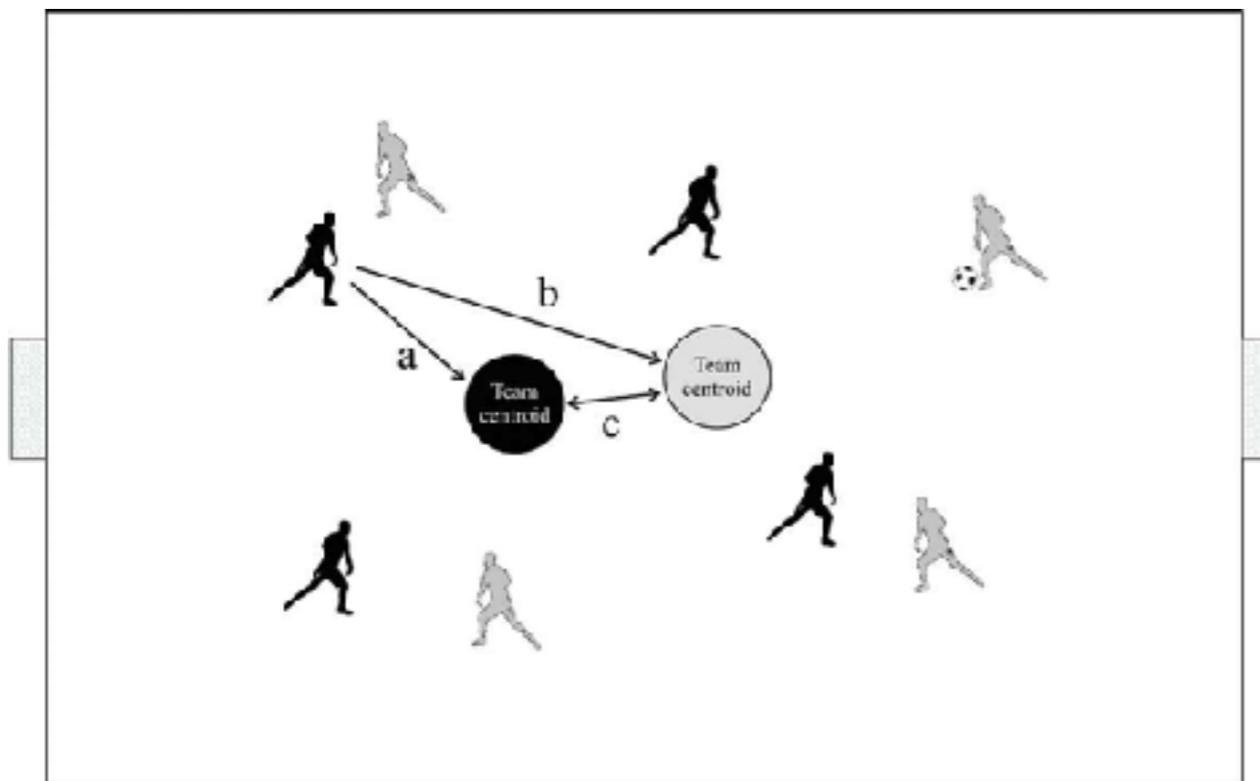
Some research-based considerations...

Footballers' movement behaviour during 2-, 3-, 4- and 5-a-side small-sided games

MARCO AGUIAR¹, BRUNO GONÇALVES¹, GORETI BOTELHO², KOEN LEMMINK³ & JAIME SAMPAIO¹

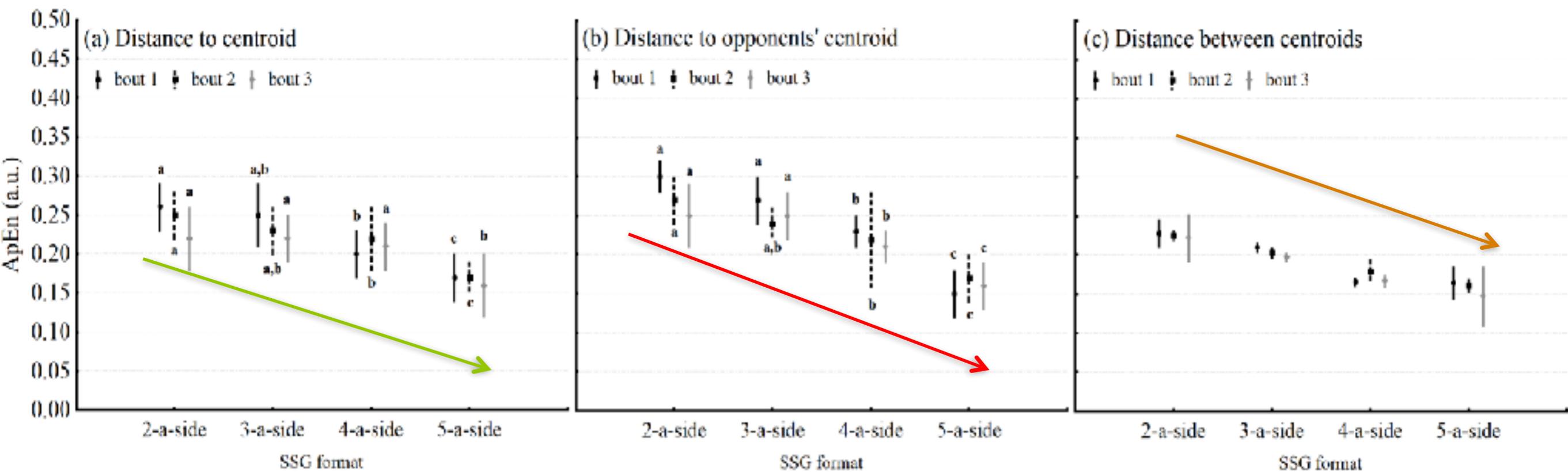
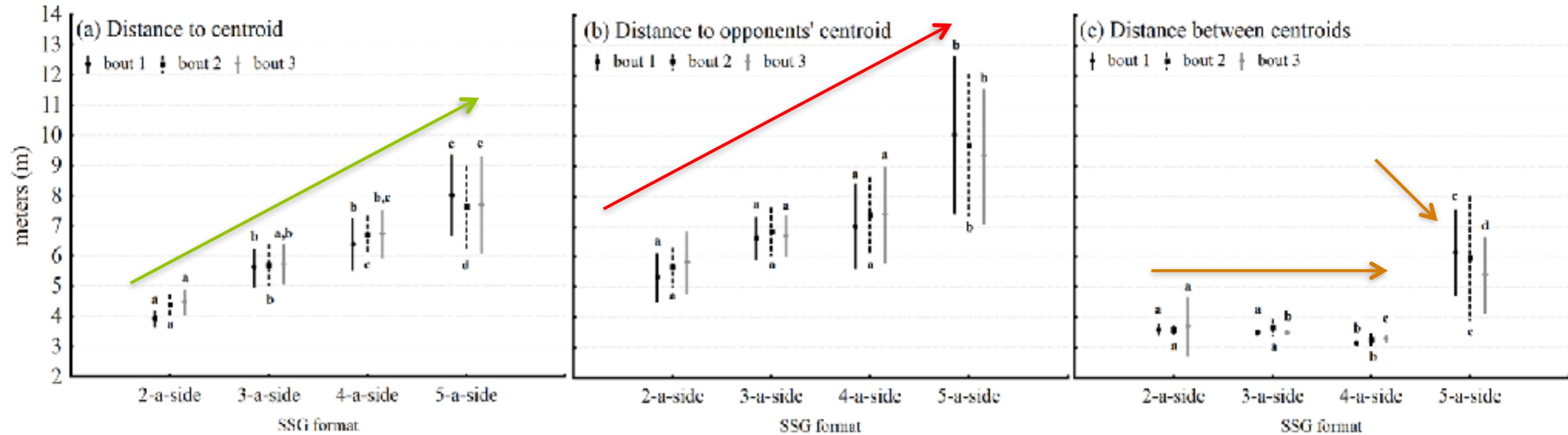
¹CreationLab, Research Center in Sports, Health Sciences and Human Development, University of Trás-os-Montes e Alto Douro, Vila Real, Portugal, ²GERNAS Research Unit, Coimbra College of Agriculture, Polytechnic Institute of Coimbra, Bussacanta, Coimbra, Portugal and ³Center for Human Movement Sciences, University of Groningen, Groningen, Netherlands

area/player = 150 m²



2-a-side, 28 × 21 m
3-a-side, 35 × 26 m
4-a-side, 40 × 30 m
5-a-side, 44 × 34 m

Results



Results

Distance to centroid
4 to 8 meters...

Different perception demands...

Different skill execution...passing
to an open player at 5m or at 8
m...



Distance to opponents' centroid
5 to 10 meters...

Different perception demands...

Anticipating a pass performed at 6
m or at 9 m...

Randomness

More players...decreased
randomness...

Effects of pacing, status and unbalance in time motion variables, heart rate and tactical behaviour when playing 5-a-side football small-sided games



Journal of Science and Medicine in Sport 17 (2014) 228–231

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Journal of Science and Medicine in Sport

journal homepage: www.elsevier.com/locate/jssms

ELSEVIER

Original research

Effects of pacing, status and unbalance in time motion variables, heart rate and tactical behaviour when playing 5-a-side football small-sided games

Jaime E. Sampaio^{a,b,*}, Carlos Lago^c, Bruno Goncalves^{a,b}, Victor M. Maçãs^{a,b}, Nuno Leite^{a,b}

^a Research Centre for Sports Sciences, Health and Human Development, Vila Real, Portugal
^b Department of Sports Sciences, Exercise and Health, University of Trás-os-Montes e Alto Alentejo, Vila Real, Portugal
^c Faculty of Educational Sciences and Sports, University of Vigo, Pontevedra, Spain

CrossMark

Game pace

...compare time-motion variables, heart rate and players' tactical behaviour according to game pace in 5-a-side games.



Slow



Normal



Fast



...to identify the most discriminating variables in classifying performances according to these constraints.



Distance covered at several speeds, total distance covered, time spent in heart rate zones and collective positional variables according to game pace.

Variable	Slow paced	Normal paced	Fast paced	
Distance covered between 0-6.9 Km h ^{-1*}	254.0±36.9	205.2±31.0	201.8±44.0	a,b
Distance covered between 7-9.9 Km h ⁻¹	154.7±44.9	177.4±35.7	146.6±34.8	c
Distance covered between 10-12.9 Km h ^{-1*}	114.5±42.1	172.5±51.0	171.0±36.9	a,b
Distance covered between 13-15.9 Km h ^{-1*}	55.2±27.6	111.3±40.2	136.0±62.9	a,b
Distance covered between 16-17.9 Km h ^{-1*}	14.8±11.3	44.9±23.7	65.4±35.2	a,b,c
Distance covered above 17.9 Km h ^{-1*}	10.2±9.4	59.6±39.0	74.4±58.5	a,b
Total distance covered (m)	604.5±100.2	771.4±124.4	795.3±156.5	a,b
Time spent below 75% HR _{max} (min)	1.9±2.1	1.6±1.5	0.5±0.3	b
Time spent between 75-84.9% HR _{max} (min)	1.8±1.4	2.1±1.4	1.2±1.5	-
Time spent between 85-89.9% HR _{max} (min)	1.1±0.9	1.1±1.2	1.5±1.4	-
Time spent above 90% HR _{max} (min)	0.9±1.5	0.7±1.1	2.3±2.1	b
Randomness in distance to team centroid*	0.99±0.08	1.15±0.06	1.22±0.09	a,b,c
Distance to team centroid (m)	10.6±3.3	10.6±2.9	11.1±2.3	-

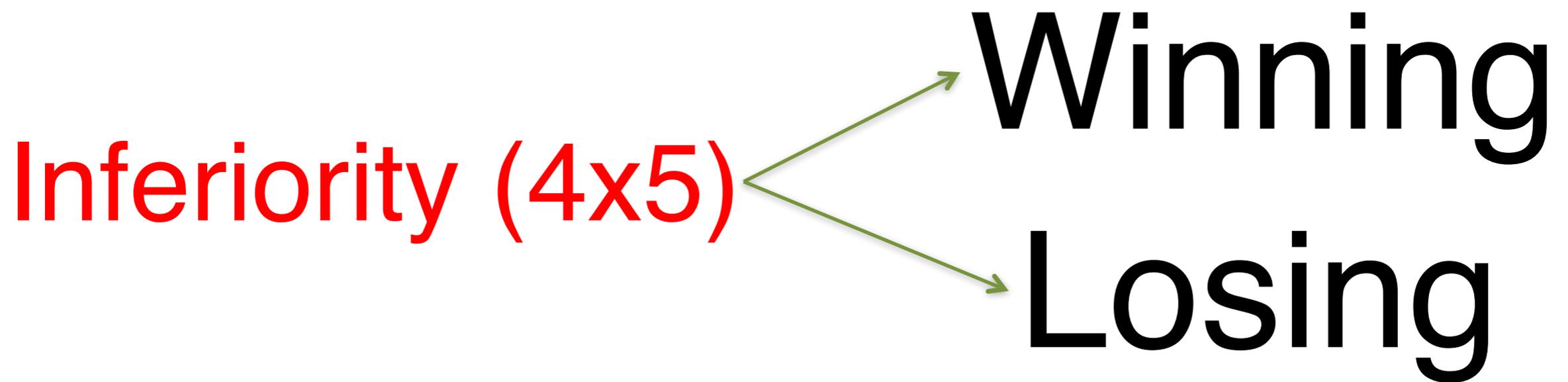
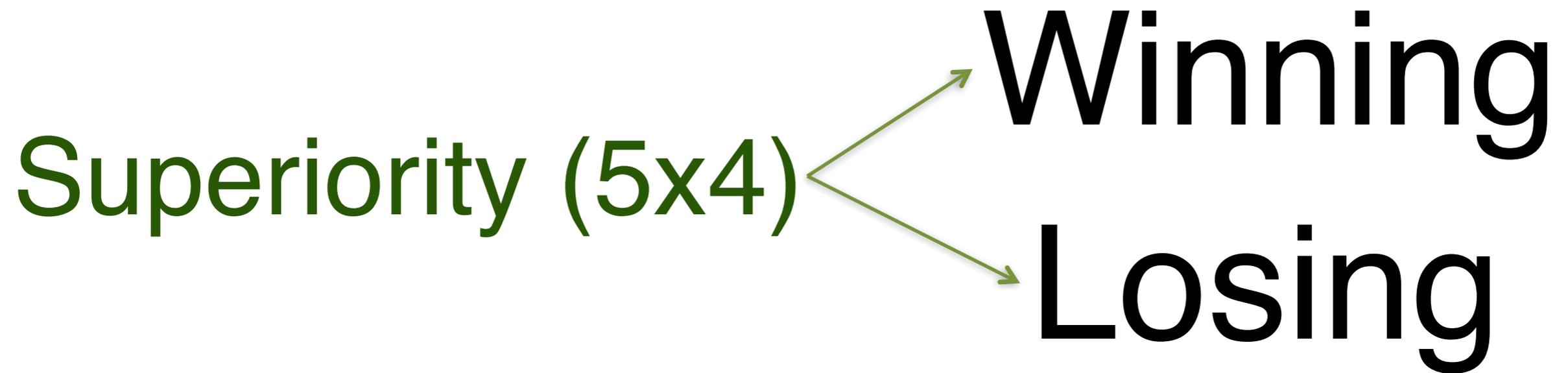
Post-hoc differences are: (a) between slow and normal paced games; (b) between slow and fast paced games and (c) between normal and fast paced games.* Discriminant structure coefficient above |0.30| in function one (85.8 % of the variance).

5-a-side
60 m × 40 m pitch size
5 min duration

In fast pacing...higher randomness for the same distances!



Numerical unbalance and status





Distance covered at several speeds, time spent in heart rate zones, total distance covered and collective positional variables according to game status and team unbalance constraints.

Have to cover more distance to win when in inferiority, but have to cover less distance to win when in superiority!

Variable	Inferiority		Superiority		
	Losing	Wining	Losing	Wining	
Distance covered between 0-6.9 Km h ⁻¹ †	200.5±22.1	250.7±27.7	254.3±16.9	203.5±13.5	c
Distance covered between 7-9.9 Km h ⁻¹	141.5±10.2	176.9±12.8	150.9±38.5	120.7±30.8	b,c
Distance covered between 10-12.9 Km h ⁻¹	143.4±34.0	179.3±42.6	157.4±31.3	125.9±25.1	c
Distance covered between 13-15.9 Km h ⁻¹ †	89.4±37.7	111.8±47.1	104.5±21.4	83.6±17.1	c
Distance covered between 16-17.9 Km h ⁻¹ †	40.0±17.4	50.0±21.8	35.9±15.3	28.7±12.2	b
Distance covered above 17.9 Km h ⁻¹	37.5±28.0	46.8±35.0	64.1±30.5	51.3±24.4	
Total distance covered (m)†	652.3±67.7	815.4±84.6	767.1±87.0	613.7±69.6	c
Time spent below 75% HRmax†	0.5±0.2	0.6±0.2	0.9±0.6	0.7±0.5	b
Time spent between 75-84.9% HRmax†	0.9±0.9	1.2±1.1	2.9±1.3	2.3±1.0	b
Time spent between 85-89.9% HRmax†	1.3±1.0	1.7±1.2	1.7±1.0	1.3±0.8	
Time spent above 90% HRmax†	2.2±1.6	2.8±2.0	0.8±1.1	0.6±0.9	b
Randomness in distance to team centroid*	1.11±0.05	1.13±0.04	1.14±0.03	1.17±0.06	a,b
Distance to team centroid (m)*	9.5±2.6	10.5±2.2	10.7±2.9	11.5±2.4	a,b

Higher randomness when wining and when in superiority!

Higher distance to centroid when wining and when in superiority!

a-significant single effect of match status; b-significant single effect of team inequity; c-significant match status × team inequity interaction; * Discriminant structure coefficient above |0.30| in function one (96.7 % of the variance). † Discriminant structure coefficient above |0.30| in function two (3.3 % of the variance)

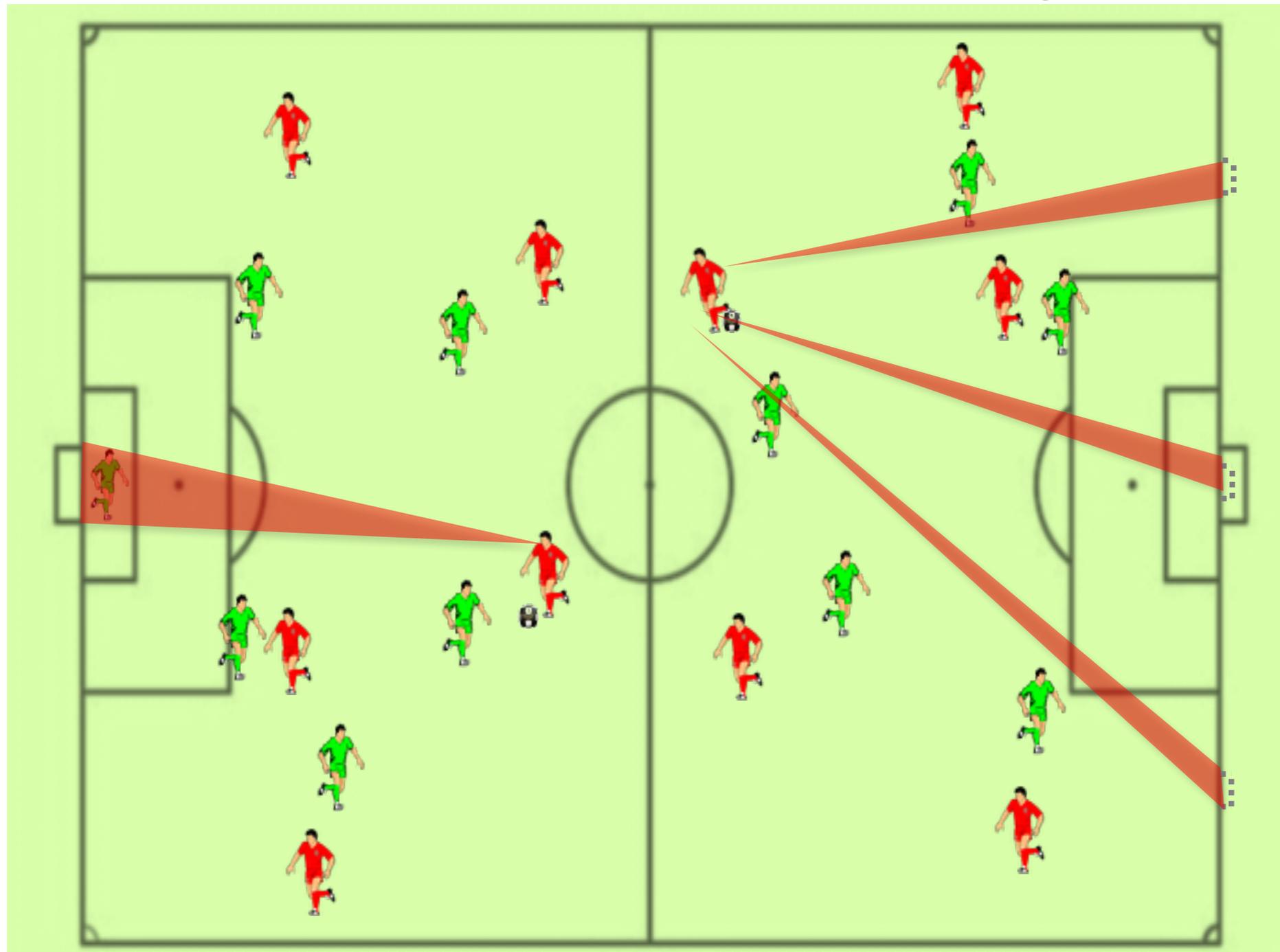
How perceiving additional targets modifies teams' tactical behavior during football small-sided games

Bruno Travassos^{a,b,c}, Bruno Gonçalves^{b,c}, Rui Marcelino^{b,c}, Ricardo Monteiro^a, Jaime Sampaio^{b,c}

^aDepartment of Sport Sciences, University of Beira Interior, Portugal
^bCESED – Research Center in Sports, Health Sciences and Human Development, Portugal
^cDepartment of Sport Sciences, Exercise and Health, University of Trás-os-Montes e Alto Douro, Vila Real, Portugal

SSG with 2 targets and goalkeeper

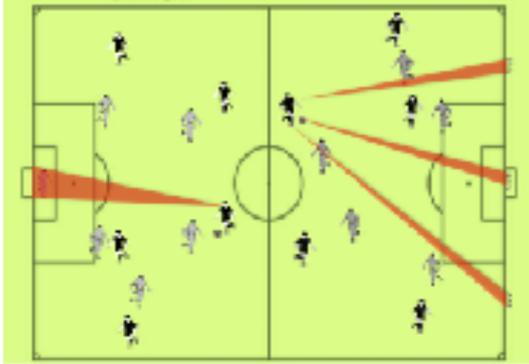
SSG with 6 targets



Distance between the CG of each team (DistCG)

Relative stretch index (RelSTI) (i.e., the difference between the stretch index of each team)

Targets



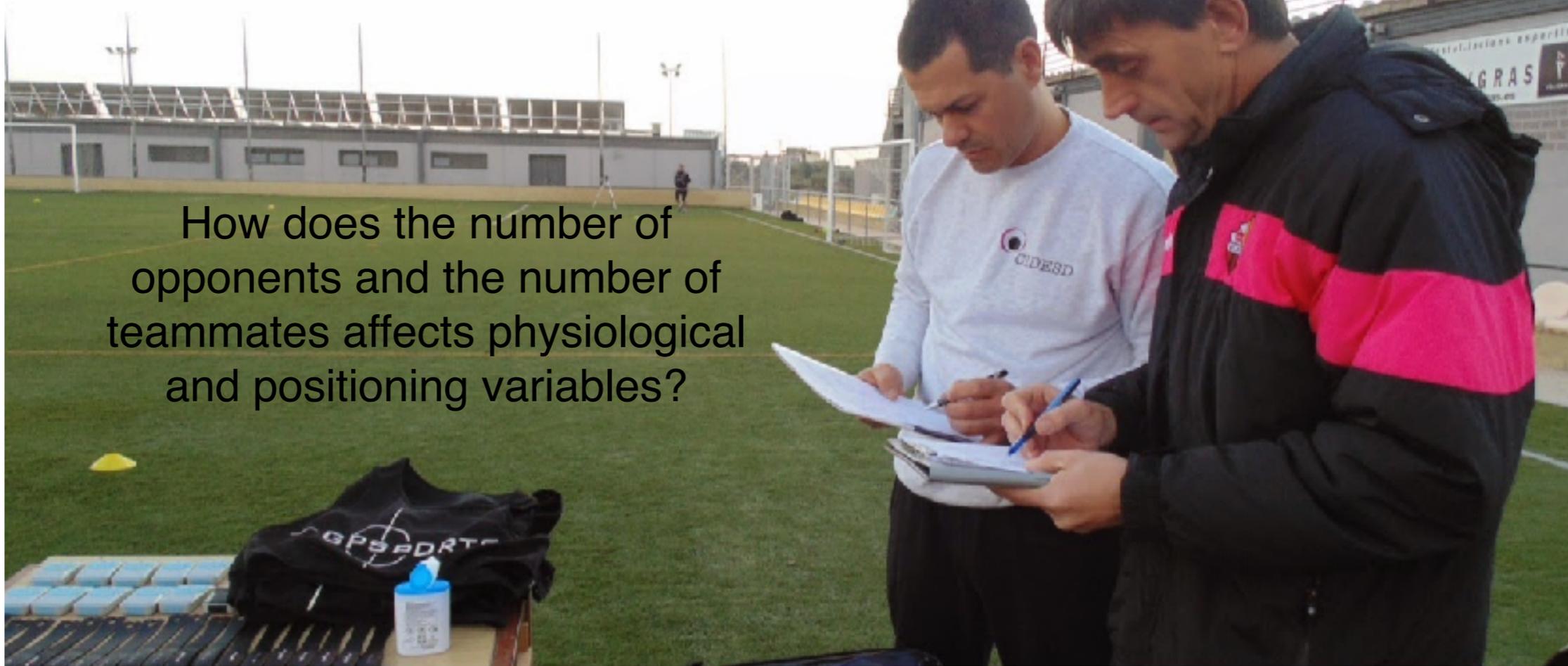
Defensive pressure ... one goal (reducing the number of opportunities for attacking, allow defending team to rise on the field and to play closer to attacking team).

Security ball possession ... six small goals (increasing the number of opportunities for attacking, constraints defending team to retreat on the pitch and to increase the distance between teams).

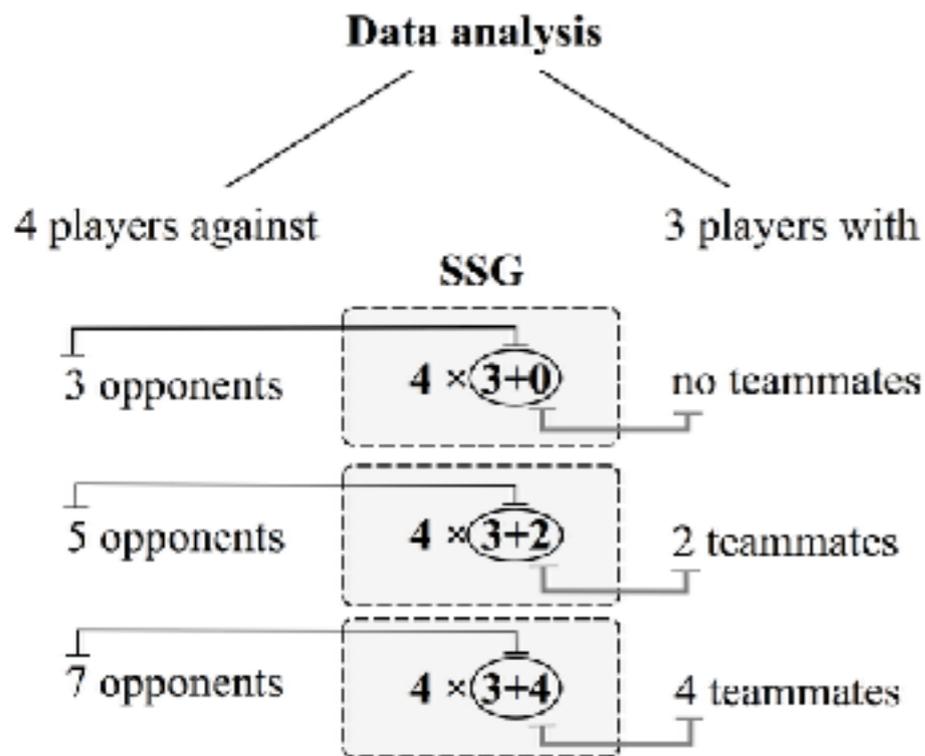


Travassos et al (2014)

Opponents and teammates



How does the number of opponents and the number of teammates affects physiological and positioning variables?



4x3

4x5

4x7

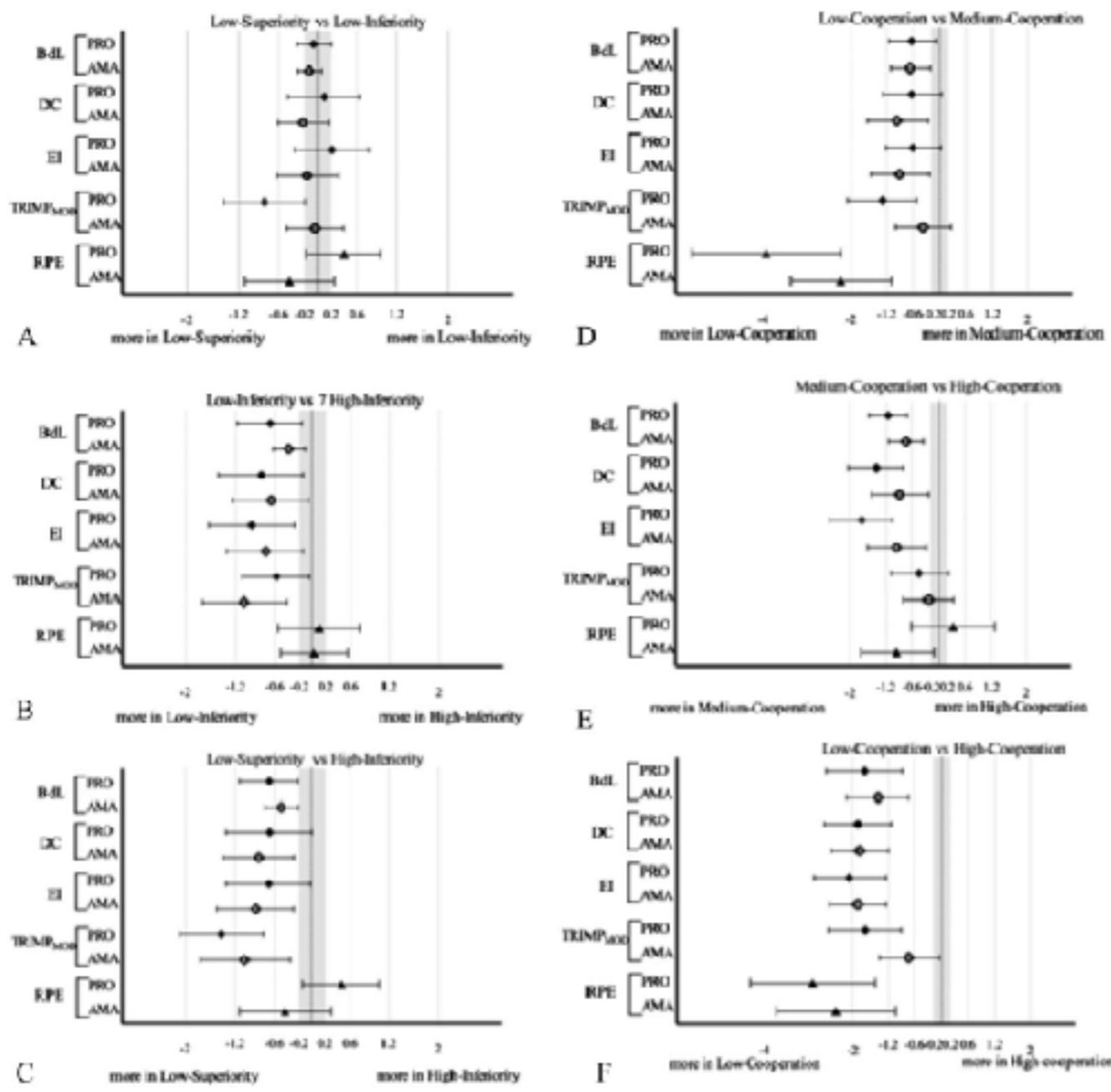
Professionals and Amateurs!

HEART RATE, TIME-MOTION, AND BODY IMPACTS WHEN CHANGING THE NUMBER OF TEAMMATES AND OPPONENTS IN SOCCER SMALL-SIDED GAMES

LORENA TORRES-RONDA,¹ BRUNO GONÇALVES,² RUI MARCELINO,² CARLOTA TORRENTS,¹ EMILI VICENTE,¹ AND JAIME SAMPAIO^{2,3}

¹National Institute of Physical Education of Catalonia (INEFC), University of Lleida, Lleida, Spain; ²Research Center in Sports Sciences, Health Sciences and Human Development (CIDESD), Vila Real, Portugal; and ³CreativeLab Research Community, Trás-Os-Montes e Alto Douro University, Vila Real, Portugal

Biological

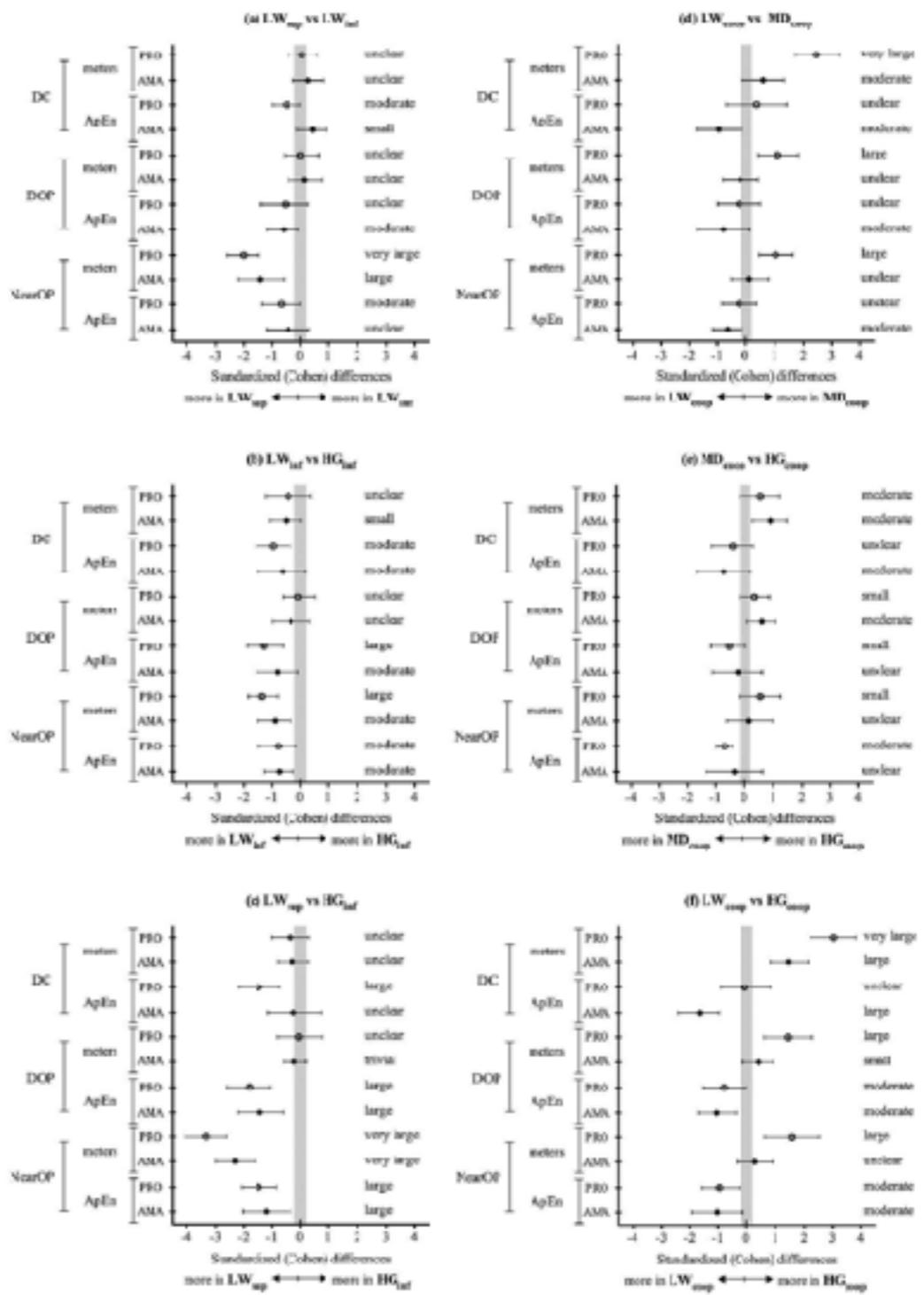


Effects of emphasising opposition and cooperation on collective movement behaviour during football small-sided games

B. Gonçalves^{AB}, R. Marcelino^{AB}, L. Torres-Ronda^{1C}, C. Torrents^{1C} and J. Sampaio^{AB}

¹Research Center in Sports Sciences, Health Sciences and Human Development, CIDESD, CreativeLab Research Community, Vila Real, Portugal; ²Sport Sciences Department, Universidade de Trás-os-Montes e Alto Douro, Vila Real, Portugal; ³National Institute of Physical Education of Catalonia (INEFC), University of Lleida, Lleida, Spain; ⁴Department of Health and Kinesiology, Exercise and Sport Nutrition Lab, Texas A&M University, College Station, TX, USA

Behavioural



Take home message?



1. Organised disorder, just general principles of play. Reach your goals with open tasks
2. Impose variability (adaptation)
3. No error...no learning
4. Limit instruction, be a designer

SSG tactical?

Creativity?

At least 5-a-side?

Unbalance?

Several targets?

Change the teammates?