
OPTIMISER TRAINING
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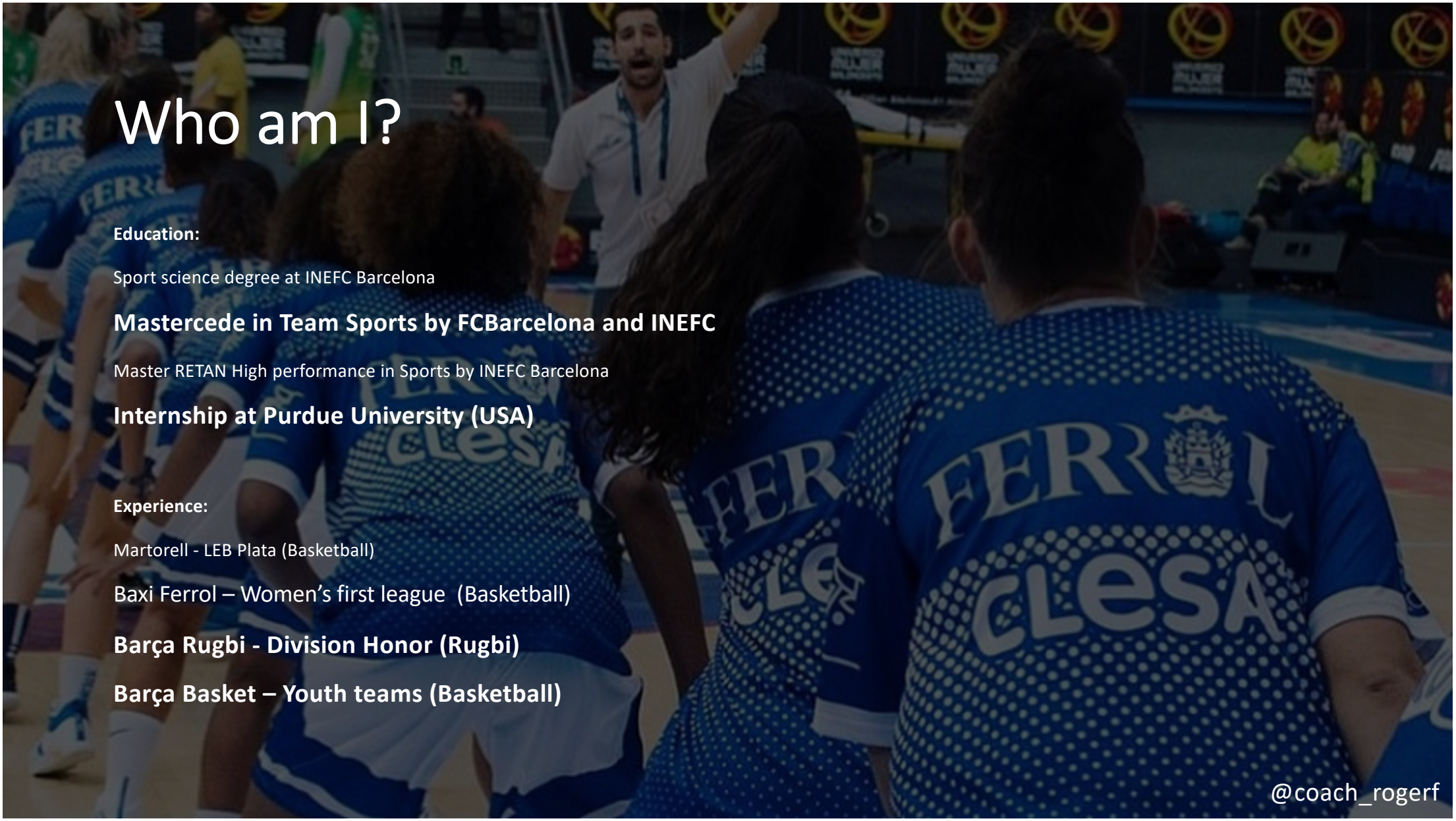

Who am I?

Education:

Sport science degree at INEFC Barcelona

Mastercede in Team Sports by FCBarcelona and INEFC

Master RETAN High performance in Sports by INEFC Barcelona

Internship at Purdue University (USA)

Experience:

Martorell - LEB Plata (Basketball)

Baxi Ferrol – Women's first league (Basketball)

Barça Rugbi - Division Honor (Rugbi)

Barça Basket – Youth teams (Basketball)

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Timing

INTRODUCTION

STRUCTURED TRAINING (ST)

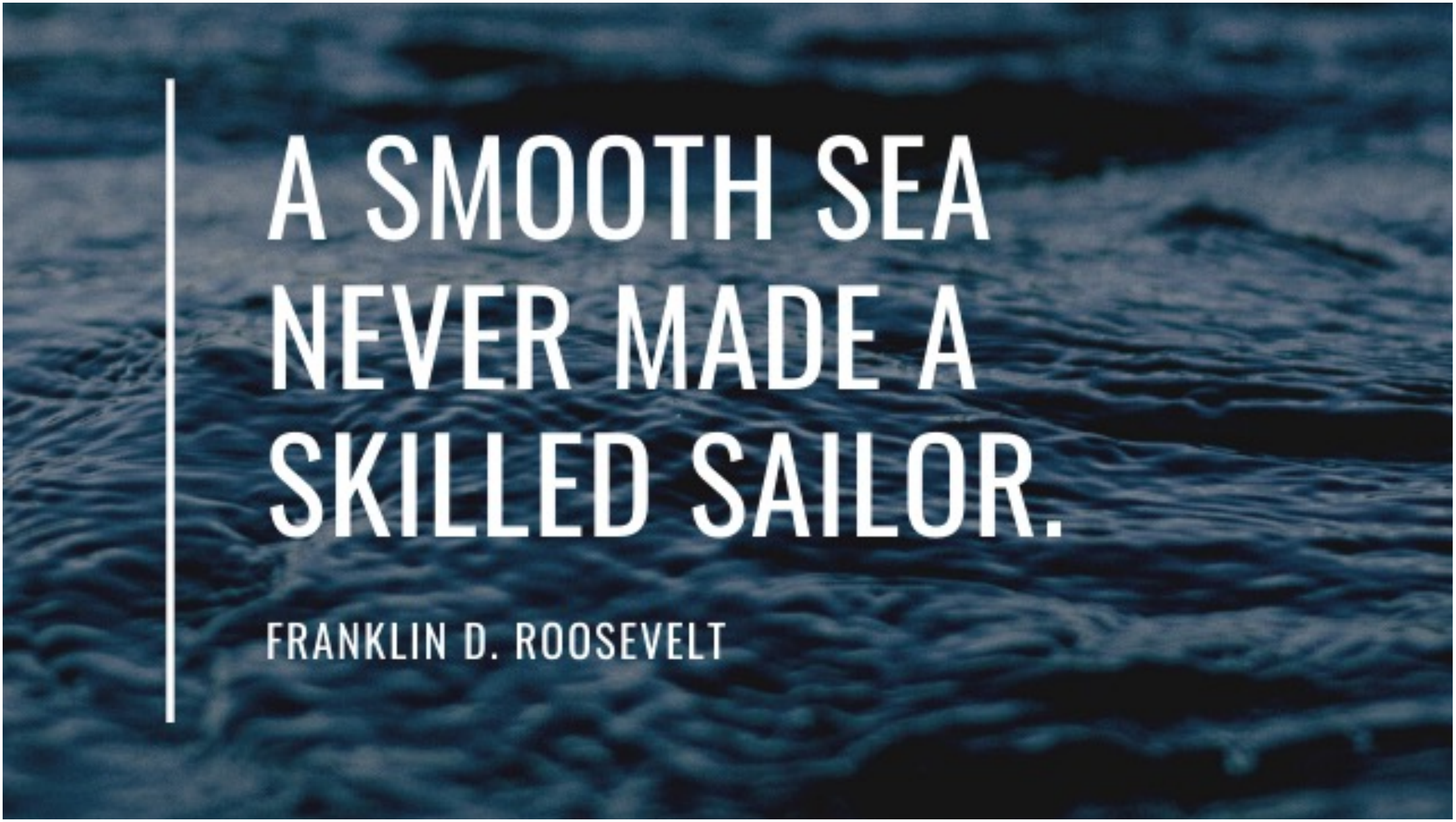
OPTIMIZER TRAINING (OT)

METHODOLOGICAL FUNDAMENTALS

INDIVIDUALIZATION

VARIABILITY

SPECIFICITY - SPS


A SMOOTH SEA
NEVER MADE A
SKILLED SAILOR.
FRANKLIN D. ROOSEVELT

“The error is not well tolerated in our society. We fear it.

We must learn to live with it. Accept that it will appear and use it in our favor.”

Jaime Sampaio

STRUCTURED TRAINING

Entrenamiento Estructurado

By Francisco Seirul·lo


Start - ending known
Public pressure
CLOSED SKILL: RUN
Controlled situation
Low level of randomness
Individual
Simple decision making
One direction
indirect opponents
My own rail
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Changing ball posession
Public pressure
OPEN SKILLS
Random
Unexpected situation
teammates
Multidirectionl
Continuous
decision making
opponents
Shared space
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COGNITIVE
CREATIVE
EMOTIONAL
CONDITIONAL
COORDINATIVE
SOCIO-AFFECTIVE
STANLEY
Mental
Bio-energetic
"Human Athlete" HA
Estructura mental: està relacionada amb l'autoorganització que el jugador té de les estructures. Combinació i recombinació de facultats cognitives que possibilita l'autoconsciència i el raonament evolutiu de tots "els mons" del nostre existir.
Estructura bioenergètica: està relacionada amb les vies energètiques; aporta i renova la bioenergia fent possible el desenvolupament de totes les estructures incloent-hi la pròpia.
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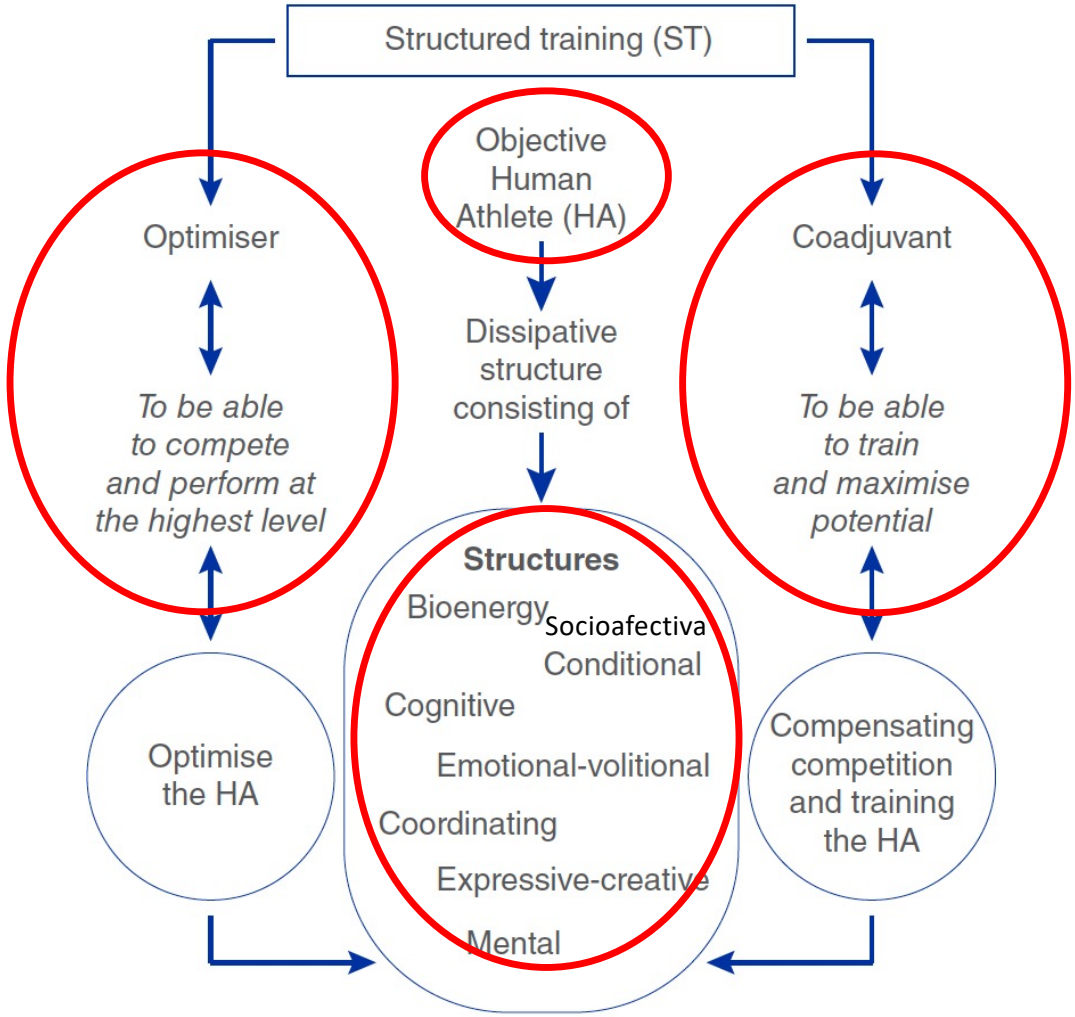
Training in Team Sports: Structured Training in the FCB

J. R. Tarragó[1], Marcel·lí Massafret-Marimón[2], Francisco Seirul·lo[1] and Francesc Cos[2,3]*

[1]Futbol Club Barcelona, Spain, [2]National Institute of Physical Education of Catalonia (INEFC), Barcelona Centre, University of Barcelona, Spain, [3]New York City Football Club, United States of America



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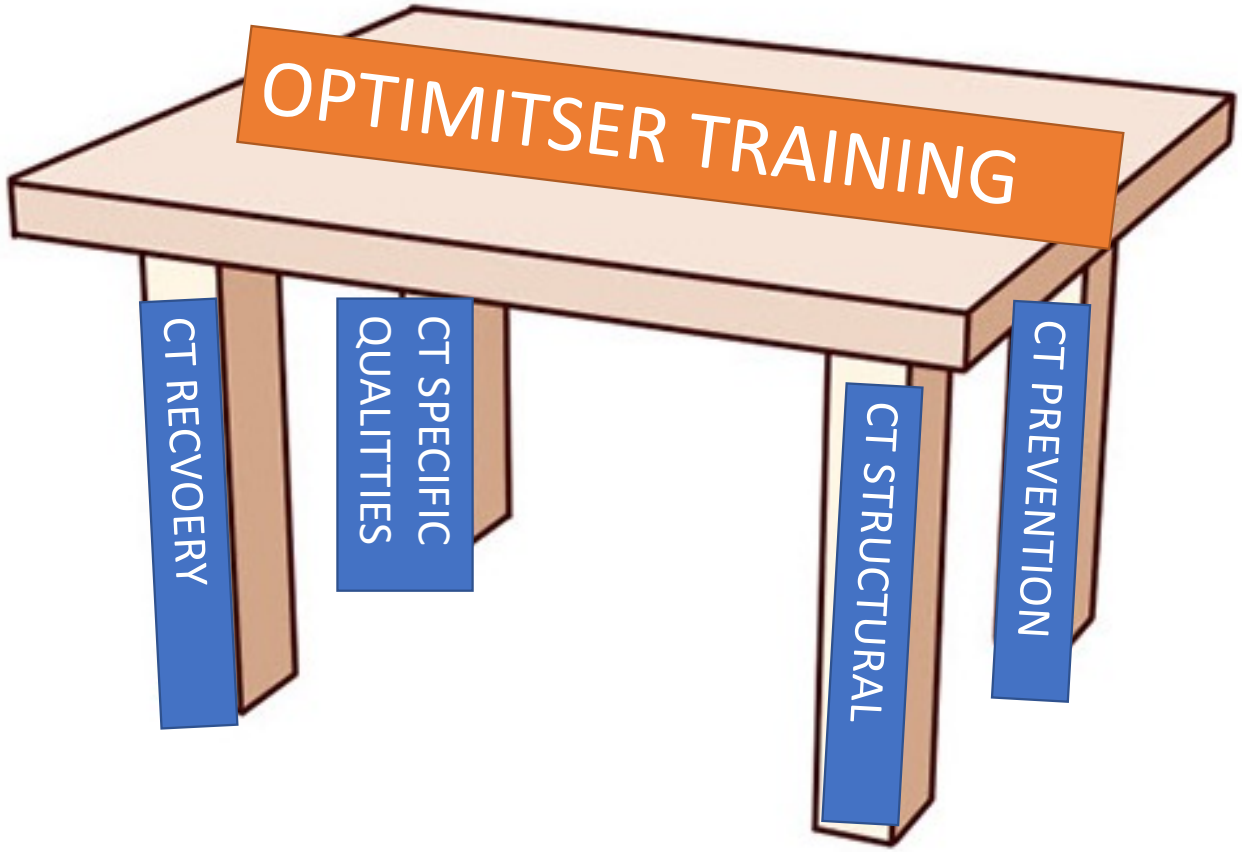

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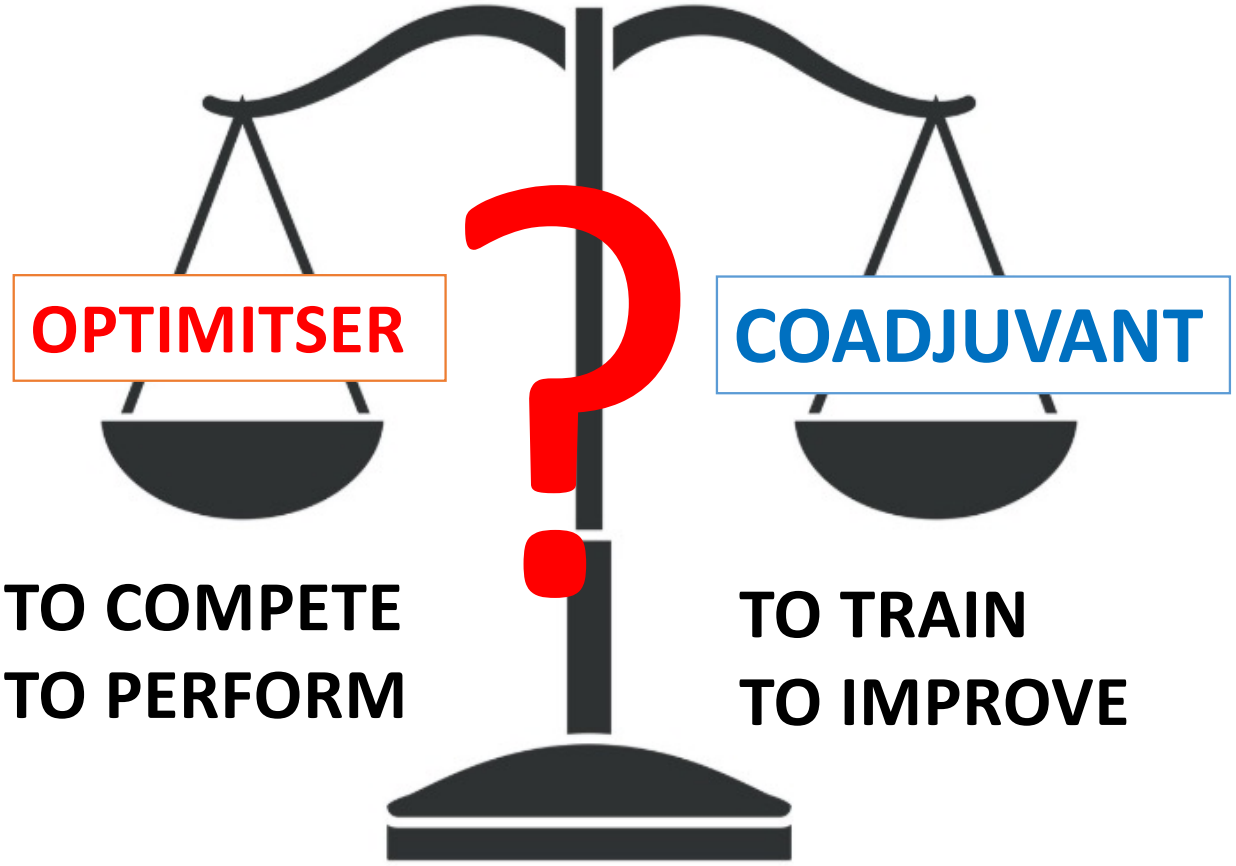
WHICH ONE IS MORE IMPORTANT?



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WHICH ONE IS MORE IMPORTANT?

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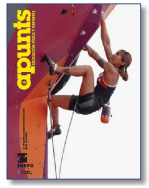
it depends...

- Moment of the season
- Day of the mycrocicle
- Youth vs Old
- Injured vs Healthy


OPTIMISER TRAINING

What?



Entrenamiento en deportes de equipo: el entrenamiento optimizador en el Fútbol Club Barcelona

Edu Pons Alcalá[1], Andrés Martín Garcia[2], Marc Guitart Trench[2], Isaac Guerrero Hernández[3], Joan Ramón Tarragó i Costa[4], Francisco Seirul·lo Vargas[5] y Francesc Cos Morera[6,7]

"Training that is concerned with the planning, design, execution and control of the tasks of the sport, whose objective is to optimise HAs' performance in all the competitions in which they participate throughout their athletic life"

(Romero & Tous, 2010, prologue by Seirul·lo, paragraph 1).

WHY?

It prepares HAs to compete and improve performance.

“There is nothing better to optimise prerformance than actually playing and competing!”

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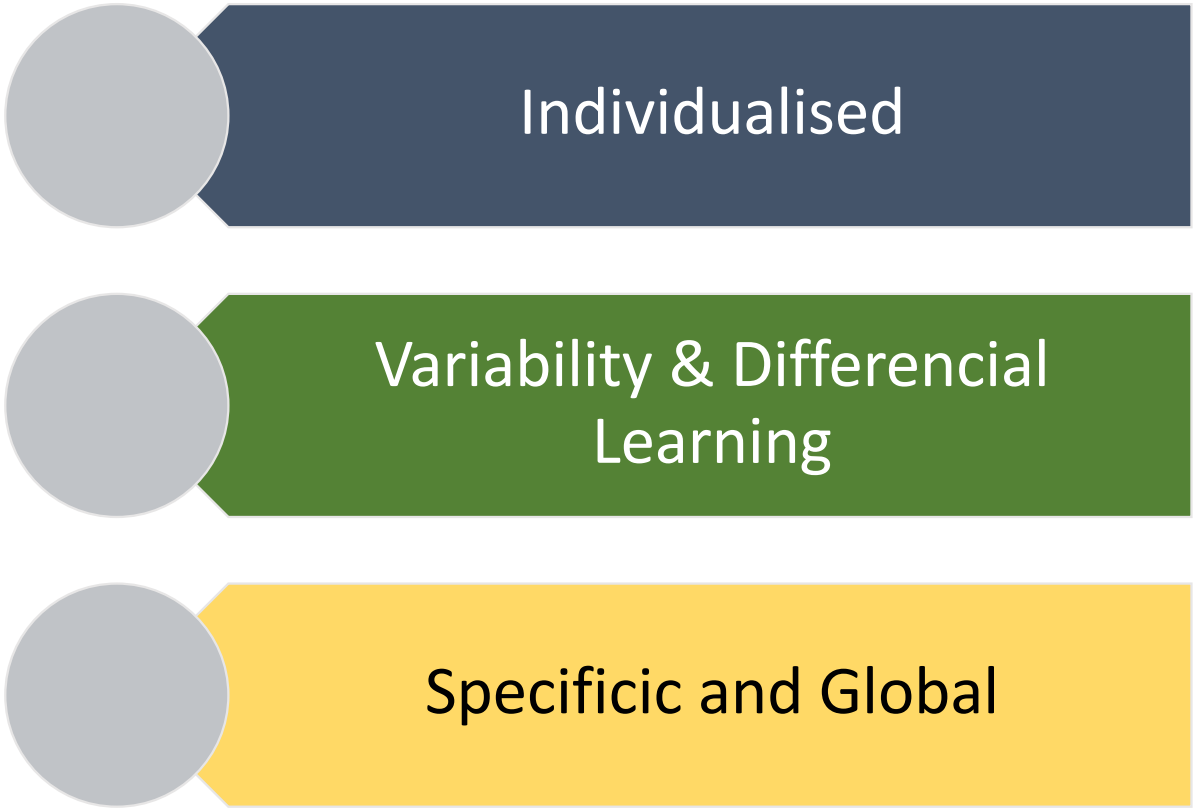
HOW?

Designing training tasks to be performed in an environment and with elements that are specific to the game.

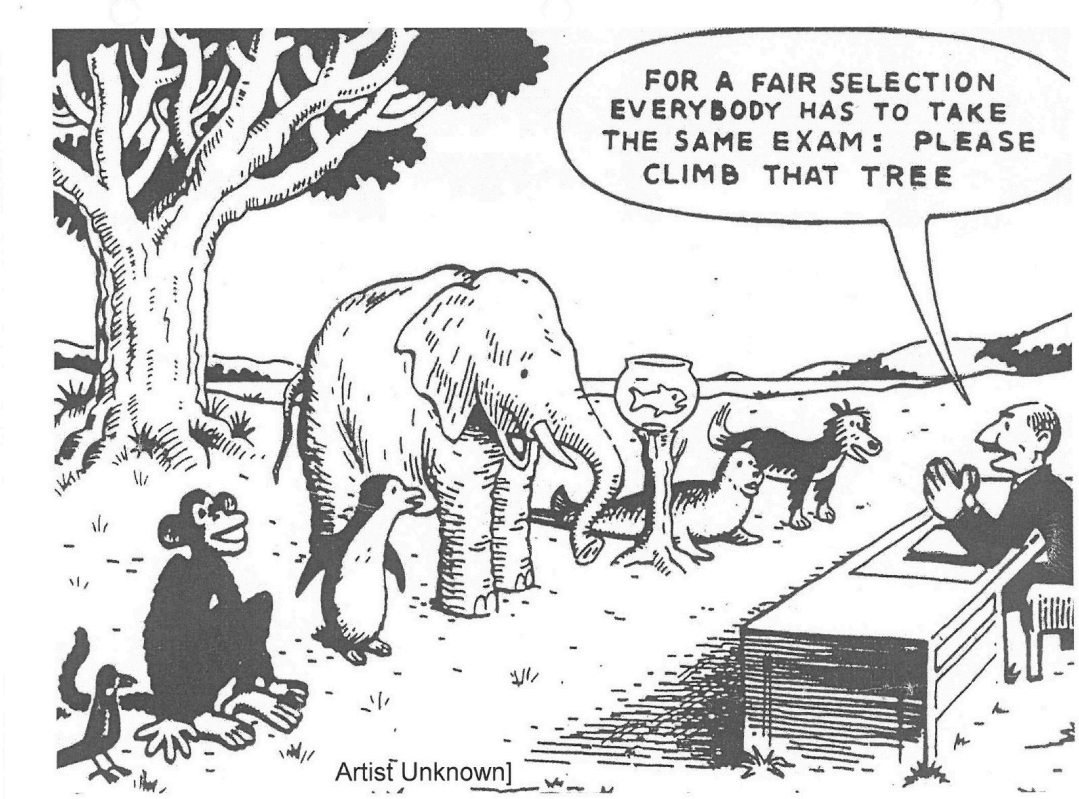
⬇

PREFERENTIAL SIMULATION SITUATION (PSS)

METHODOLOGICAL FUNDAMENTALS OF ST



INDIVIDUALISED



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SHOULD THEY TRAIN THE SAME?

- AGE?
- POSITION?
- CULTURE?
- BELIVES?
- PHYSICAL QUALITIES?
- INJURIES?
- MOTIVATION?
- FRIENDSHIPS?

Variability

Bernstein (1967): We don't learn by repeating the same solution to a movement problem, but by constantly solving a new movement problem"
(Repetition without repetition)

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Budweiser
GEICO GEICO GEICO

DIFFERENCIAL LEARNING

The “differential learning” approach takes advantage of the fluctuations in a complex system by increasing them through “non-repetition” and “constant change” in the movement tasks which produce “stochastic disturbances”

(Frank, Michelbrink, Beckmann, & Schöllhorn, 2007; Schöllhorn, Hegen, & Davids, 2012).

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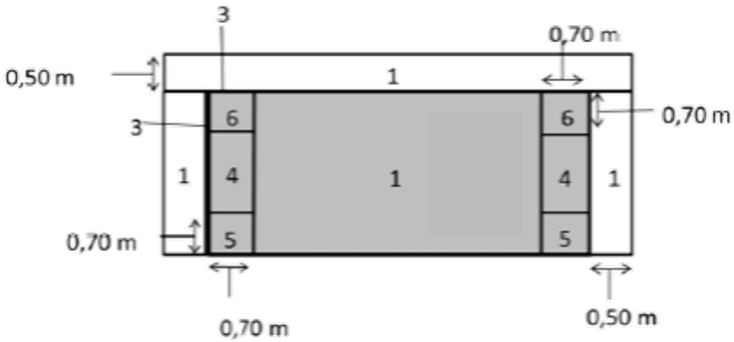
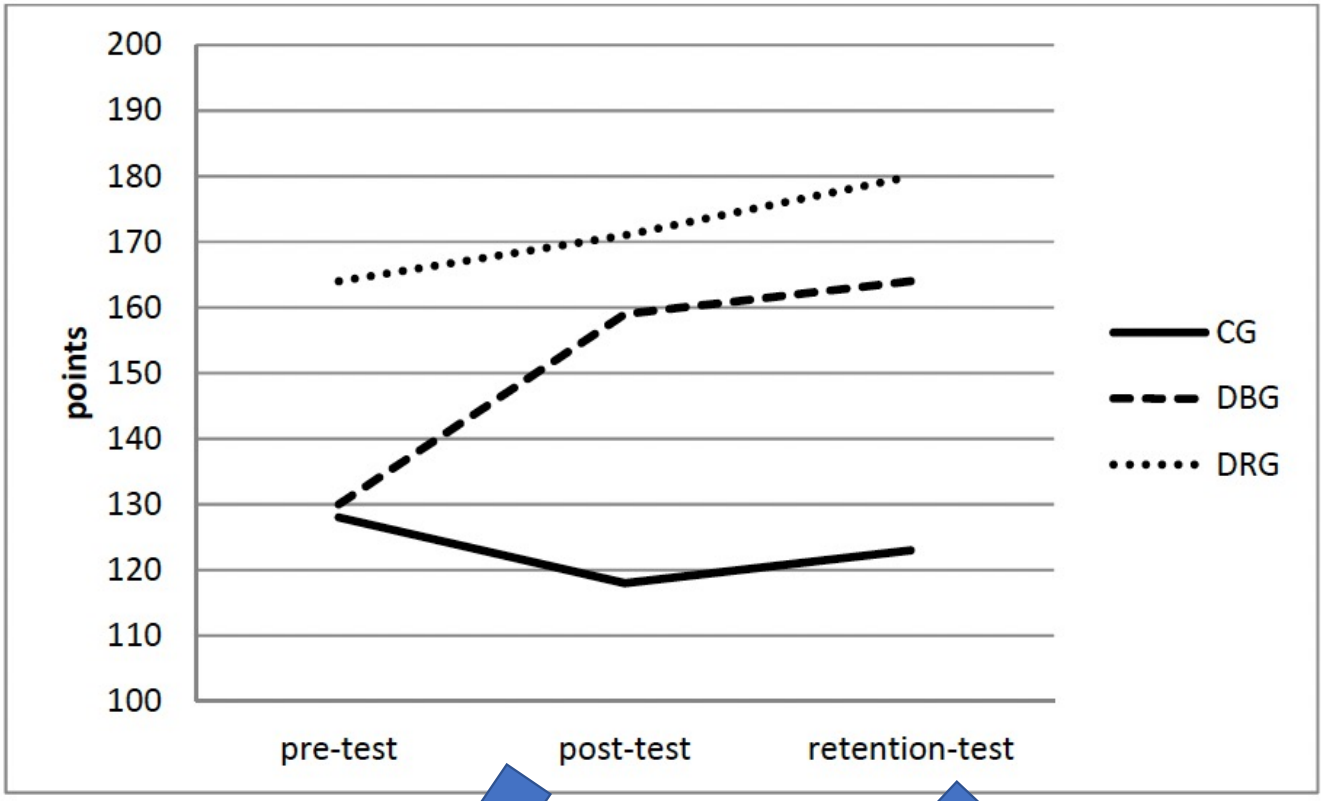


1. Five immobile balls were shot towards the goal after a short run-up from position 1.
2. Five balls were shot towards the goal after a 10m drib-bling from position 1.
3. Five balls were shot towards the goal after a 5m drib-bling from position 2.
4. Five balls were shot towards goal from position 1 after a pass from the right.
5. Five balls were shot towards the goal after a 5 m drib-bling from position 3.
6. Five balls were shot towards the goal from position 1 after a pass from the left.
7. Five balls were shot towards the goal from position 1 after crossing an obstacle of 40 cm height with a vertical jump.

I Schollhorn, W., Hegen, P., & Davids, K. (2012). The nonlinear nature of learning-A differential learning approach. *The Open Sports Sc Journal*, *5*(1).



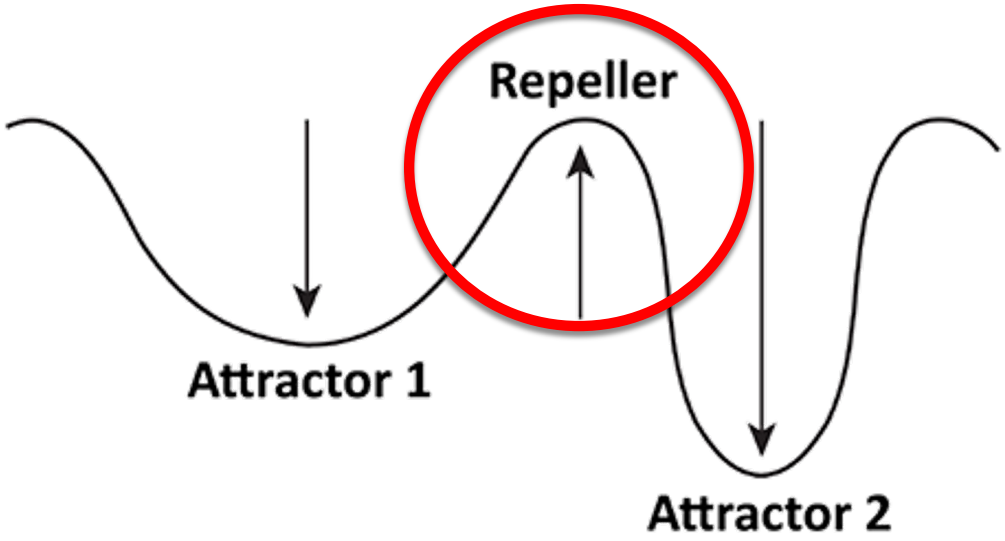
CG: Control Group
DBG: Differencial Blocked Group
DRG: Differencial Random group

“SHORT TERM TRAINING (1 MONTH)”

PERFORMANCE!

RETENTION : AFTER TWO WEEKS!

LEARNING!


Repeller
Attractor 1
Attractor 2

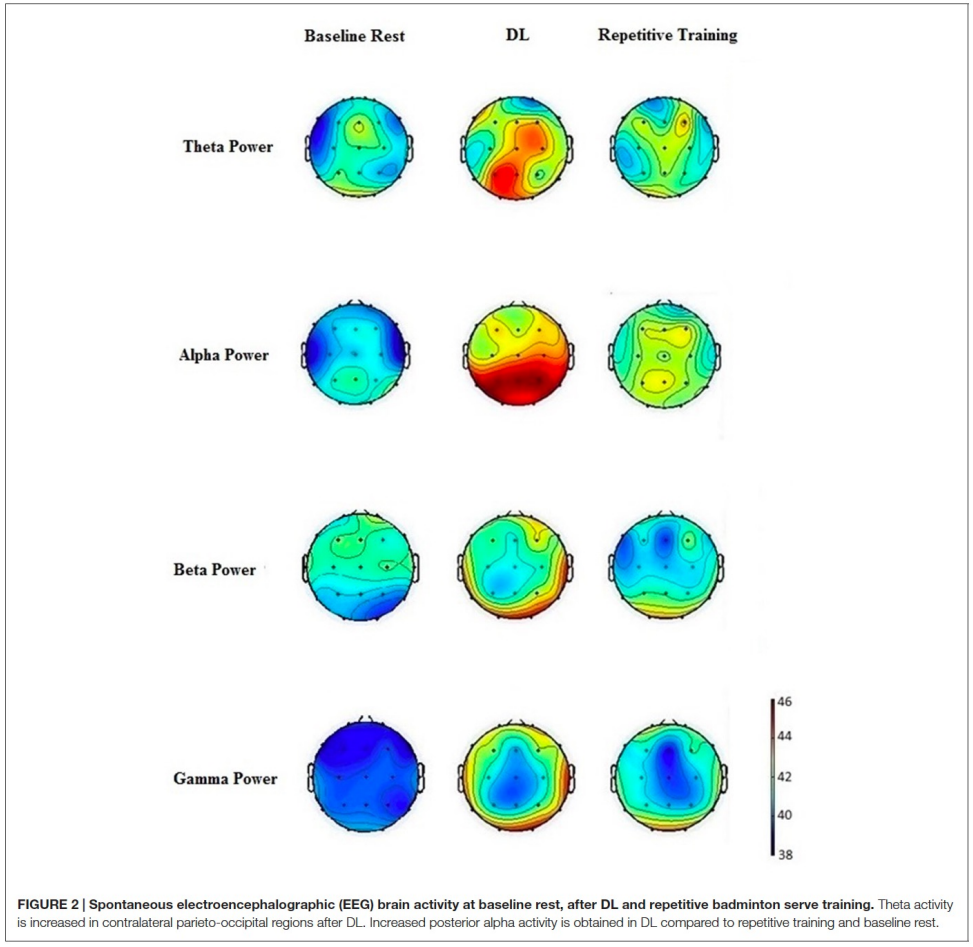


FIGURE 2 | Spontaneous electroencephalographic (EEG) brain activity at baseline rest, after DL and repetitive badminton serve training. Theta activity is increased in contralateral parieto-occipital regions after DL. Increased posterior alpha activity is obtained in DL compared to repetitive training and baseline rest.

Differential Training Facilitates Early Consolidation in Motor Learning (Schollhorn et al. 2016)

VARIETY

Different patterns

Variety of sports

Changing environments

Different solutions to different problems

VS

VARIABILITY

It's a human characteristic. We can't repeat the same exact movement two consecutive times.

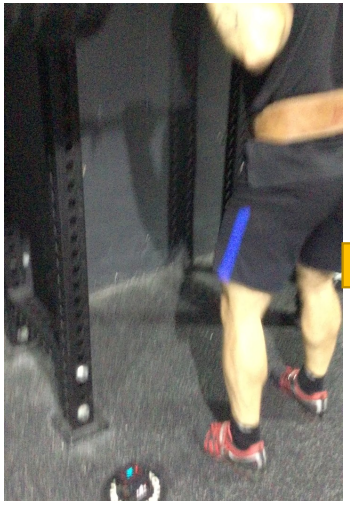
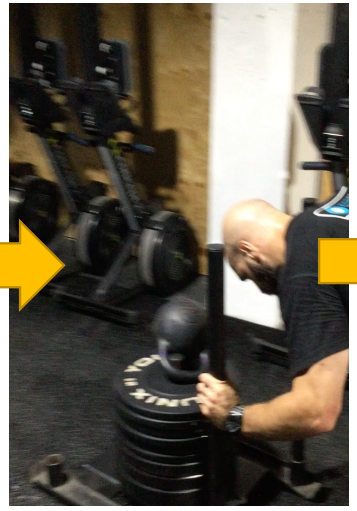
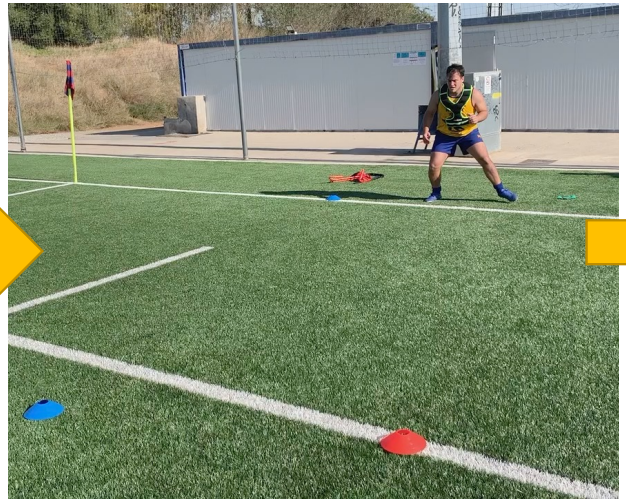
Small changes without changing the main pattern

Experts athletes show less variability in their coordination than novel. But can change easier.
STABLE BUT FLEXIBLE!

Entropy = Measure amount of variability

STABLE BUT FLEXIBLE!

SPECIFICITY


- **SPECIFICITY** **+**

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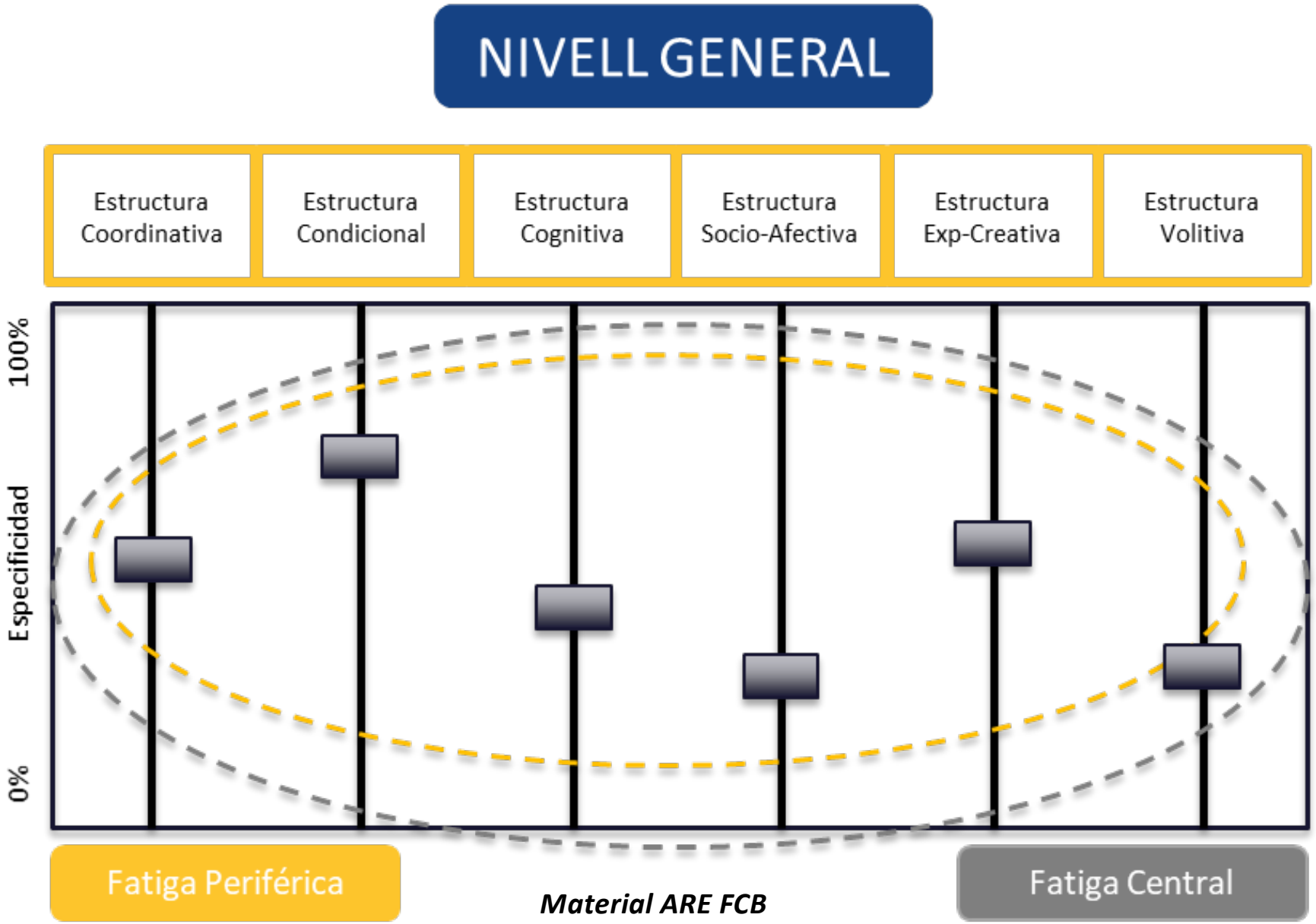

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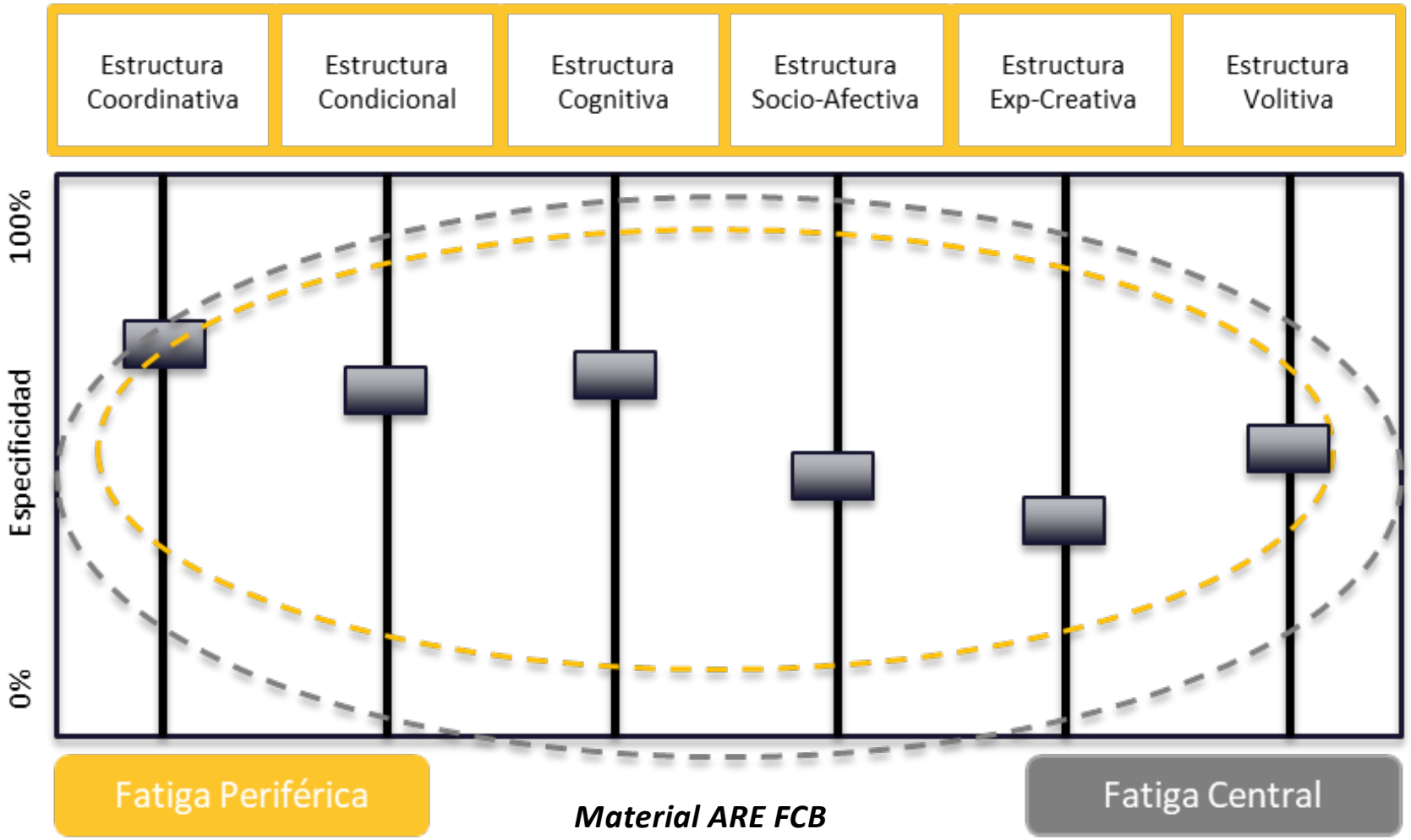
SPECIFIC QUALITY: RUNNING

LEVEL OF APPROACH	SPECIFICITY	TYPE OF EXERCISE	DECISION MAKING	BALL	SPACE	EXAMPLE
LEVEL 0 LEVEL 1 LEVEL 2	MEDIUM - LOW	PHYSICAL TECHNICAL	LOW	USUALLY NO	GYM or FIELD. SMALL or BIG	Desplazamientos a diferentes velocidades lineales con cambios de dirección Desplazamientos entre 5-12 metros focalizando en aceleraciones i desaceleraciones

NIVELL ESPECIFIC DIRIGIT

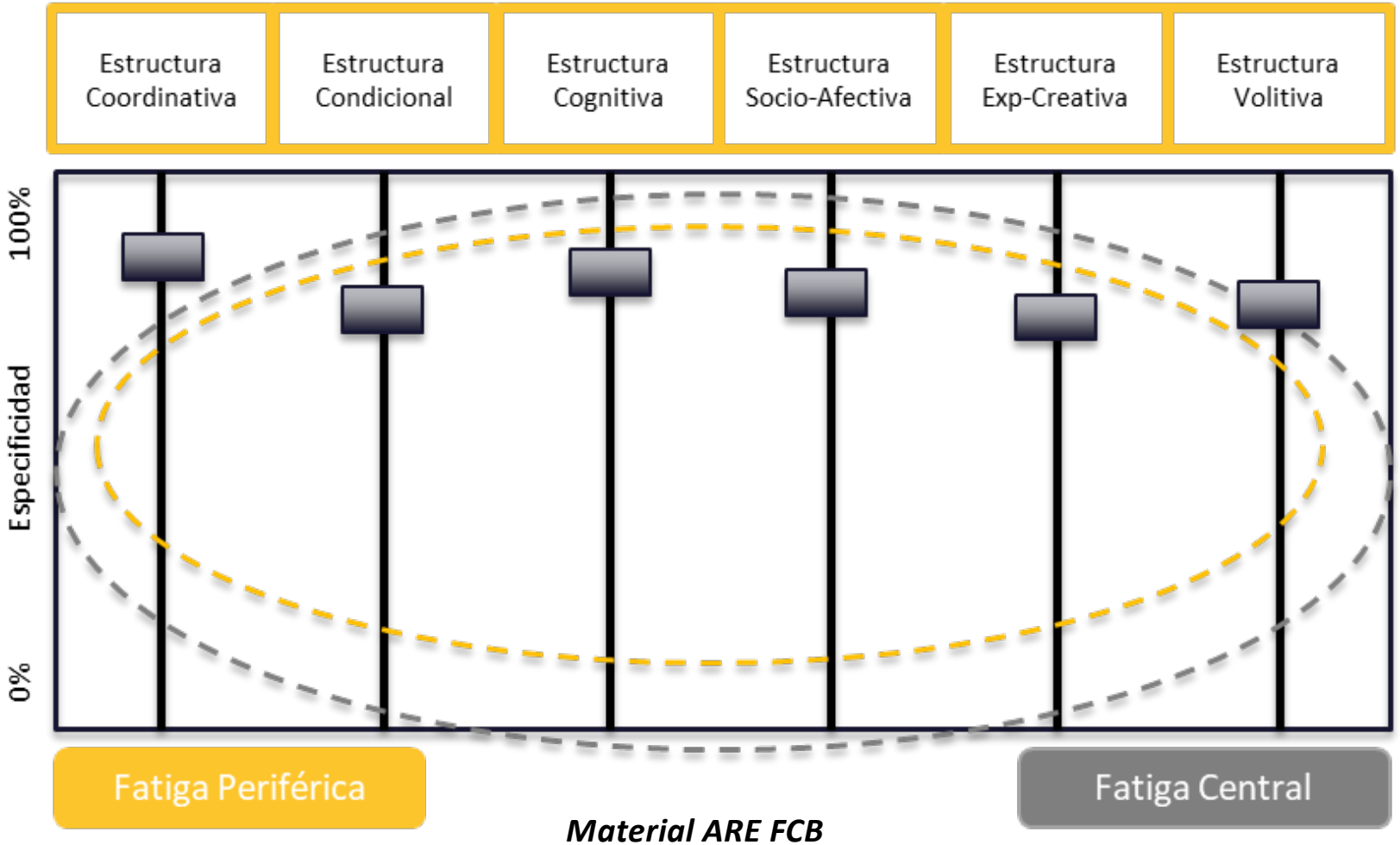


Material ARE FCB

SPECIFIC QUALITY: RUNNING

LEVEL OF APPROACH	SPECIFICITY	TYPE OF EXERCISE	DECISION MAKING	BALL	SPACE	EXAMPLE
LEVEL 2 LEVEL 3	MEDIUM	TECHNICAL PHYSICAL INDIVIDUAL	SIMPLE.	YES/NO	FIELD	Mismas acciones que en el trabajo general, pero introduciendo pelota, antes, durante y después. Rueda de pases Secuencia de pases Circuito con acciones combinadas de desplazamiento

NIVELL ESPECIFIC ESPECIAL



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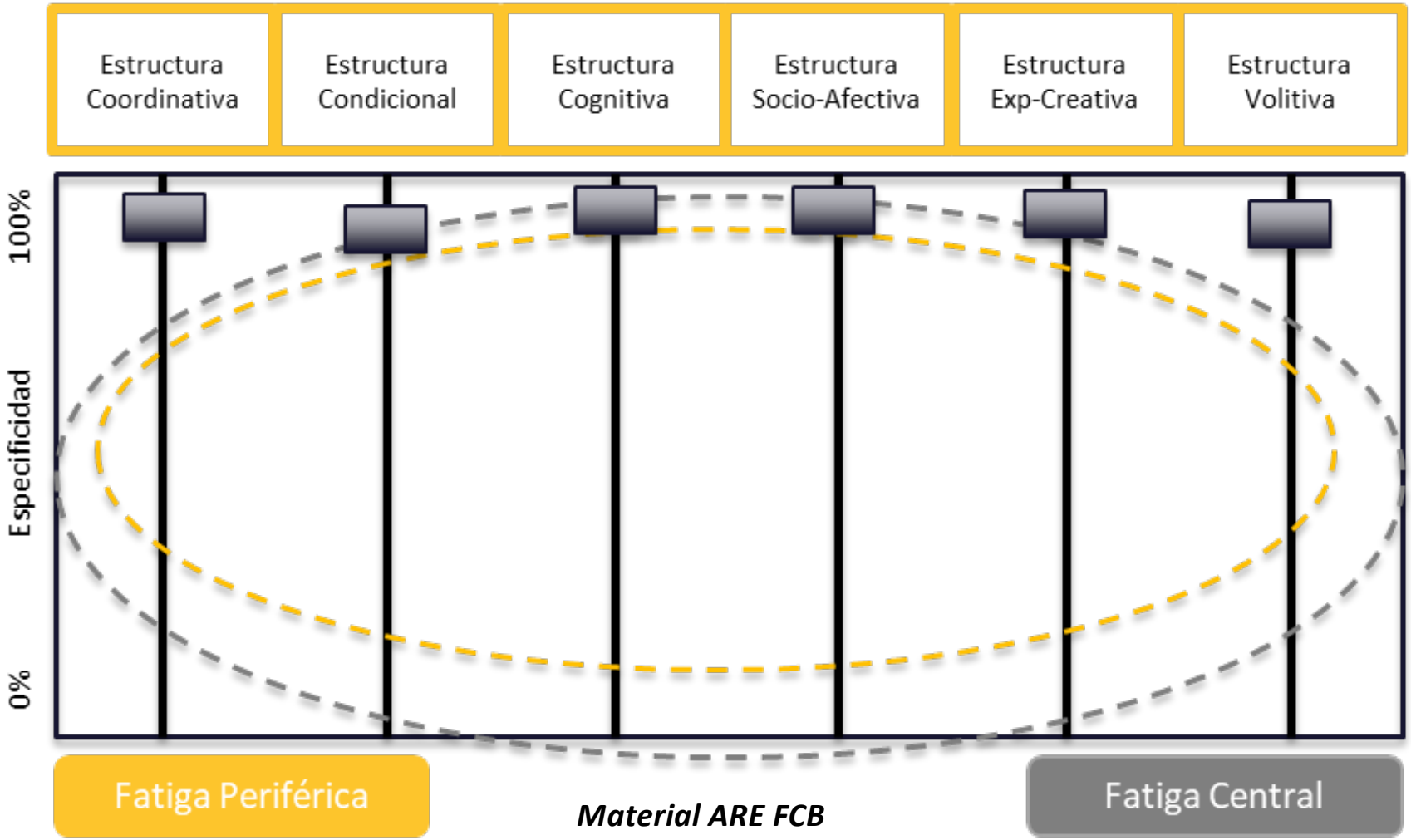
SPECIFIC QUALITY: RUNNING

LEVEL OF APPROACH	SPECIFICITY	TYPE OF EXERCISE	DECISION MAKING	BALL	SPACE	EXAMPLE
LEVEL 3 LEVEL 4	HIGH	Small sided games GROUP	HIGH DEMANDS	YES	FIELD	Juego de situación (5v5+3) Espacio 20x24. (6v6+3) Espacio 22x26 (7v7+3) Espacio 29x25. (8v8+3) Espacio 30x26 Partidos cortos estructurados (3v3)(3v3+1). (4v4)(4v4+1) (5v5)(5v5+I). (6v6)(6v6+1) Partidos grandes Espacio ½ campo. Área a área


GILBERT

NIVELL ESPECIFIC COMPETITIU



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SPECIFIC QUALITY: RUNNING

LEVEL OF APPROACH	SPECIFICITY	TYPE OF EXERCISE	DECISION MAKING	BALL	SPACE	EXAMPLE
LEVEL 5	HIGHEST	REAL GAME SIMULATED	MAX DEMANDS	YES	FIELD	Juego real Situación de partido Oficial 11v1


80:00
2ª PR
VRA
25 - 25
BAR
LaLigaSportsTV
LIVE
JOSÉ PARIENT
#1 BARÇA Quiebre LV
10°, BARÇA: BARÇA Quiebre LV, BARÇA SCRUM: GANADO -, ZONA: ROJA, CANAL QUIEBRE: 2, FASES: F1,
BARÇA: BARÇA Try, ZONA FINAL: VERDE F

SPECIFIC QUALITIES IN TEAM SPORTS

THROWS / BALL ACTIONS

RUNNING

JUMPING

FIGHTING

Material ARE FCB

SPECIFIC QUALITY: JUMPING


RONALDO
7
bwin
DANI ALVES
2
17
© Real Madrid


MATTHEWS
1
gettyimages
Tom Pennington
NCAA
2018
FINAL


JCR
R U G B


19
London 2012


JCR
Fitness
Pádel
de Patinaje
LESAFFRE

Characteristics:

- Vertical Force Vector
- Main joints involved: KNEE – ANKLE a treballar genoll i turmell
- Bilateral and unilateral
- Plyometrics: RSI
- Work along the F/V curve
- Landings! Learn how to apply force but also to decelerate.
- Unexpected situations
- Moving elements

SPECIFIC QUALITY: RUNNING

RUNNING we find different “familiy movement”

1. Acceleration
2. High speed running
3. Change of direction. Open step.
4. Change of direction. Crossover step.
5. Deceleration

Acceleració

- Horizontal Vector
- Long time contact
- Unilateral focus
- Main involved muscles: Gluteus, hamstrings, calfs, hips flexors.
- KEY DETERMINANT FACTOR IN TEAM SPORTS!

SPEED

- Verctical Vertical
- minimum contact time
- Unilateral
- Main Muscle groups involved: muscular implicats: Hamstrings, glutes, calfs,
- INJURIES: HAMSTRINGS!

CHANGE DIRECTION: OPEN STEP

- Horizontal vector
- Less time contact than crossover step.
- Unilateral
- Main muscles involved: Gluti, abductors, quads, hamstrings
- Core stability
- ACL injury!

CHANGE DIRECTION: CROSSOVER STEP

- Horizontal vector
- Longer contact time than open step
- Unilateral / Bilateral
- Main muscles involved: Adductors, quads, glutes
- INTERNAL HIP MOBILITY!
- GROIN INJURIES!

Deceleration

- vector Horitzontal
- Sagital plane
- More contact time.
- Unilateral / Bilateral
- Main muscles involved: Quadriceps, hamstrings, glute.
- Trunk stability
- Knee and ankle keys!

SPECIFIC QUALITY: FIGHTING


CLIPPERS
6
CLIPPER
33

Fight: Push

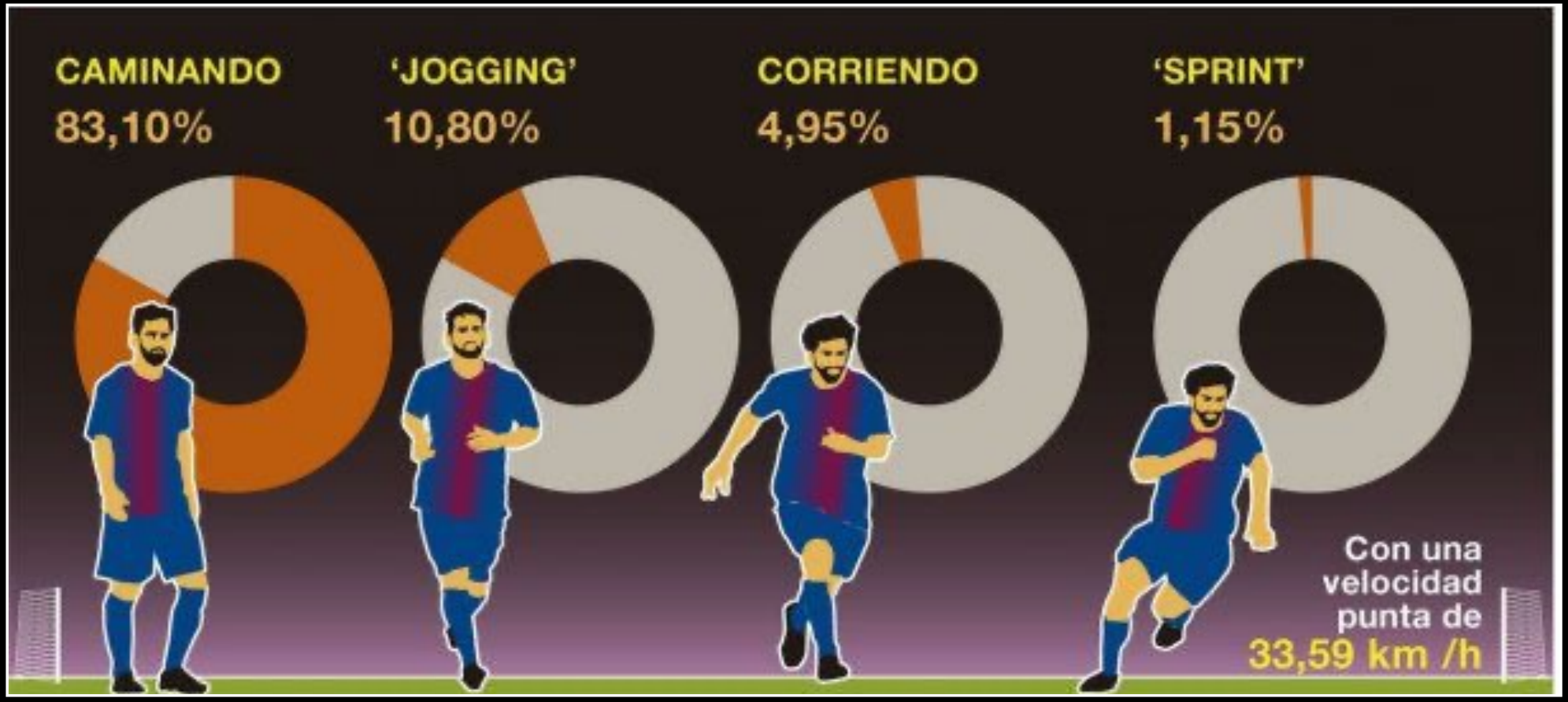
- Upper body
- Force transfer: Low body to upper body
- Core stability is key!
- isometric work
- High loads
- Unexpected situations
- Functional -> stand up!!
- Main muscles involved: Chest, triceps, deltoides….

Fight: Pull

- Upper body
- Force transfer: Low body to upper body
- Core stability is key!
- isometric work
- High loads
- Unexpected situations
- Functional -> stand up!!
- Main muscles involved: Dorsis, biceps….

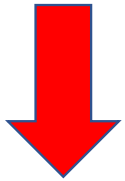
WHAT IS A SIMULATED PREFERENTIAL SITUATION (SPS) ?

Situation to generate events and sets of situations which predispose towards a state of action and response in a created **environment** that encourages the **imitation of behaviours** which are simulations of the game-sport and which **preferentially** affect the different systems according to the **intention** of the task, which in turn is guided through **rules**, **spaces** and the **number** of participating players.



UNDERSTANDING THE GAME WILL HELP US DESIGN BETTER SPS!

WHAT IS A SIMULATED PREFERENTIAL SITUATION (SSP) ?



"imitate" all the elements that are found in the actual game. Competitive and physical demands.

(Balagué et al., 2004)

Design exercises with different orientation or approaching levels (specificity) will help planning and controlling the load along the season.

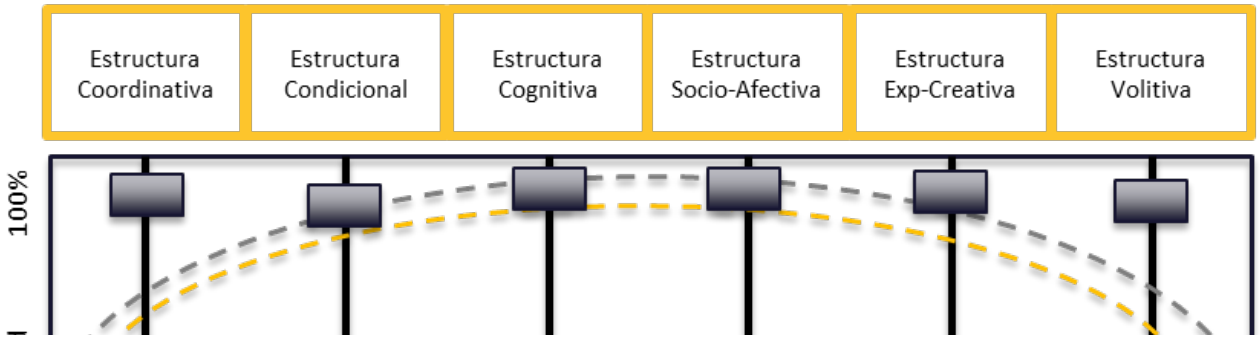
Create sequences based on the coach needs.

WHAT IS A SIMULATED PREFERENTIAL SITUATION (SSP) ?

It refers to the idea of focusing in one or some

structure that create the HA in the context of OT.

We can’t eliminate them! They are interrelated and inherent in the game!



WHAT IS A SIMULATED PREFERENTIAL SITUATION (SSP) ?

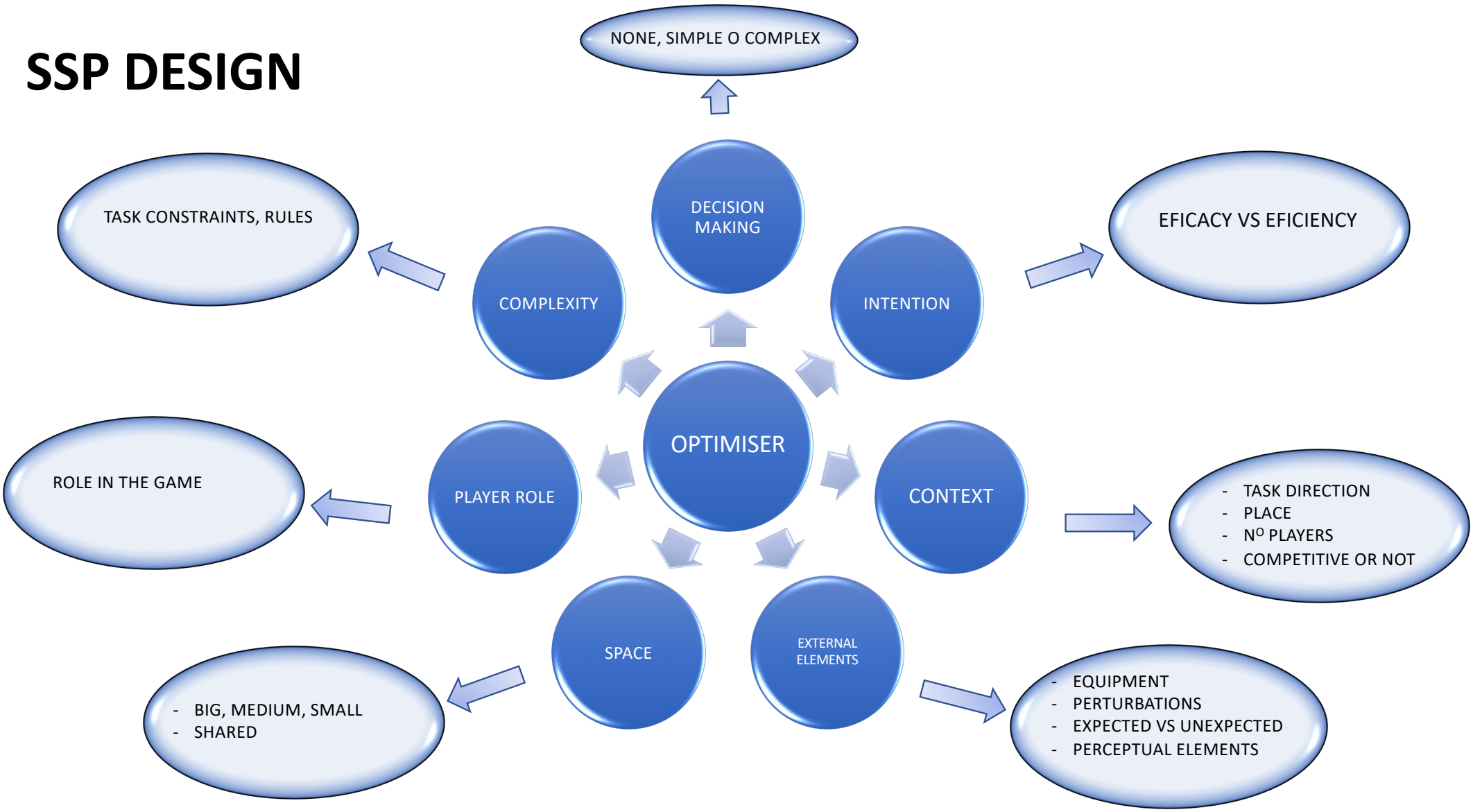
Tasks during training are gobal, are in group and they are designed in different timed secuences in order to be integrated in the context of the game. (Pol, 2014).

SITUATION OF COMPETITION?

Is where all the structures are active with higher intensity.

SPS with higher amount of stimulated structure will have a higher level of specificity

SSP DESIGN

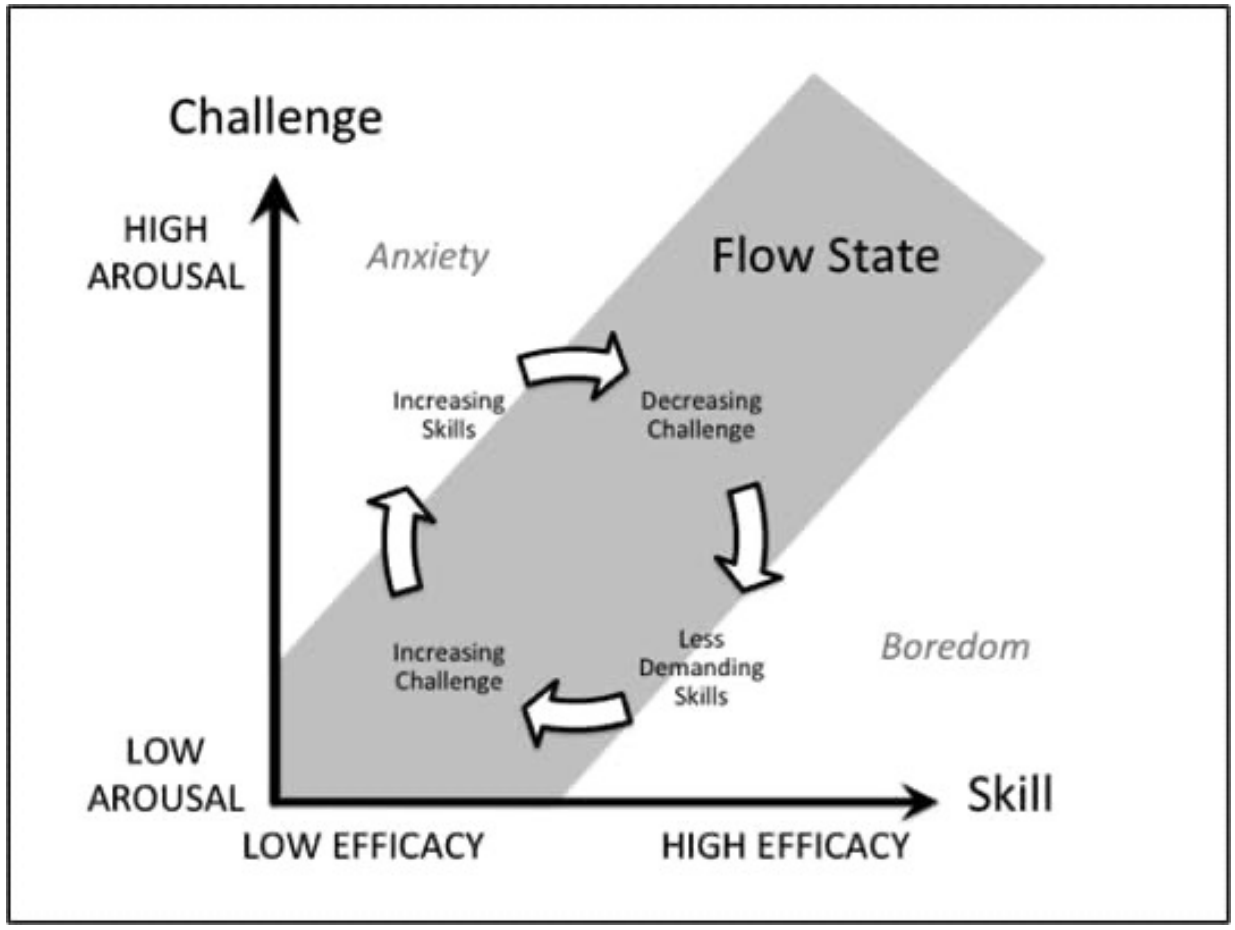


Material ARE FCB

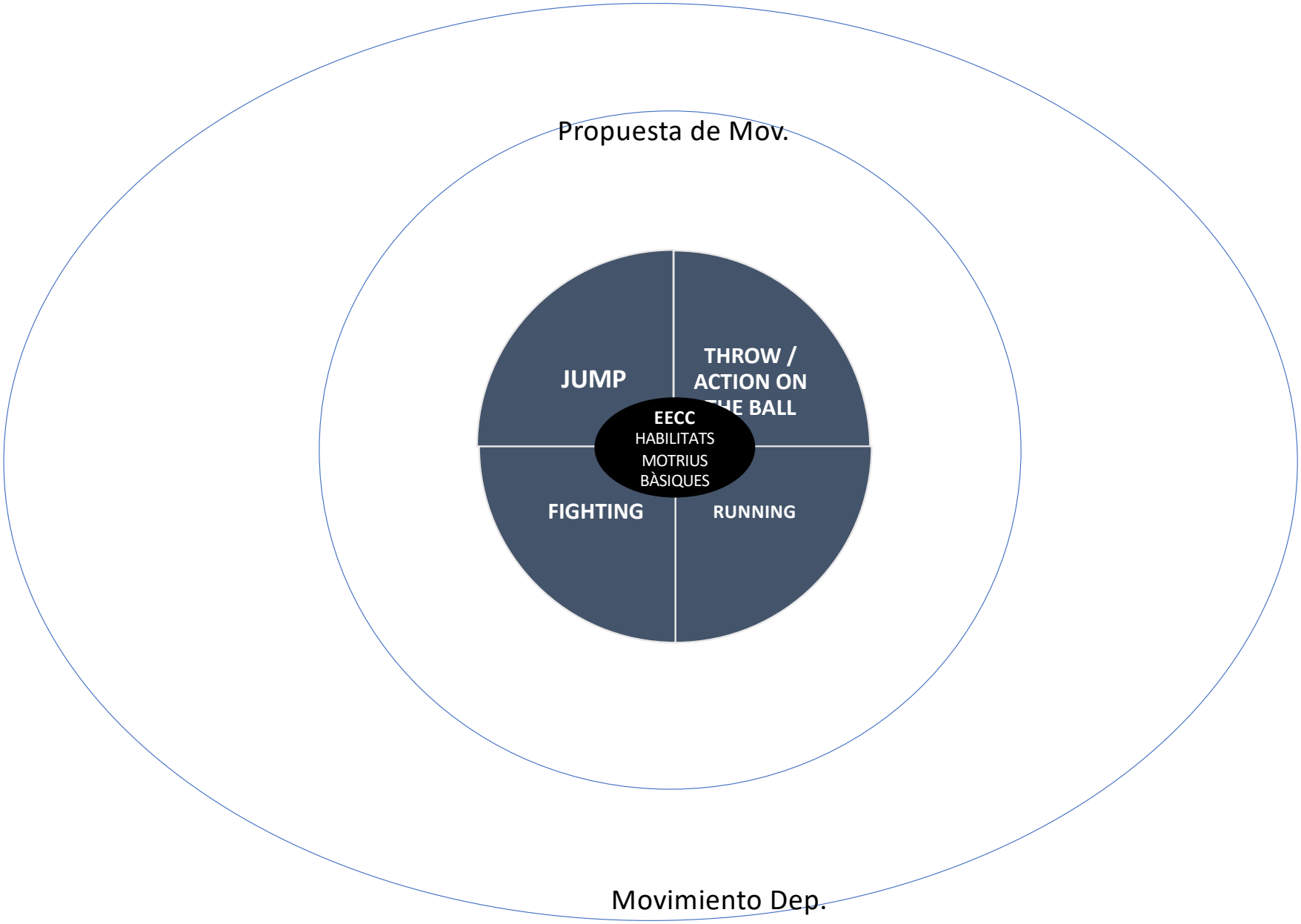
HOW TO DESIGN THE TASK ACCORDING TO GOALS AND PHASE

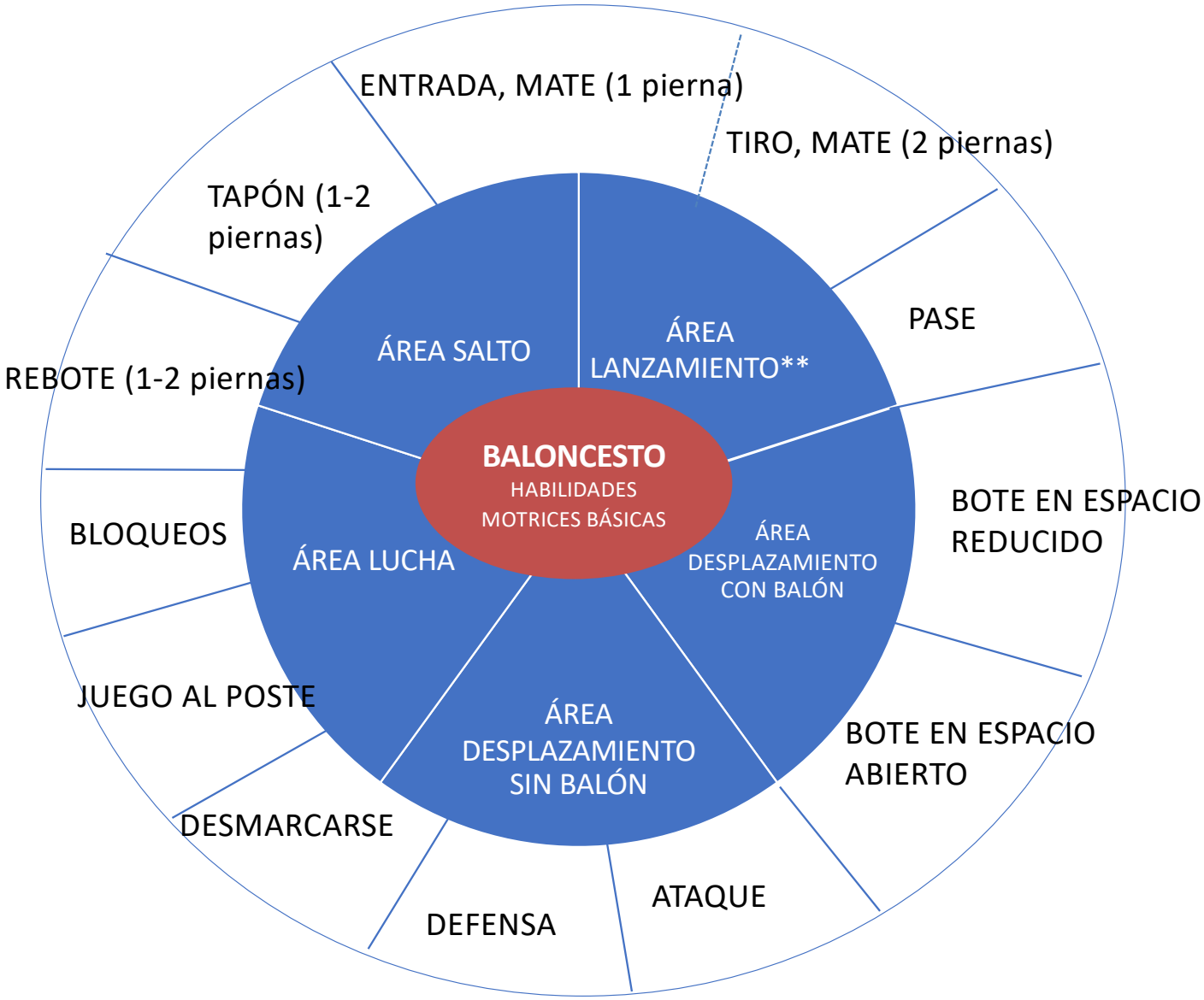
WORKING ELEMENTS	LEARN	TRAIN	PERFORM
Number of REPS	HIGH	MEDIUM	LOW
Time between REPS	MINIMUM	REAL	REAL or ABOVE
Number of Perturbations	NONE	SOME	ALL
Perturbation	NOWHERE	OUT OF THE CENTER	INSIDE AND OUTSIDE
Roles and groups	STABLE	CHANGE ROLES	CONSTANT CHANGES
Elements to remember	FEW	SOME	ALL
Motor elements	PRIORITAZE	AUTOMATIZE	CONTROLLED
Spacial elements	CLOSE - INTERNAL	GLOBAL	STRATEGY
Temporal elements	INTERNAL PACE	GLOBAL PACE	STRATEGY
Efficacy demands	MEDIUM	HIGH	MAX
Psychological demands	FEW	MEDIUM	HIGH

What is training?



ACTIVITY:
“THE SPECIFIC QUALITIES CAKE”


Propuesta de Mov.
JUMP
THROW /
ACTION ON
EECC
HABILITATS
MOTRIUS
BÀSIQUES
FIGHTING
RUNNING
Movimiento Dep.


BALONCESTO
HABILIDADES MOTRICES BÁSICAS
ÁREA SALTO
ÁREA LANZAMIENTO**
ÁREA DESPLAZAMIENTO CON BALÓN
ÁREA DESPLAZAMIENTO SIN BALÓN
ÁREA LUCHA
ENTRADA, MATE (1 pierna)
TIRO, MATE (2 piernas)
PASE
BOTE EN ESPACIO REDUCIDO
BOTE EN ESPACIO ABIERTO
ATAQUE
DEFENSA
DESMARCARSE
JUEGO AL POSTE
BLOQUEOS
REBOTE (1-2 piernas)
TAPÓN (1-2 piernas)

MULTU MESC!
GRÀCIES!
THANKS!