

# PROPUESTA DE SMALL-SIDED GAMES (SSG) PARA DEPORTES INDOOR: BALONCESTO



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OXFORD  
**BROOKES**  
UNIVERSITY



- Profesora de Ciencias del Deporte e investigadora en fisiología.
- Ex-jugadora de baloncesto a nivel nacional (Francia).
- Entrenadora baloncesto de equipos junior (5-16 años).
- Fisioterapeuta del Deporte

# OBJETIVOS

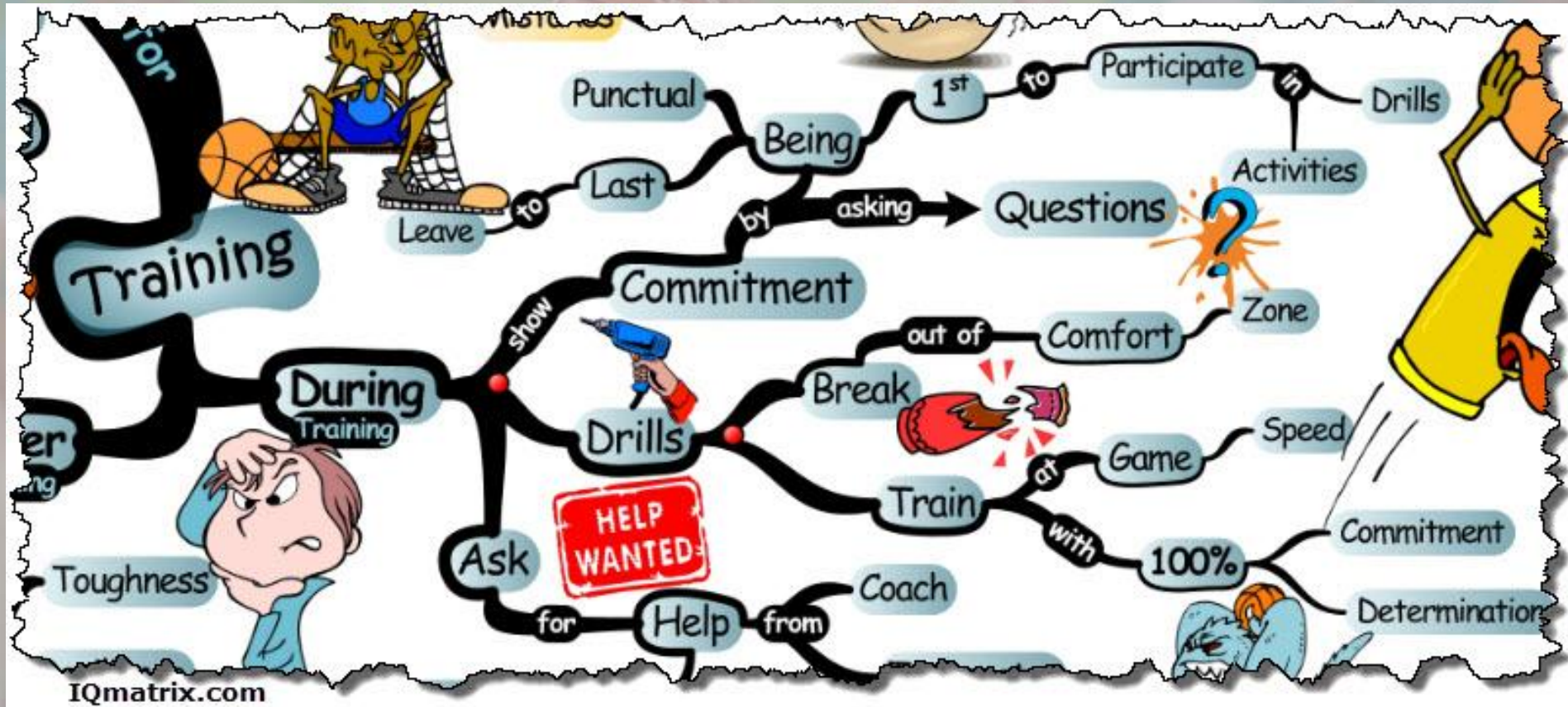
Porque  
necesitamos  
SSG en  
baloncesto?



Efectos  
agudos

Efectos  
crónicos

# 1) PORQUE NECESITAMOS SSG?

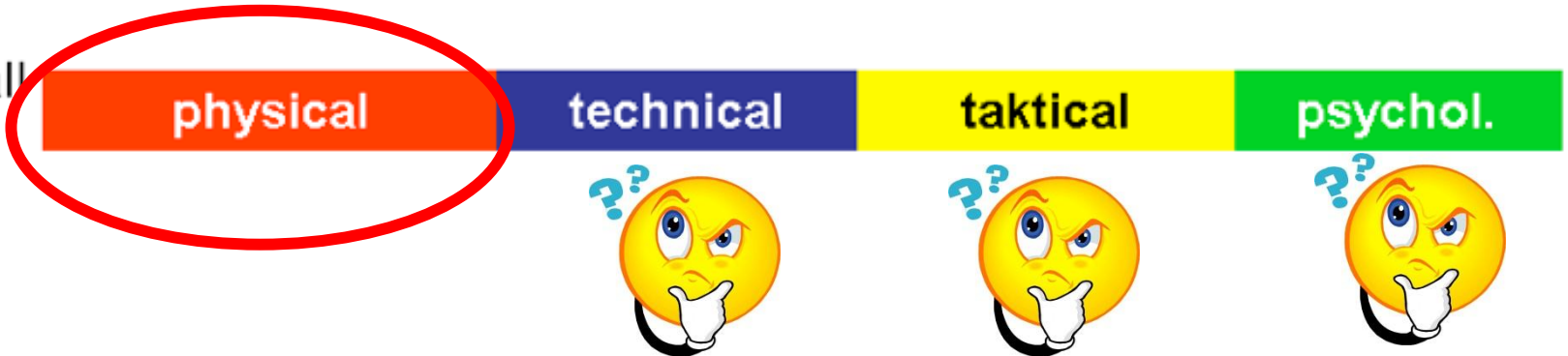


# Factors of sports performance

Marathon runner



Basketball player



Gymnast



100% of sports performance

# Como entrenar las habilidades físicas?



# OBJETIVOS

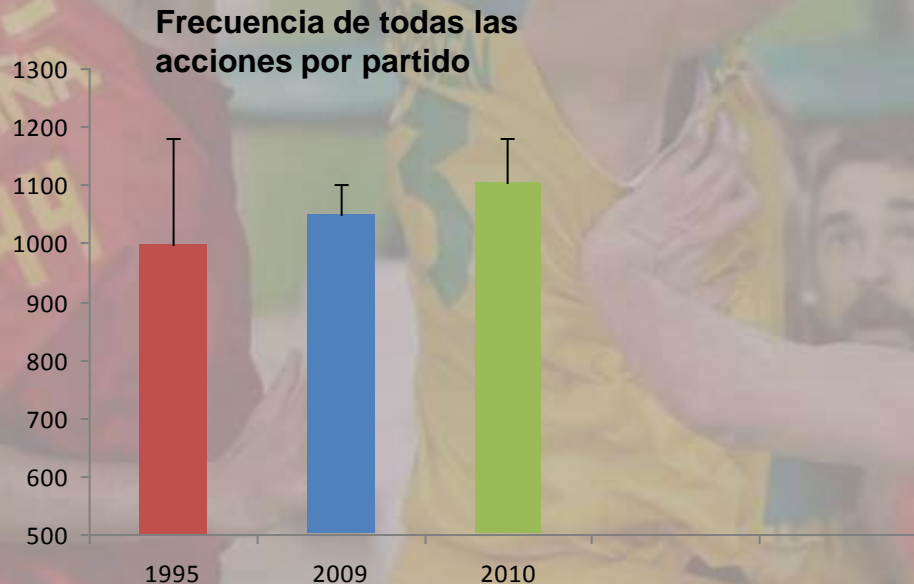
Porque  
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Efectos  
agudos

Efectos  
cronicos

# Características de un partido



**Cambio de acción cada 2-2.8 sg**

(McInnes et al., J Sports Sci 1995; Ben Abdelkrim et al., 2007, 2010).



# Acciones específicas:

44 saltos

55 sprints

97 carreras rápidas

113 carreras moderadas

276 acciones de recuperación

175 desplazamientos laterales (ritmo lento)

197 desplazamientos laterales (ritmo medio)

94 desplazamientos laterales (ritmo rápido)

(McInnes et al., J Sports Sci 1995; Ben Abdelkrim et al., 2007, 2010).

$VO_{2\text{máx}}$ : 50-60 ml.kg<sup>-1</sup>.min<sup>-1</sup>

Concentración de lactato: 4-7 mmol.L<sup>-1</sup>

Matthew and Delestrat, 2009; Montgomery et al., 2010; Ben Abdelkrim et al., 2007, 2010).



# Ratio trabajo : descanso

- Ratio medio: 1: 3.6 (ben Abdelkrim et al., 2010)
- Una acción (1-6 s) a intensidad alta, 22 s descanso o acción a intensidad baja (Hoffman and Maresh, 2000; ben Abdelkrim et al., 2010).

Entrenamiento: Sistema Anaeróbico Aláctico (ATP-PCr)

PERO:

- 19% de las acciones con una densidad de 1:1 (Calleja y Terrados, 2008; ben Abdelkrim et al., 2010)
- No tiempo para rellenar las reservas de PCr, entonces se utiliza el sistema anaeróbico láctico.

Entrenamiento: Sistema Anaeróbico láctico (ATP-PCr) y sistema aeróbico para mejorar la recuperación

## 2) EFECTOS CRONICOS

### Effects of two different short-term training programs on the physical and technical abilities of adolescent basketball players

Gregory C. Bogdanis<sup>b,\*</sup>, Vaghelis Ziagos<sup>a</sup>,  
Michalis Anastasiadis<sup>a</sup>, Maria Maridaki<sup>b</sup>

Journal of Science and Medicine in Sport (2007) 10, 79–88



Table 1 The mean percentage contribution (per week) of the components of each session to the total session duration

	Week 1		Week 2		Week 3		Week 4		Mean	
	SP	MX	SP	MX	SP	MX	SP	MX	SP	MX
Warm-up	18	21.1	18.2	15.4	17.6	16.2	17	17.5	17.7 ± 0.3	17.6 ± 1.3
Fundamentals	70	43.9	37.4	29.4	21.2	15.7	18.1	12.8	36.7 ± 11.9	25.5 ± 7.1
Individual work	0.0	0.0	34	26.4	43.8	32.4	21.3	16.6	24.8 ± 9.5	18.9 ± 7.1
Off.-def. coop.	0.0	0.0	0.0	0.0	0.0	0.0	34.9	26.4	8.7 ± 8.7	6.6 ± 6.6
Team work	6.5	7	5.6	3.3	12.5	10.4	4.6	4.5	7.3 ± 1.8	6.3 ± 1.6
Cool-down	5.5	5.8	4.8	3.6	4.9	4	4.1	3.1	4.8 ± 0.3	4.1 ± 0.6
Circuit training	—	22.2	—	21.9	—	21.3	—	19.1	—	21.1 ± 0.7
Total	100	100	100	100	100	100	100	100	100	100

SP: specialized; MX: mixed training group; Off.-def. coop.: offensive/defensive co-operations between players.

SSG

SSG+  
atletismo

Table 2 Maximal oxygen uptake ( $VO_{2max}$ ), oxygen uptake the first (VT1) and second ventilatory threshold (VT2), maximal heart rate ( $HR_{max}$ ) and heart rate at VT1 ( $HR_{VT1}$ ) and VT2 ( $HR_{VT2}$ ), before (PRE) and after (POST) training

	SP		MX		C	
	PRE	POST	PRE	POST	PRE	POST
$VO_{2max}$ ( $ml\ kg^{-1}\ min^{-1}$ )	52.3 ± 1.4	54.7 ± 0.7*	52.5 ± 1.3	54.9 ± 1.0*	49.8 ± 3.3	49.4 ± 3.4
VT1 ( $ml\ kg^{-1}\ min^{-1}$ )	33.9 ± 1.1	35.0 ± 1.1	37.0 ± 1.7	38.1 ± 1.6	33.1 ± 2.2	33.2 ± 2.8
VT2 ( $ml\ kg^{-1}\ min^{-1}$ )	43.5 ± 1.2	46.3 ± 0.9	45.6 ± 1.1	46.8 ± 0.9	42.4 ± 2.6	42.1 ± 2.9
$HR_{max}$ ( $b\ min^{-1}$ )	201 ± 1	200 ± 1	199 ± 1	200 ± 1	200 ± 2	200 ± 3
$HR_{VT1}$ ( $b\ min^{-1}$ )	163 ± 2	162 ± 2	167 ± 2	166 ± 2	164 ± 3	167 ± 3
$HR_{VT2}$ ( $b\ min^{-1}$ )	184 ± 2	183 ± 2	186 ± 1	185 ± 2	184 ± 3	184 ± 4

Values are mean ± S.E.

\*  $p < 0.05$  from the corresponding pre training value.

Incremento similar en la potencia media y maxima durante el test de Wingate después de SP ( $21 \pm 5\%$ ) and MX ( $15 \pm 6\%$ ).

La resistencia (endurance) de los músculos del tronco se incrementa equitativamente (SP:  $23 \pm 4\%$ , MX:  $25 \pm 5\%$ ).

PERO la resistencia de los brazos se incrementa más en MX ( $50 \pm 11\%$ ) que SP ( $11 \pm 14\%$ ,  $p < 0.05$ ).

- Características técnicas: efectos crónicos

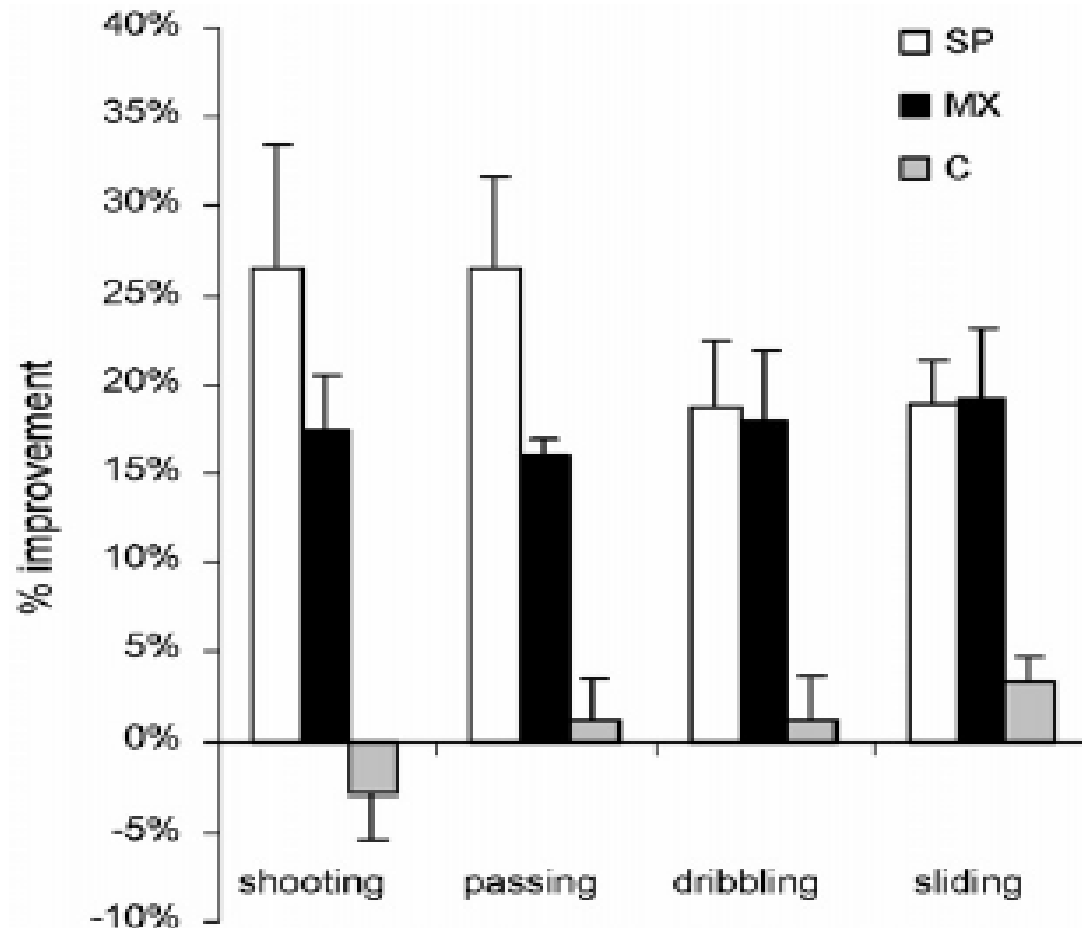


Figure 4 Percent improvement in technical abilities of the control group (C) and the specialized (SP) and mixed training (MX) groups following 4 weeks of training. Values are mean  $\pm$  S.E.

# Small-Sided Game Training Improves Aerobic Capacity and Technical Skills in Basketball Players

Delextrat A, Martinez A. Small-Sided Game Training Improves... Int J Sports Med 2014; 35: 385–391

Authors

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**Table 1** Description of the 6-weeks training programmes for the small-sided game (SSG) group and the high-intensity intermittent running group (HIT).

	HIT	SSG
subjects characteristics	N=9 (4 guards, 3 forwards, 2 centres) Age: 16.0±0.6 years Height: 181±7 cm Body mass: 73.5±6.9 kg Basketball training experience: 6.8±3.1 years	N=9 (4 guards, 3 forwards, 2 centres) Age: 16.3±0.8 years Height: 182±9 cm Body mass: 74.2±6.3 kg Basketball training experience: 7.2±2.9 years
week 1	2×(8 min of 15"-15" at 95% of V <sub>IFT</sub> )	2×(2×3 min45)
week 2	2×(9 min of 15"-15" at 95% of V <sub>IFT</sub> )	2×(2×4 min15)
week 3	2×(10 min of 15"-15" at 95% of V <sub>IFT</sub> )	2×(3×3 min)
week 4	2×(11 min 30s of 15"-15" at 95% of V <sub>IFT</sub> )	2×(3×3 min30)
week 5	2×(13 min of 15"-15" at 95% of V <sub>IFT</sub> )	2×(3×4 min)
week 6	2×(9 min of 15"-15" at 95% of V <sub>IFT</sub> )	2×(2×4 min15)

15"-15": 15s of high-intensity running at a speed corresponding to 95% of the speed attained in the last stage fully completed during the 30–15 intermittent fitness test (V<sub>IFT</sub>)

## Cualidades físicas

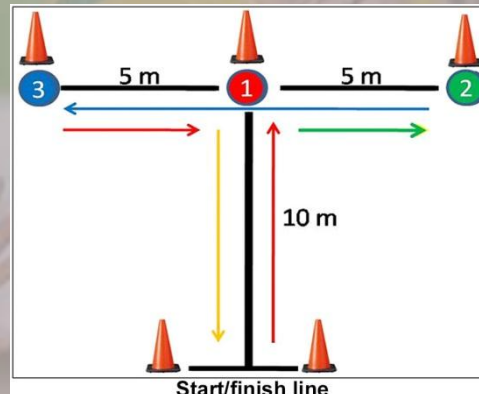
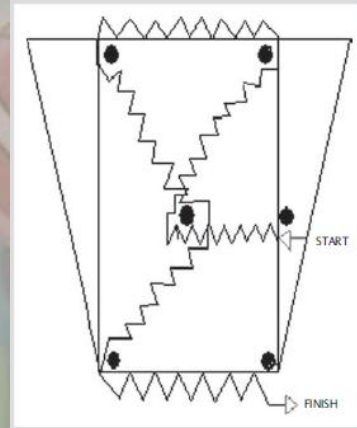
Capacidad aeróbica: 30-15

Capacidad de repetir sprints (RSA):  
6x(10m+10m), salir cada 20 s.

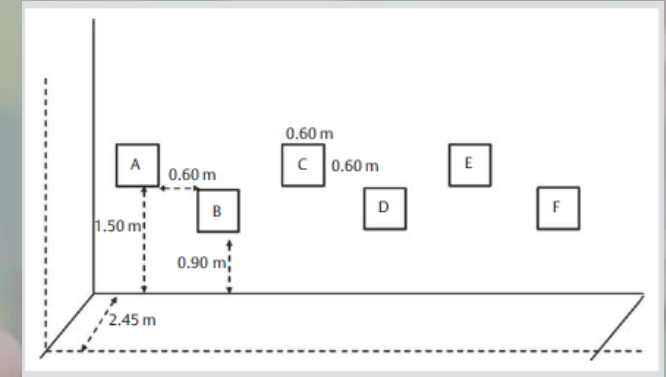
Agilidad ofensiva (slalom dribble) y defensiva (T-test)

Potencia de los brazos (2-handed chest pass)

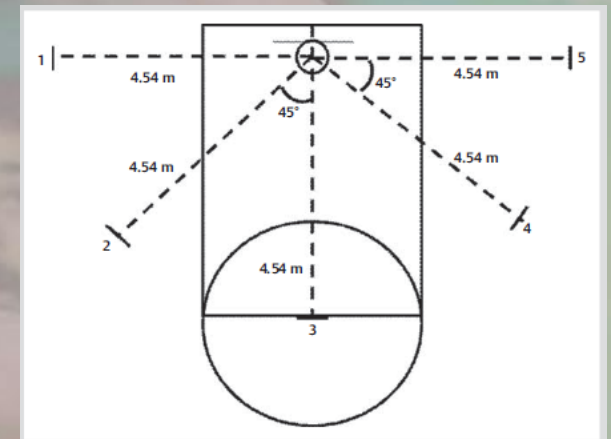
Potencia de las piernas (5JT)



## Cualidades técnicas



Pases (30 s)



Tiros (60 sg)

	Time	HIT	SSG	P values and Effect sizes (eta squared $\eta^2$ )
$V_{IFT}$ ( $\text{km}\cdot\text{h}^{-1}$ )	PRE	17.4±0.7	17.2±1.7	<b>Time: P=0.028, <math>\eta^2=0.395</math></b> Group: P=0.814, $\eta^2=0.006$ Interaction: P=0.765, $\eta^2=0.006$
	POST	18.0±1.0	17.9±1.5	
total time RSA (s)	PRE	27.1±1.9	27.9±2.4	Time: P=0.300, $\eta^2=0.070$ Group: P=0.230, $\eta^2=0.108$ Interaction: P=0.146, $\eta^2=0.144$
	POST	27.0±1.8	28.7±1.9	
ideal time RSA (s)	PRE	26.1±1.8	26.3±1.9	Time: P=0.667, $\eta^2=0.013$ Group: P=0.490, $\eta^2=0.037$ Interaction: P=0.208, $\eta^2=0.117$
	POST	25.8±1.7	26.9±1.9	
performance decrement RSA (%)	PRE	3.75±1.99	5.83±2.53	Time: P=0.399, $\eta^2=0.055$ Group: P=0.162, $\eta^2=0.145$ Interaction: P=0.938, $\eta^2=0.001$
	POST	4.35±2.51	6.33±4.26	
defensive agility (s)	PRE	10.32±1.16	10.36±0.72	Time: P=0.558, $\eta^2=0.018$ Group: P=0.432, $\eta^2=0.045$ <b>Interaction: P=0.037, <math>\eta^2=0.270</math></b>
	POST	10.60±0.97	9.89±0.40	
offensive agility (s)	PRE	8.33±0.34	8.48±0.50	<b>Time: P=0.001, <math>\eta^2=0.700</math></b> Group: P=0.895, $\eta^2=0.001$ Interaction: P=0.131, $\eta^2=0.047$
	POST	7.97±0.42	7.87±0.24	
shooting skills (points)	PRE	29.4±3.4	29.7±3.7	Time: P=0.151, $\eta^2=0.086$ Group: P=0.195, $\eta^2=0.117$ <b>Interaction: P=0.006, <math>\eta^2=0.394</math></b>
	POST	28.7±4.0	31.9±3.6	
passing skills (points)	PRE	97.7±9.0	95.7±4.2	<b>Time: P=0.004, <math>\eta^2=0.452</math></b> Group: P=0.541, $\eta^2=0.027$ Interaction: P=0.504, $\eta^2=0.018$
	POST	107.3±6.9	102.3±5.4	
upper body power (m)	PRE	5.91±1.83	6.10±1.34	Time: P=0.223, $\eta^2=0.080$ Group: P=0.532, $\eta^2=0.029$ <b>Interaction: P=0.048, <math>\eta^2=0.231</math></b>
	POST	5.79±1.49	6.58±1.29	
lower body power (m)	PRE	10.7±1.3	10.7±1.0	Time: P=0.094, $\eta^2=0.179$ Group: P=0.734, $\eta^2=0.009$ Interaction: P=0.401, $\eta^2=0.042$
	POST	10.9±1.0	11.2±0.8	

SSG = HIT

SSG > HIT

SSG = HIT

SSG > HIT

SSG = HIT

SSG > HIT



# OBJETIVOS

Porque  
necesitamos  
SSG en  
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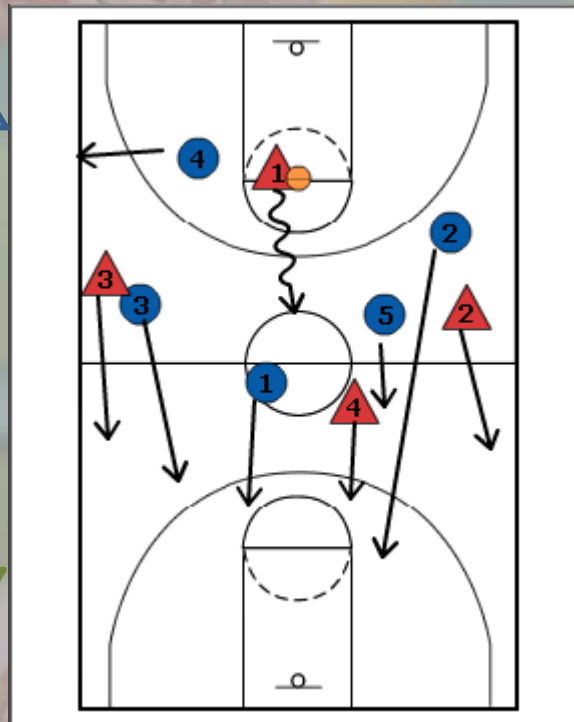


Efectos a  
termino corto

Efectos a  
termino largo

# 3) EFECTOS AGUDOS

Número de jugadores



Espacio de juego

Reglas de juego

Ratio trabajo/  
descanso

# 3-A) Efecto del número de jugadores

## Parámetros Fisiológicos

5 vs 5

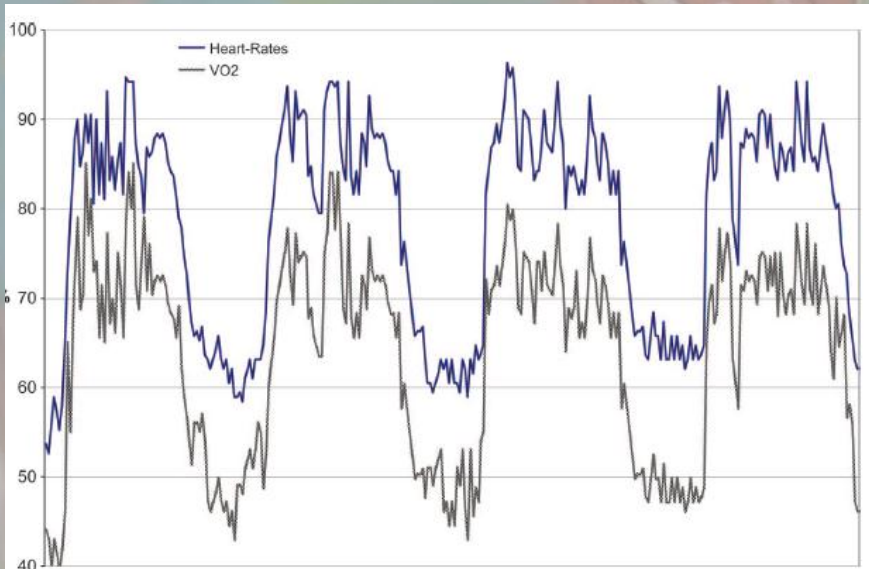


Figure 2. Profile of heart-rates and  $\dot{V}O_2$  of a player (A.L.) performing a 5v5 drill.

2 vs 2

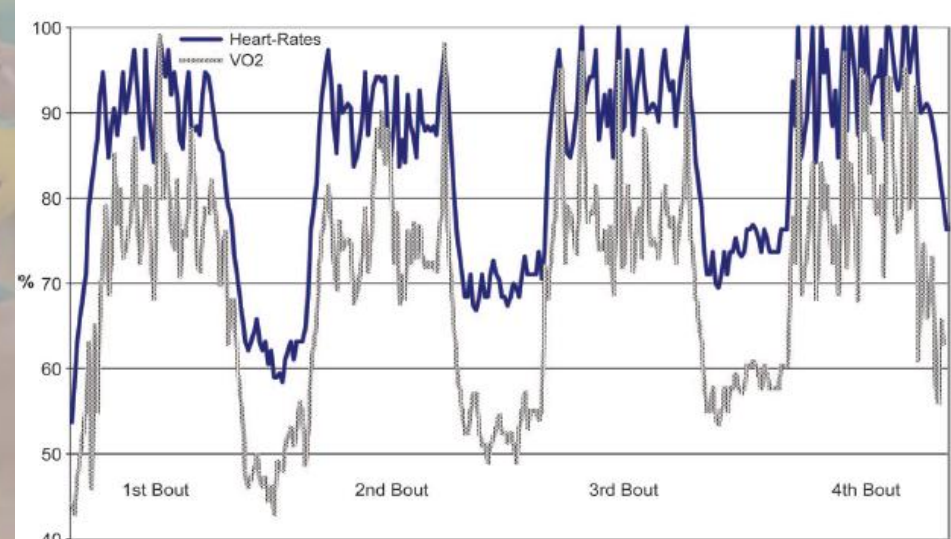


Figure 3. Profile of heart-rates and  $\dot{V}O_2$  of a player (A.L.) performing a 2v2 drill.

Castagna et al, J Sports Sci 2011

# 3-A) Efecto del número de jugadores

## Parámetros Fisiológicos

I	Heart Rate					
	Period	Bout	Active Recovery	% maximum per period	% maximum per bout	% maximum in active recovery
3X3	Effort 1	176,0±6,9		88,4		
	Effort 2	175,9±9,1		88,4		
	Effort 3	170,4±7,7	173,4	152,2	87,1	76,5
	Effort 4	171,1±9,6			86,0	
4X4	Effort 1	165,9±17,7		83,3		
	Effort 2	167,1±17,6		83,9		
	Effort 3	165,9±15,1	164,7	144,7	82,7	72,7
	Effort 4	160,1±14,2			80,4	

Sampaio et al, Revista de Psicología del Deporte, 2009.

# 3-A) Efecto del numero de jugadores

## Parámetros Fisiológicos

	2vs2	4vs4	P-value
%HRmax (total drill duration)	87.1 ± 2.9	84.5 ± 4.0	<i>P</i> < 0.001
%HRmax (actual drill duration)	89.9 ± 3.1	87.3 ± 4.2	<i>P</i> < 0.001
Edwards' TL	54.1 ± 3.5	51.0 ± 5.1	<i>P</i> < 0.001
RPE	8.8 ± 0.9	7.7 ± 1.1	<i>P</i> < 0.001

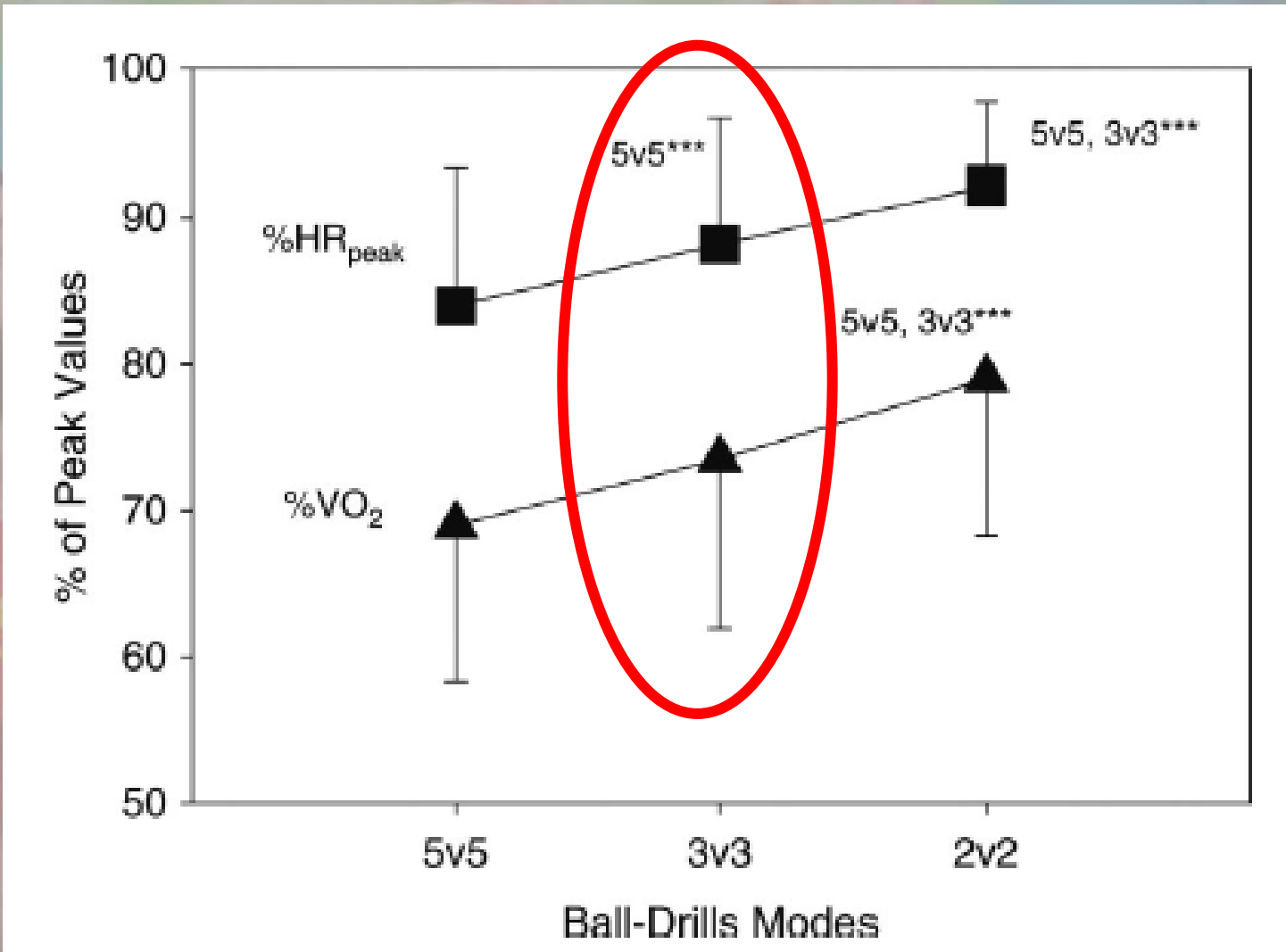
Conte et al, J Sports Sci 2016

Physiological demand	Player number (4v4; 2v2)	
	Mean ±SD	Effect size ±CL
RPE	6 ± 2; 8 ± 2	0.95 ±0.26* moderate
Peak heart rate as % of max heart rate	92 ± 3; 92 ± 3	0.28 ±0.29* small
Mean heart rate as % of max heart rate	83 ± 5; 86 ± 4	0.53 ±0.26* moderate

Klusemann et al, J Sports Sci 2012

# 3-A) Efecto del número de jugadores

Consumo de Oxígeno ( $VO_2$ )



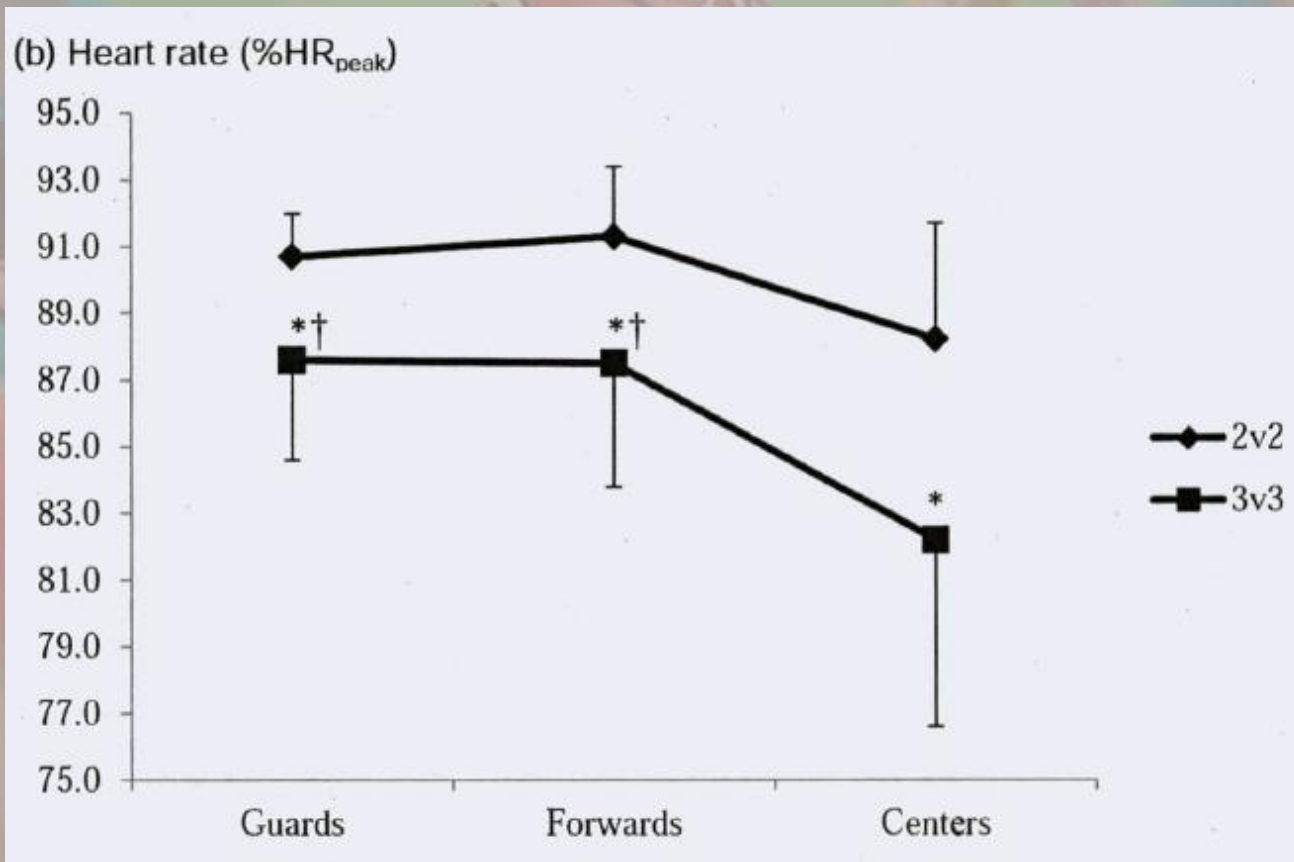
# 3-A) Efecto del número de jugadores

## Acciones Específicas

Physical demand (count)	Player number (4v4; 2v2)	
	mean $\pm$ SD	Effect size $\pm$ CL
Total Movements	378 $\pm$ 51; 382 $\pm$ 52	0.07 $\pm$ 0.18 trivial
Stand/Walk	125 $\pm$ 23; 120 $\pm$ 18	-0.20 $\pm$ 0.17* small
Jog	66 $\pm$ 12; 63 $\pm$ 11	-0.28 $\pm$ 0.25* small
Run	35 $\pm$ 10; 35 $\pm$ 10	0.06 $\pm$ 0.33 unclear
Sprint	11 $\pm$ 5; 15 $\pm$ 5	0.73 $\pm$ 0.26* moderate
Low shuffle	42 $\pm$ 10; 39 $\pm$ 12	-0.39 $\pm$ 0.28* small
Med shuffle	75 $\pm$ 17; 72 $\pm$ 19	-0.19 $\pm$ 0.24 trivial
High shuffle	8 $\pm$ 4; 13 $\pm$ 6	0.97 $\pm$ 0.28* moderate
Jump	16 $\pm$ 6; 26 $\pm$ 5	1.75 $\pm$ 0.29* large

# 3-A) Efecto del número de jugadores

## Posición de Juego



2v2 > 3v3 por cada posición de juego

Pivots < bases y aleros en el 3vs3, pero pivots = bases en el 2v2



# 3-A) Efecto del número de jugadores

## Acciones técnicas

2 c 2

4 c 4

Dribble	23.7 ± 6.1	14.4 ± 7.2	<i>P</i> < 0.001
Steal	2.5 ± 1.9	2.1 ± 1.6	<i>P</i> = 0.354
Rebound	7.0 ± 3.3	3.3 ± 2.1	<i>P</i> < 0.001
Turnover	2.9 ± 2.0	2.5 ± 1.9	<i>P</i> = 0.282
Total Pass	21.9 ± 5.4	17.7 ± 6.7	<i>P</i> = 0.005
Correct pass	19.8 ± 5.3	15.9 ± 6.2	<i>P</i> = 0.005
Wrong pass	2.1 ± 1.7	1.9 ± 1.4	<i>P</i> = 0.381
% Correct pass	90.1 ± 8.1	89.2 ± 6.8	<i>P</i> = 0.523
Total Shot	16.0 ± 5.3	6.8 ± 3.0	<i>P</i> < 0.001
Scored shot	6.8 ± 3.7	2.8 ± 2.1	<i>P</i> < 0.001
Missed shot	9.1 ± 3.3	4.0 ± 1.9	<i>P</i> < 0.001
% Made shot	40.8 ± 15.8	37.4 ± 23.1	<i>P</i> = 0.273

# A-Efecto del número de jugadores

## Acciones técnicas

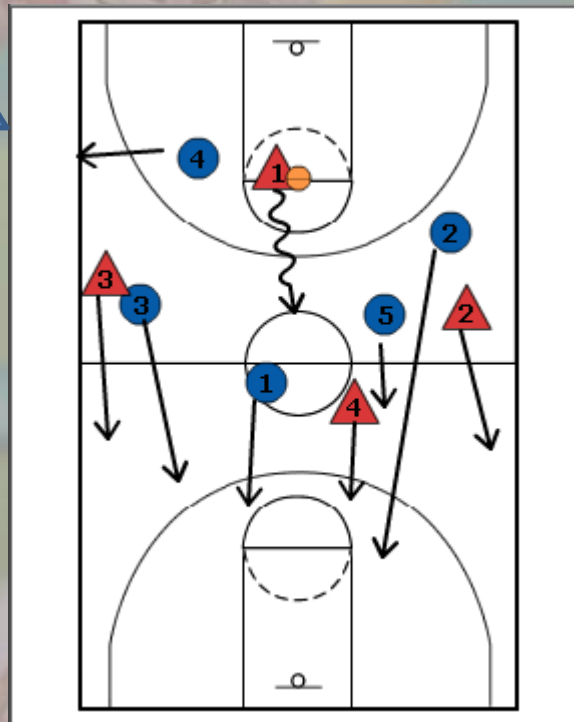
Technical Element (per player per game)	Player number (4v4; 2v2)	
	mean $\pm$ SD	Effect size $\pm$ CL
Total Elements	43 $\pm$ 10; 68 $\pm$ 12	2.28 $\pm$ 0.30* very large
Dribble	12 $\pm$ 5; 20 $\pm$ 6	1.18 $\pm$ 0.27* moderate
Pass	15 $\pm$ 5; 19 $\pm$ 5	0.94 $\pm$ 0.31* moderate
Close range shot	3 $\pm$ 2; 8 $\pm$ 3	1.71 $\pm$ 0.37* large
Mid-range jump shot	2 $\pm$ 2; 4 $\pm$ 3	0.44 $\pm$ 0.33* small
3-point shot	2 $\pm$ 2; 3 $\pm$ 3	0.37 $\pm$ 0.36* small
Rebound	5 $\pm$ 3; 8 $\pm$ 3	1.18 $\pm$ 0.38* moderate
Ball Screen	3 $\pm$ 3; 5 $\pm$ 4	1.17 $\pm$ 0.44* moderate

Klusemann et al, J Sports Sci 2012

# 3) Efectos agudos

Número de jugadores

Espacio de juego



# 3-B-Efecto del espacio de juego

## Parámetros Fisiológicos

Physiological demand	Court size (Half; Full)	
	Mean $\pm$ SD	Effect size $\pm$ CL
RPE	6 $\pm$ 2; 7 $\pm$ 2	0.62 $\pm$ 0.22* moderate
Peak heart rate as % of max heart rate	92 $\pm$ 3; 92 $\pm$ 3	0.06 $\pm$ 0.26 trivial
Mean heart rate as % of max heart rate	84 $\pm$ 5; 85 $\pm$ 4	0.18 $\pm$ 0.21 trivial
Mean % time spent in Zone 4 (80–89% HR max)	46 $\pm$ 27; 56 $\pm$ 19	0.18 $\pm$ 0.33 unclear
Mean % time spent in Zone 5 (90–100% HR max)	20 $\pm$ 27; 25 $\pm$ 27	0.18 $\pm$ 0.40 unclear

# 3-B) Efecto del espacio de juego

## Parámetros Fisiológicos

**TABLE 1.** Heart rate and %HRmax responses of female high school basketball players for half-court and full-court 3-a-side games, respectively.\*†

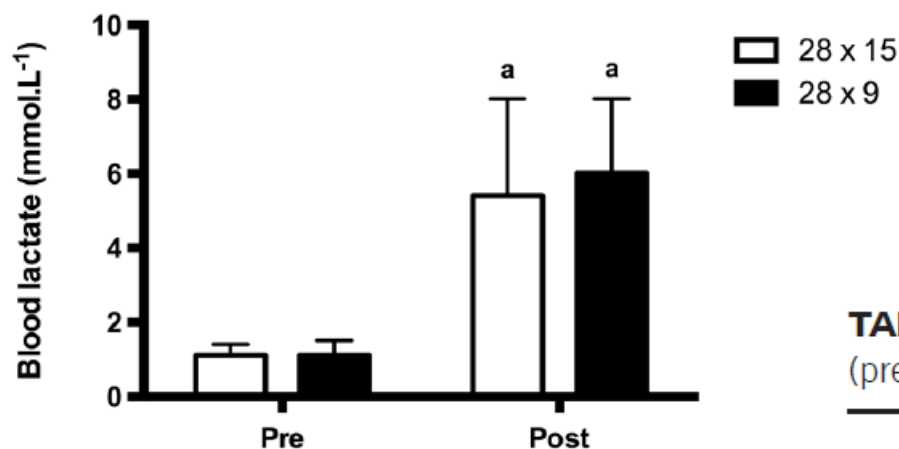
	3-a-Side games			
	Half-court		Full-court	
	Mean $\pm$ SD†	CV (%)	Mean $\pm$ SD	CV (%)
HR	161.8 $\pm$ 6.2	3.8	180.9 $\pm$ 5.7	3.2
%HRmax	76.3 $\pm$ 2.5	3.3	85.6 $\pm$ 3.1	3.6

\*CV = coefficient of variation; HR = heart rate; %HRmax = percentage of maximum heart rate.

† $p < 0.05$ .

# 3-B) Efecto del espacio de juego

## Parámetros Fisiológicos



**FIG. 1.** Lactate concentration response.  
 a – significant difference to pre ( $p < 0.00$ ); Pre – before SSG;  
 – immediately after SSG; SSG28x15 – small-sided game, 28x15 m court area;  
 SSG28x9 – small-sided game, 28x9 m court area

**TABLE I.** Repeated-sprint ability (RSA) test performance before (pre) and after (post) SSG (mean  $\pm$  SD).

RSA test measures		SSG	
		28x15	28x9
Best time (s)	Pre	3.20 $\pm$ 0.10	3.18 $\pm$ 0.07
	Post	3.24 $\pm$ 0.14	3.18 $\pm$ 0.15
	ES	0.33 (small)	0.03 (trivial)
Mean time (s)	Pre	3.36 $\pm$ 0.10	3.37 $\pm$ 0.07
	Post	3.43 $\pm$ 0.20	3.39 $\pm$ 0.25
	ES	0.40 (small)	0.04 (trivial)
Performance decrement (%)	Pre	5.31 $\pm$ 3.90	6.15 $\pm$ 3.31
	Post	6.01 $\pm$ 3.98	6.47 $\pm$ 3.03
	ES	0.12 (trivial)	0.06 (trivial)

Note: RSA – repeated-sprint ability; SSG – small-sided game; ES – effect size.

Marcelino et al, Biol. Sport 2016

# 3-B) Efecto del espacio de juego

## Acciones específicas

Physical demand (count)	Court size (Half; Full)	
	mean $\pm$ SD	Effect size $\pm$ CL
Total Movements	407 $\pm$ 30; 340 $\pm$ 35	-1.73 $\pm$ 0.24* large
Stand/Walk	137 $\pm$ 14; 103 $\pm$ 11	-2.62 $\pm$ 0.24* very large
Jog	63 $\pm$ 13; 68 $\pm$ 10	0.50 $\pm$ 0.30* moderate
Run	34 $\pm$ 9; 37 $\pm$ 11	0.15 $\pm$ 0.30 unclear
Sprint	13 $\pm$ 6; 13 $\pm$ 6	0.08 $\pm$ 0.24 trivial
Low shuffle	45 $\pm$ 9; 32 $\pm$ 9	-1.53 $\pm$ 0.34* large
Med shuffle	81 $\pm$ 13; 62 $\pm$ 20	-1.06 $\pm$ 0.34* moderate
High shuffle	11 $\pm$ 5; 7 $\pm$ 3	-0.86 $\pm$ 0.29* moderate
Jump	23 $\pm$ 8; 18 $\pm$ 6	-0.53 $\pm$ 0.18* small

# B-Efecto del espacio de juego

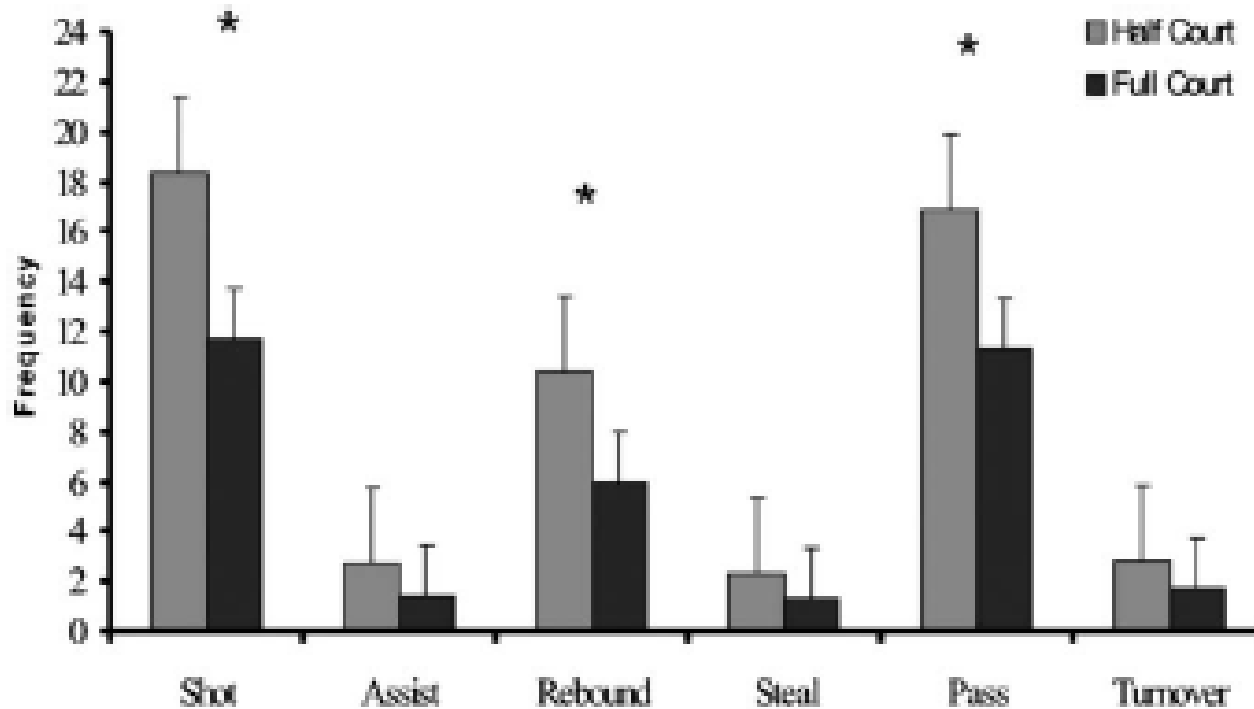
## Acciones Técnicas

Technical Element (per player per game)	Court size (Half; Full)	
	mean $\pm$ SD	Effect size $\pm$ CL
Total Elements	57 $\pm$ 18; 46 $\pm$ 13	-0.64 $\pm$ 0.17* moderate
Dribble	16 $\pm$ 8; 13 $\pm$ 6	-0.32 $\pm$ 0.18* small
Pass	18 $\pm$ 6; 14 $\pm$ 4	-0.75 $\pm$ 0.23* moderate
Close range shot	6 $\pm$ 4; 5 $\pm$ 3	-0.32 $\pm$ 0.26* small
Mid-range jump shot	3 $\pm$ 3; 2 $\pm$ 2	-0.53 $\pm$ 0.38* small
3-point shot	3 $\pm$ 3; 2 $\pm$ 2	-0.30 $\pm$ 0.29* small
Rebound	7 $\pm$ 2; 5 $\pm$ 3	-0.58 $\pm$ 0.25* small
Ball Screen	4 $\pm$ 4; 4 $\pm$ 5	-0.24 $\pm$ 0.34 unclear



# 3-B) Efecto del espacio de juego

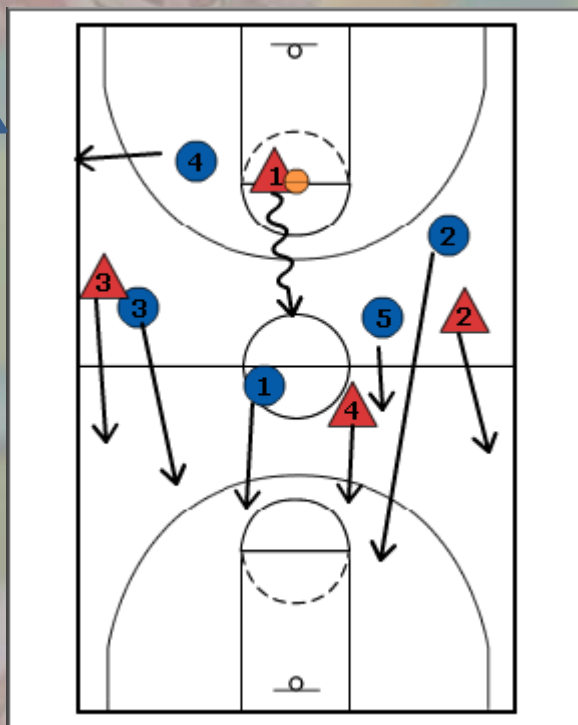
## Acciones Técnicas



**Figure 1.** Comparison of female high school basketball players' frequencies of technical actions for half-court and full-court 3-a-side games.

### 3) Efectos agudos

Número de  
jugadores



Espacio de  
juego

Ratio trabajo/  
descanso

# 3-C) Efecto del ratio trabajo/descanso

## Parámetros Fisiológicos

Physiological demand	Work-to-rest ratio (2x5 min; 4x2.5 min)	
	Mean $\pm$ SD	Effect size $\pm$ CL
RPE	7 $\pm$ 2; 7 $\pm$ 2	-0.50 $\pm$ 0.23* small
Peak heart rate as % of max heart rate	92 $\pm$ 3; 92 $\pm$ 2	-0.17 $\pm$ 0.22 trivial
Mean heart rate as % of max heart rate	86 $\pm$ 4; 83 $\pm$ 3	-0.83 $\pm$ 0.19* moderate
Mean % time spent in Zone 4 (80–89% HR max)	53 $\pm$ 26; 58 $\pm$ 9	0.43 $\pm$ 0.29* small
Mean % time spent in Zone 5 (90–100% HR max)	33 $\pm$ 32; 14 $\pm$ 13	-0.49 $\pm$ 0.32* small

# 3-C) Efecto del ratio trabajo/descanso

## Parámetros Fisiológicos

Physical demand (count)	Work-to-rest ratio (2x5 min; 4x2.5 min)	
	mean $\pm$ SD	Effect size $\pm$ CL
Total Movements	365 $\pm$ 45; 393 $\pm$ 49	0.57 $\pm$ 0.15* small
Stand/Walk	119 $\pm$ 20; 124 $\pm$ 20	0.25 $\pm$ 0.13* small
Jog	65 $\pm$ 11; 66 $\pm$ 11	0.08 $\pm$ 0.22 trivial
Run	33 $\pm$ 8; 38 $\pm$ 8	0.49 $\pm$ 0.17* small
Sprint	12 $\pm$ 5; 14 $\pm$ 6	0.47 $\pm$ 0.28* small
Low shuffle	39 $\pm$ 12; 40 $\pm$ 12	-0.10 $\pm$ 0.21 trivial
Med shuffle	69 $\pm$ 17; 77 $\pm$ 18	0.40 $\pm$ 0.22* small
High shuffle	9 $\pm$ 6; 12 $\pm$ 6	0.55 $\pm$ 0.26* small
Jump	20 $\pm$ 7; 22 $\pm$ 7	0.27 $\pm$ 0.14* small

# 3-C) Efecto del ratio trabajo/descanso

## Acciones Técnicas

Technical Element (per player per game)	Work-to-rest ratio (2x5 min; 4x2.5 min)	
	mean $\pm$ SD	Effect size $\pm$ CL
Total Elements	51 $\pm$ 17; 55 $\pm$ 18	0.22 $\pm$ 0.13* small
Dribble	14 $\pm$ 7; 15 $\pm$ 8	0.18 $\pm$ 0.15 trivial
Pass	16 $\pm$ 5; 17 $\pm$ 6	0.17 $\pm$ 0.16 trivial
Close range shot	6 $\pm$ 3; 6 $\pm$ 4	-0.07 $\pm$ 0.24 trivial
Mid-range jump shot	3 $\pm$ 2; 3 $\pm$ 3	0.17 $\pm$ 0.27 trivial
3-point shot	2 $\pm$ 2; 2 $\pm$ 3	0.11 $\pm$ 0.23 trivial
Rebound	6 $\pm$ 3; 7 $\pm$ 3	0.23 $\pm$ 0.27 trivial
Ball Screen	3 $\pm$ 4; 4 $\pm$ 4	-0.15 $\pm$ 0.30 unclear

# 3-C) Efecto del ratio trabajo/descanso

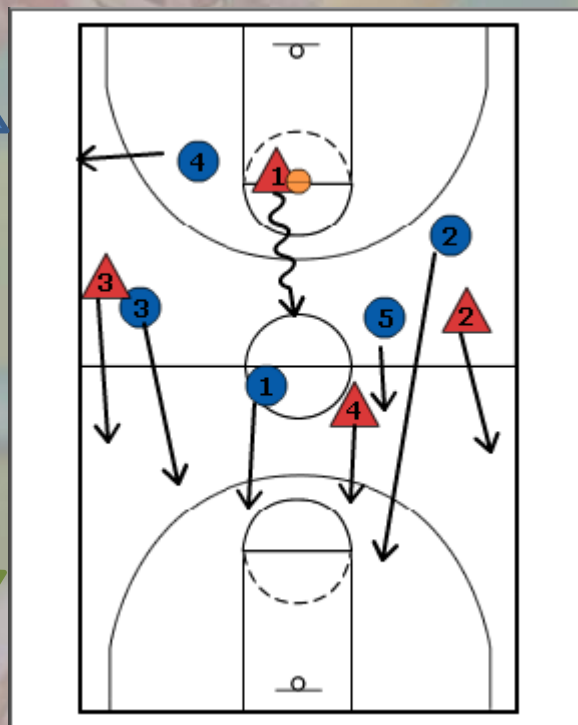
## Parámetros Fisiológicos /tecnicos

	BDcont	BDint	P-value
%HRmax (total drill duration)	87.4 ± 2.8	84.2 ± 3.9	<i>P</i> < 0.001
%HRmax (actual drill duration)	90.8 ± 2.7	86.5 ± 3.7	<i>P</i> < 0.001
Edwards' TL	55.1 ± 2.8	50.0 ± 4.6	<i>P</i> < 0.001
RPE	8.5 ± 1.0	8.0 ± 1.3	<i>P</i> = 0.006
Dribble	17.4 ± 8.1	20.7 ± 7.9	<i>P</i> < 0.001
Steal	2.5 ± 2.1	2.2 ± 1.4	<i>P</i> = 0.423
Rebound	5.0 ± 3.5	5.4 ± 3.1	<i>P</i> = 0.490
Turnover	2.5 ± 1.9	2.9 ± 2.0	<i>P</i> = 0.302
Total Pass	18.7 ± 6.4	21.0 ± 6.3	<i>P</i> = 0.101
Correct pass	17.0 ± 6.2	18.7 ± 5.9	<i>P</i> = 0.208
Wrong pass	1.7 ± 1.3	2.3 ± 1.8	<i>P</i> = 0.092
% Correct pass	90.3 ± 6.9	89.0 ± 8.0	<i>P</i> = 0.406
Total Shot	10.8 ± 6.7	12.9 ± 5.8	<i>P</i> = 0.074
Scored shot	4.6 ± 3.8	5.0 ± 3.5	<i>P</i> = 0.336
Missed shot	6.2 ± 3.6	7.0 ± 3.8	<i>P</i> = 0.170
% Made shot	38.7 ± 20.1	39.5 ± 19.5	<i>P</i> = 0.827

Conte et al, J Sports Sci 2016 (Cont:  
3x4min/Int:3x(7min de1min-1min))

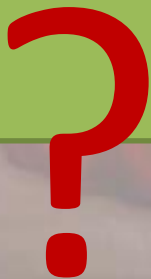
# 3) Efectos agudos

Número de jugadores



Espacio de juego

Reglas de juego



Densidad de trabajo/anso

# TAKE HOME MESSAGE



- El entrenador tiene muchas posibilidades para adaptar los SSG
- Se puede cambiar el número de jugadores, el espacio de juego y el ratio trabajo: pausa
- Se puede entrenar la capacidad aeróbica o anaeróbica durante SSG
- Necesitamos mas investigaciones en baloncesto!!!!