Module 1. Structured training

Just as the title states, this course establishes the basis for the structured training. The third course will be composed by four modules, namely: in module 1 we will develop structured training, which is a methodology typical for FC Barcelona that tries to include team sports characteristics; in module 2 we will deal with adjuvant training, which can be defined as a support training; in module 3 we will include optimizer training, devoted mainly to improve player´s performance in the game itself and, consequently, the team´s game; and lastly, in module 4 we will deal with structured microcycle and we will try to show which is the structure and justify our proposal.

The theoretical grounds that you will see below are based on contributions made by Professor Francisco Seirul lo Vargas and by the FC Barcelona performance area, headed by Joan Ramón Tarragó.

In the year 2014, FC Barcelona created its sport performance area. They established two essential goals inside this area: using knowledge and innovation to give support to the five professional sports and to be at the head of knowledge areas, in order to foster innovation and development in the sport activity and contribute to sustainable growth in the club.

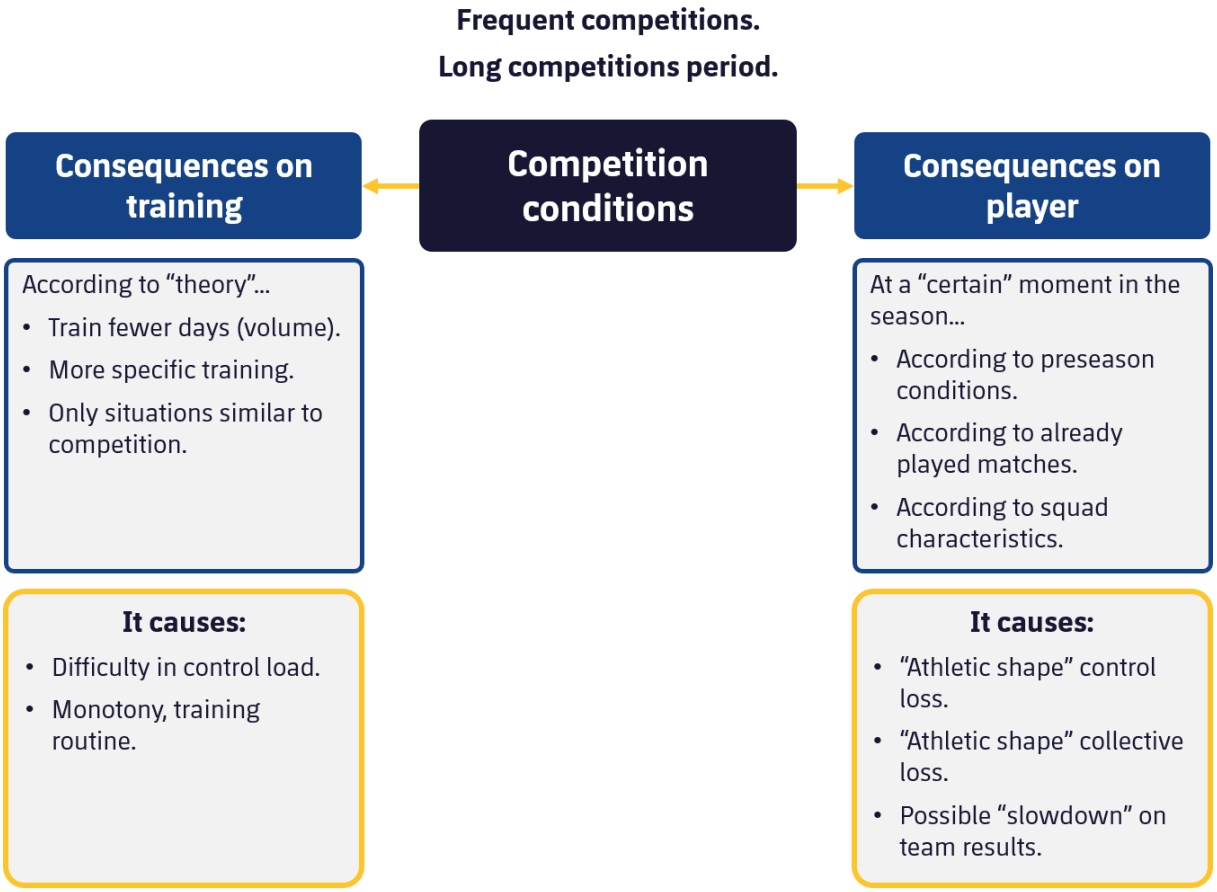
In this context of maximum demand in the constant search of optimization in sport performance, areas like motor learning and injury prevention have motivated the performance area in the club create an own methodology for collective sports. Now, what is the basis of this methodology? Well, the concept that includes this methodology is the one for “structured training”, which considers the sports human being-who in this case plays basketball-the essential pillar. This methodology allows the sports human being who plays in a certain team to have a good performance and to achieve an optimal performance level.

We will focus on the topic and establish, in the first place, which has led us to where we are.

What happens when the team sports characteristics take us to make a high number of repetitions during the whole sport season? There will be consequences on training: teams will have to train less (modify the volume) and do it with a more specific kind of training to be able to reach peak performance; therefore it will be necessary to use similar to competition situations. What will lead us there? This, at the same time, brings about a difficulty to control the load, since there will be a monotony derived from a routine in training, given the characteristics we have mentioned. However, this will not

only have consequences in training, but also in the player himself or herself. This will be determined, partly, by the pre-season's conditions, the number of matches played until season time and the typical characteristics for each squad. All these conditions can bring about lack of control in athletic shape, a collective loss of the athletic shape and possible decrease in performance, which can be transformed in negative results for the team.

Figure 1: Conditions for competition



Source: own adaptation based on Seirul·lo Vargas, 2003.

Therefore, an unavoidable situation rises with a training system based in the classic periodization, which is inherited from individual sports. Trying to train with a very similar perspective to individual sports, based in classic periodization, will have all these consequences we have pointed out.

According to Professor Seirul.lo Vargas (2003), during 20th century it is established that the training system develops in two essential fields: teaching and training. When we talk about teaching, we refer mainly to the mind, e.g., to teaching and learning processes based on behaviorist theories. Which are the behaviorist theories that can affect us? Well, psychology, pedagogy, didactics and methodology, e.g., what is possible to observe. On the other hand, we have the training that makes references to the body itself, e.g., all the performance training processes that are based on mechanistic theories, such as physiology, physics, medicine and biomechanics; all processes than can be

measured. This way, not only teaching based on mind, but also training based on body generates an atomized multidisciplinary model for collective sports.

Figure 2: Basketball in 20th century

Source: Seirul·lo Vargas, 2003, https://n9.cl/04sq

Baloncesto. Se desarrolla por medio de su...	Basketball. It develops by...
Enseñanza	Teaching
MENTE	MIND
Los procesos enseñanza aprendizaje basados en...	Teaching learning process based on...
TEORÍAS CONDUCTISTAS PSICOLOGÍA PEDAGOGÍA DIDÁCTICA METODOLOGÍA	BEHAVIOURIST THEORIES PSYCHOLOGY PEDAGOGY DIDACTICS METHODOLOGY
Lo observable	Possible to observe
S.XX	21st century
CIENCIAS QUE HAN SERVIDO PARA CONSTRUIR SUS APORTACIONES UN...	SCIENCES THAT HAVE HELPED TO BUILD THEIR CONTRIBUTIONS IN...
MODELO ATOMIZADO PLURIDISCIPLINARIO DEL DEPORTE	MULTIDISCIPLINARY ATOMIZED MODEL FOR SPORT
Entrenamiento	Training
CUERPO	BODY
Los procesos entrenamiento rendimiento basado en...	Training performance processes based on...
TEORÍAS MECANICISTAS FISIOLOGÍA FÍSICA	MECHANISTIC THEORIES PHYSIOLOGY PHYSICS

MEDICINA BIOMECÁNICA	MEDICINE BIOMECHANICS
Lo mensurable	Possible to measure

The classic paradigm is based on models reproduction by contrasted evolution. That is, the model is reproduced according to different aspects in relation to the following: the way in which regulations evolve; competition demands that can be modified in relation to regulations change (for example, going from 30 seconds possession to 24 seconds possession; evolution in trainer´s knowledge; evolution in social and economic assessment in basketball; and the evolution of technology and research applied to basketball. If you pay attention, these aspects are external and, consequently, external to athletes. Based on this paradigm, the model is constituted from sports and from society.

Figure 3: Classic paradigm

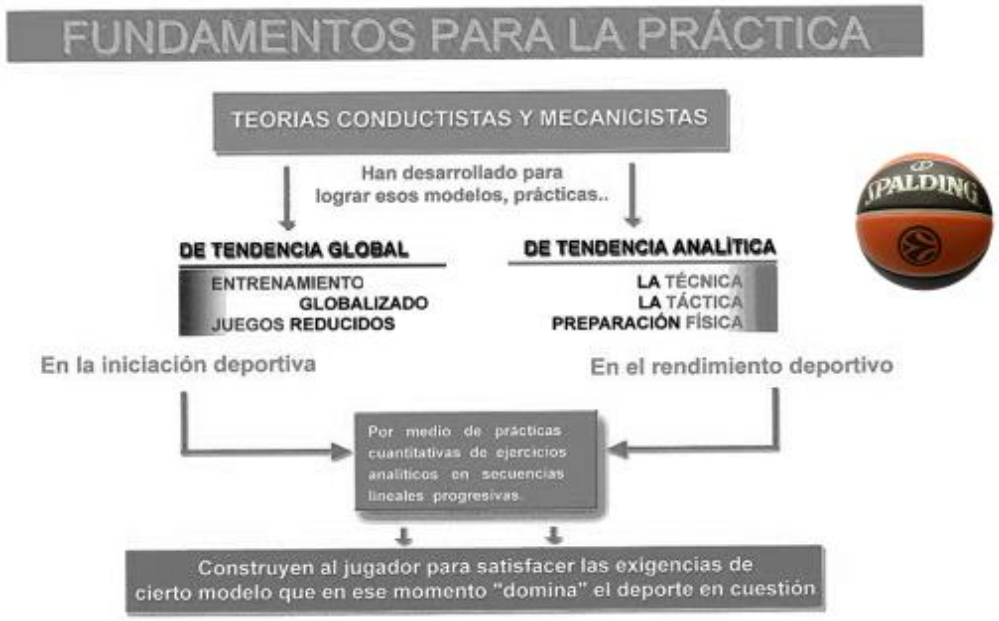
Source: Seirul·lo Vargas, 2003, https://n9.cl/04sq

Paradigma clásico	Classic paradigm
REPRODUCCIÓN DE MODELOS POR… “EVOLUCIÓN CONTRASTADA”	MODEL REPRODUCTION BY… “CONTRASTED EVOLUTION”
EL MODELO SE REPRODUCE SEGÚN:	MODEL GET REPRODUCED AS:
EVOLUCIONE EL REGLAMENTO	REGULATIONS EVOLVE
EVOLUCIONEN LAS EXIGENCIAS DE LA COMPETICIÓN	COMPETITION DEMANDS EVOLVE
EVOLUCIONEN LOS CONOCIMIENTOS DEL ENTRENADOR	TRAINER KNOWLEDGE EVOLVES
EVOLUCIONE LA VALORACIÓN SOCIAL Y ECONÓMICA DEL DEPORTE	SPORTS SOCIAL AND ECONOMIC VALUES EVOLVE
EVOLUCIONE LA TECNOLOGÍA E	SPORTS TECHNOLOGY AND RESEARCH EVOLVE

INVESTIGACIÓN APLICADA AL DEPORTE	
TODOS ELLOS EXTERNOS, AJENOS AL DEPORTISTA	ALL OF THEM EXTERNAL TO ATHLETES
Modelo se constituye desde el DEPORTE / SOCIEDAD	Model gets constituted from SPORTS/SOCIETY

Just as Professor Seirul.lo Vargas (2003) points out, behaviorist and mechanistic theories cited before have developed practices, in order to achieve these models, which can have mainly two tendencies: a global, based on globalized training and reduced games and an analytical one, based in different game aspects, like the technical, the tactical or the physical education. These tendencies are applied by quantitative practices of analytical exercises in progressive lineal sequences and, therefore, they build players to satisfy certain game models' demands; game model is at that moment what controls collective sports and basketball, with the characteristics typical to that trainer and also typical to players in the team, although in a lesser extent.

Figure 4: Global and analytical tendency



Source: Seirul·lo Vargas, 2003, https://n9.cl/04sq

FUNDAMENTOS PARA LA PRÁCTICA	PRACTICE BASIS
TEORÍAS CONDUCTISTAS Y MECANICISTAS	BEHAVIOURIST AND MECHANISTIC THEORIES
Han desarrollado para lograr esos modelos, prácticas	Have been developed to achieve those models, practices
DE TENDENCIA GLOBAL ENTRENAMIENTO GLOBALIZADO JUEGOS REDUCIDOS	GLOBAL TENDENCY GLOBALIZED TRAINING REDUCED GAMES
En la iniciación deportiva	At the sport initiation
DE TENDENCIA ANALÍTICA	ANALYTICAL TENDENCY

LA TÉCNICA LA TÁCTICA PREPARACIÓN FÍSICA	TECHNICAL TACTICAL PHYSICAL EDUCATION
En el rendimiento deportivo	In sport performance
Por medio de prácticas cuantitativas de ejercicios analíticos en secuencias lineales progresivas	Through quantitative practices of analytical exercises in lineal progressive sequences
Construyen al jugador para satisfacer las exigencias de cierto modelo que en ese momento "domina" el deporte en cuestión	They build players to meet demands of a certain model that at that moment "controls" sport activity in question

This classic paradigm which, we could say, is currently in a type of recession, has controlled our culture through long years, during which it has considerably shaped and influenced the rest or the world. Said paradigm consists of a series of ideas and values, among which we can mention the vision of the world as a mechanical system composed by different pieces, the vision of the human body as a machine and the vision of living in society as a competitive fight for the own existence. There was a belief in a limitless material progress through the economic and technological growth (Capra, 1998).

If we consider the 21st century, collective sports have experienced a change: currently the vision is developed around a complete vision of the athlete. This means that we no longer see the body and the mind as differentiated aspects, but as a whole entity. Therefore, teaching and training for situational sports training is a unique optimization process for sports human beings (basketball players, in this case) through cognitivism and structuralism. The latter are supported by sciences like organicist biology and neuroscience, and in theories like the systems theory, the information theory and ecological theories which achieve self-modelling, self-structuring in sports human beings that play basketball.

Figure 5: Basketball in 21st century

Source: Seirul·lo Vargas, 2003, https://n9.cl/04sq

El baloncesto en el siglo XXI	Basketball in 21st century
Baloncesto Se desarrollará por medio de...	Basketball It will be developed through...
DESARROLLO INTEGRAL DEL DEPORTISTA	COMPLETE ATHLETE´S DEVELOPMENT
CUERPO MENTE	BODY MIND
Su enseñanza y su entrenamiento es un proceso único de optimización del deportista	Its teaching and training are a unique process of athlete´s optimization
COGNITIVISMO	COGNITIVISM
ESTRUCTURALISMO	STRUCTURALISM
APOYADOS POR: Biología organicista Neuro-ciencias Teoría de los sistemas Teoría de la información Teorías ecologistas LOGRAN...	SUPPORTED BY: Organicist biology Neuro-sciences Systems theory Information theory Ecologist theory ACHIEVE...
Automodelación SHDB AUTOESTRUCTURACIÓN	SHDB Self-modeling SELF-STRUCTURING

Seirul.lo Vargas (2003) states that this phenomenon has a series of consequences that will provide a new paradigm, based on achieving self-structuring by differentiated optimization. And how is this self-structuring achieved? By setting certain elements like the followings:

- technical-tactical or coordinative-cognitive abilities, in which players show certain competence or level;

- observation of the impact that competition generates in players, that is, the way in which players develop in competition itself;
- constant acquisition of new knowledge by players about the game, about training and about themselves, that is, the way they evolve;
- the image players have about their own social image;
- and the knowledge players achieve during practice, by using technologies and adequate research means.

If you pay attention, all these aspects are typical in athletes. Therefore, this proposal is done taking sports human beings into account.

Figure 6: Self-structuring by differentiated optimization

Source: Seirul·lo Vargas, 2003, https://n9.cl/04sq

Consecuencias	Consequences
Paradigma nuevo	New paradigm
LOGRAR LA AUTO-ESTRUCTURACIÓN POR… "OPTIMIZACIÓN DIFERENCIADA"	ACHIEVE SELF-STRUCTURING BY… "DIFFERENTIATED OPTIMIZATION"
LA AUTO-ESTRUCTURACIÓN SE LOGRA POR:	SELF-STRUCTURING IS ACHIEVED BY:
LA INSTALACIÓN DE HABILIDADES TÉCNICO-TÁCTICAS EN LAS QUE EL JUGADOR PRESENTE CIERTA COMPETENCIA	SETTING OF TECHNICAL-TACTICAL ABILITIES IN WHICH THE PLAYER SHOW CERTAIN COMPETENCE
LA OBSERVACIÓN DEL IMPACTO QUE LA COMPETICIÓN OCASIONA EN EL JUGADOR	OBSERVATION OF THE COMPETITION IMPACT ON PLAYERS
LA CONSTANTE ADQUISICIÓN DE NUEVOS CONOCIMIENTOS DEL JUGADOR SOBRE EL JUEGO, EL ENTRENAMIENTO Y DE ÉL MISMO	CONSTANT ACQUISITION OF NEW KNOWLEDGE BY PLAYERS ABOUT GAME, TRAINING AND HIM/HERSELF
LA FORMACIÓN DE LA PROPIA IMAGEN SOCIAL	OWN SOCIAL IMAGE CONSTRUCTION
EL LOGRO DEL CONOCIMIENTO DEL JUGADOR DURANTE LA PRÁCTICA POR MEDIO DE	PLAYER KNOWLEDGE ACHIEVEMENT DURING PRACTICE THROUGH TECHNOLOGY AND

TECNOLOGÍA Y MEDIOS DE INVESTIGACIÓN ADECUADOS	ADEQUATE RESEARCH MEANS
TODOS ELLOS PROPIOS DEL DEPORTISTA	ALL OF THEM FOR AND TO ATHLETES
Propuestas parten SHDB	Proposals from SHDB

This paradigm makes us modify our thinking, our ideas and values about sports human beings: we consider them living creatures that seek constant dynamic interaction between two big blocks, one belonging to individual sports and another belonging to collective sports, in this case, basketball. That way we differentiate between reasoning and intuition, between analysis and synthesis, between reductionism and holism, between lineality and non-lineality, between competition and cooperation, between quantity and quality.

Figure 7: Constant dynamic interaction between individual and collective sports

Source: Seirul·lo Vargas, 2003, https://n9.cl/04sq

Paradigma nuevo	New paradigm
Las propuestas parten de SHDB	Proposals come from SHDB
NOS HACE MODIFICAR NUESTRO PENSAMIENTO, IDEAS Y VALORES SOBRE EL HOMBRE-DEPORTISTA COMO SER VIVO QUE BUSCA LA INTERACCIÓN DINÁMICA CONSTANTE ENTRE LO:	THEY MAKE US TO MODIFY OUR THINKING, IDEAS AND VALUES ABOUT SPORTS HUMAN BEINGS AS A LIVING CREATURE THAT SEARCH FOR THE CONSTANT DYNAMIC INTERACTION AMONG:
RACIONAL ANALÍTICO REDUCCIONISTA LINEAL COMPETITIVO	RATIONAL ANALYTICAL REDUCTIONIST LINEAL COMPETITIVE

CUANTITATIVO	QUANTITATIVE
PARA EL DEPORTE INDIVIDUAL	FOR WORLD SPORTS
INTUITIVO SINTÉTICO HOLÍSTICO NO LINEAL COOPERATIVO CUALITATIVO	INTUITIVE SYNTHETICAL HOLISTIC NON-LINEAL COOPERATIVE QUALITATIVE
PARA EL BALONCESTO	FOR BASKETBALL

When we talk about intuition, which is more typical in collective sports, we are talking about players´ ability to make decisions based on their feelings, not so much on rational facts or facts we could take as "scientific".

We could also talk about synthetic aspects, that is, about the ability of forming a whole in its parts, about the possibility that players be able to synthetize different characteristics against analytical actions.

Holism is related to team sports. Sports human beings will be considered as a whole.

In relation to non-lineality above lineality, we make reference to the fact that, habitually, in individual sports more is better, that is, if players are quicker in a 100 meters sprint, it is evident that they will have a better performance. However, in basketball, once we achieve a certain level, being quicker does not have to be a decisive factor to optimize sport performance.

In relation to cooperation, we refer to the fact that, contrary to most individual sports, players (sports human beings) have to cooperate with their partners to compete against the rival team.
Finally, putting quality above quantity has to do with the fact that we will not focus only on quantity, that is, in number of repetitions for a certain action, for example "we will only do series of 15 repetitions" or "we will do five minutes of a certain exercise", but we will focus mainly on what is happening in relation to quality.

That way, this paradigm is based on understanding human beings as a super complex structure, which is formed by interactions and retroactions among structures. We understand retroaction as an action by which each process´ result has an impact in the whole process, including it and modifying it. This super complex structure that shape human beings that play basketball is formed by substructures such as the conditional, the coordinative, the social-affective, the emotional-volitional, the creative-expressive and the mental; all of which will be later developed more extensively.

What we actually recognize as “abilities” are ways of assessing on part of processes that happen in a system and shape a certain structure. For instance, force and speed are the result of the engagement of different processes that belong to different systems included in the conditional structure of the sports human beings.

And which are the basic goals in the structured training that would allow basketball development? We could say that these goals are the following:

- to control training load,
- to have a good performance with a small number of training sessions;
- to vary training, that is, to generate (besides other issues) trainings that are attractive for players; and
- to succeed in a process by which the training load and the performance we want to achieve are quickly assimilated and the athletic shape maintained during the whole season, because of the great number of competitions hold each week.

All this can be achieved by structured training which is based on certain conditions for preseason and season planning, taking into account not only micro-structuring, but also certain conditions for building sessions and training systems that will have their basis in the generation of tasks we will name "preferential simulating situations". Everything will be done according to the needs of sports human beings that play basketball.

Before going on, we have to highlight an important aspect: the influence that complex dynamic systems have on the training development.

This systemic and holistic conception of players will give us insights into the conditions in which sports human beings should develop their training activities to obtain their differentiated structuring, that is, the structuring each of them need to achieve their peak performance.

This way, we can observe typical content for structured training, adequate for basketball, given the presence (and other factors) of the ball, the baskets (the one players have to defend and the one in which they score), partners and rivals. Everything is in continuous interaction to get these high self-structuring levels through all its components.

The content of the tasks we propose will show high variation and practices should also be related with high variability. From the new paradigm, teaching and training represent a unique process optimization that will manifest as properties of each structure, since these properties can only be achieved through the dynamic interaction of the systems group and the global consistence of their interactions, which is a feature for what it is stable, coherent and not easily vanished. This is what makes reference to global consistence: it being stable.

That way then, we should create typical structured training's tasks that propose dynamic interaction and consistence, aspects that are not covered by the repetitive and analytical exercises, typical in individual sports based on other theories.

Complex dynamic systems' theory appears as a way to analyze collective sports. It includes living creatures' hierarchic organization, such as human beings themselves. Human beings are built by a cell; a group of cells, in turn, will form organs; organs will generate systems and structures that allow sports human beings to develop abilities and to apply them to basketball, in this case. Understanding this hierarchic organization and the dynamic integration that leads them to self-regulation represents the theoretical basis to build a training science specific to basketball, inspired and based in proposals by Professor Seirul.lo Vargas (2003).

This way, sports human beings themselves will be able to self-regulate through stimuli they find in basketball practice. In these systems, integration is dynamic and non-lineal, and interaction between both subsystems implies the emergence of new properties that do not belong to any system.

Genes that are part of individuals are individual units relatively independent and they can match with each other and alter their interaction state when they do it with other units. These interactions will bring about system reorganization, in an interactive and adaptive network that has new own collectivity properties that were not present in an individual way. These genes match to form cells and all of them organized in various groups will form human beings, providing them with a series of characteristics, abilities and properties that will not be present in a cell, or in a gene, or in a group of cells by themselves.

Figure 8: Example of self-organized units

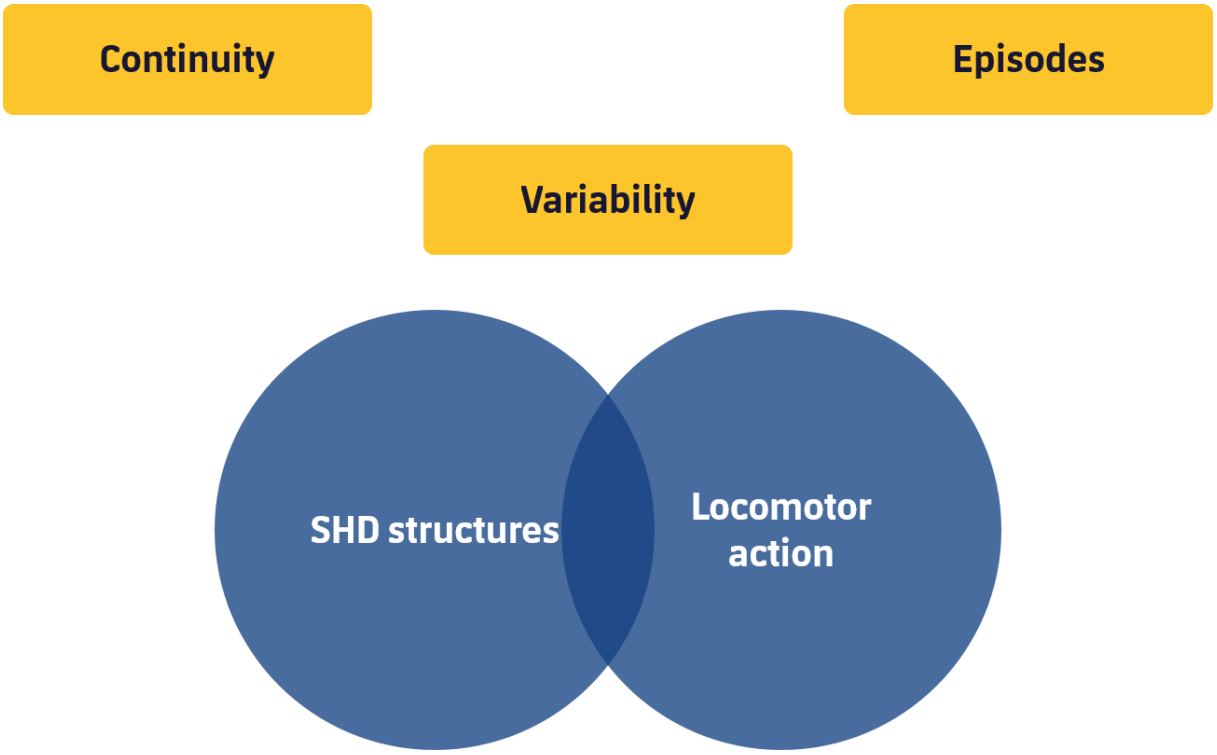
SELF-ORGANIZATION

Individual Units →	Adaptive Interactive Network →	Dynamic Collective Properties
10^4 Genes	300 Cell Types	Body
Cardio-myocytes	Heart	Synchronized Beat
Neurons	Brain	Cognitive
People	New York City	Culture Society
Birds	Flock	Fitness
Fish	School	Fitness
Bacteria	Biofilm	Fitness

Source: Coffey, 1998. p. 882.

Structured training is based on what sports human beings that play basketball share with others, which is the common interest for defeating rivals and wining to obtain compensation for the effort and dedication this goal requires. Training is presented as a dynamic specific correlation done with variability and continuity, conforming to game sections. This training is called "structured training", because it is based on sports human beings and in their expression through motor action, that is, everything they do on game courts, thanks to the locomotor system and the rest of the systems that contribute for this to occur.

Figure 9: Training dynamic correlation

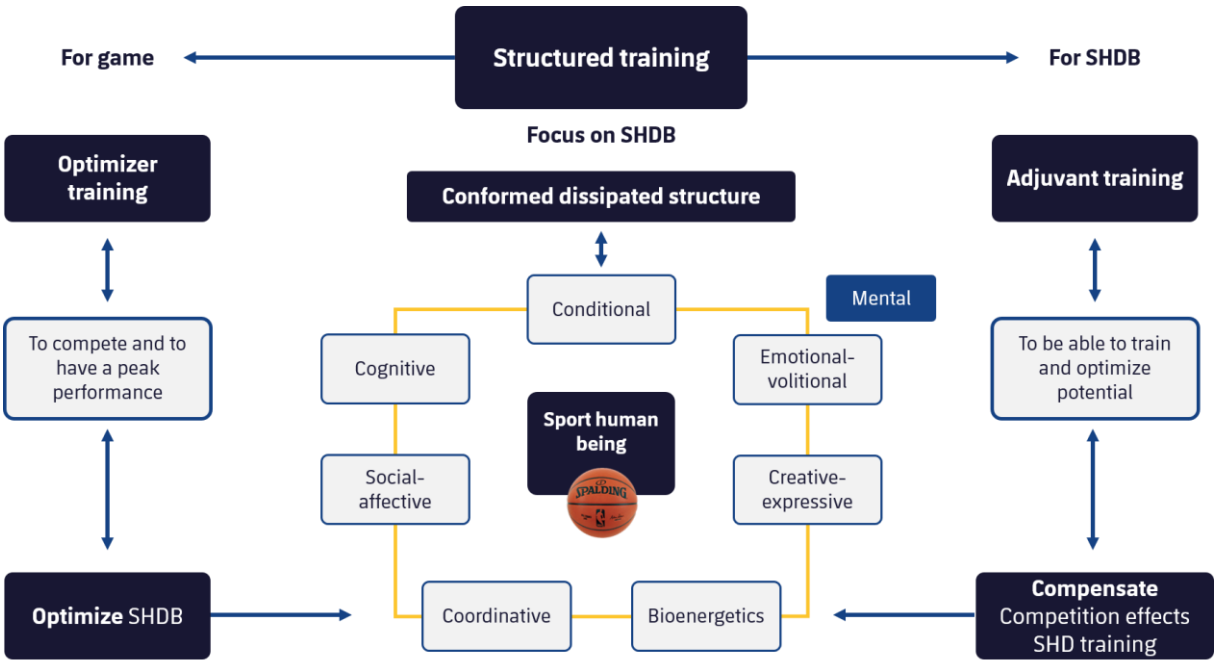


Source: own creation.

This way, relations that exist between the different structures and their organization facilitate relations with the basketball competitive environment.

Figure 10 summarizes structured training.

Figure 10: Structured training



Source: own adaptation of Tarragó, Massafred-Marimón and Seirul.lo, 2019.

The first thing we have to highlight, just as we can see in the figure, is that focus on this training are sports human beings that play basketball.

These sports human beings who play basketball are understood or defined as conformed dissipated structures, living creatures that are different from one moment to the other; they are in constant change. Structured training is based in two big sections: adjuvant training and optimizer training. Adjuvant training allows athletes to train and optimize their potential. Its big goal is to compensate the effects that competition and training sessions have on players. On the other hand, optimizer training is useful for competing and having the highest level performance. Its main goal is to optimize sports human beings that play basketball at the competition itself, while, as we pointed out, adjuvant training would be more focused on human beings training and it allows them to support the load to train and compete.

We understand sports human beings that play basketball as dynamic biological systems, in which system's substructures and different movement applications interrelate with each other; all of them are relevant. We could say then, that the whole is greater than the sum of the parts and that consistency among their interrelations determines the efficiency of optimizers in sports human beings that play basketball.

Here holistic and biological practices are built according to the general theory of complex dynamic systems that are focused on sports human beings that play basketball.

Figure 11: Sports human being understood as a complex biological dynamic system

Source: [Untitled image about complex biological dynamic system], s.f., https://bit.ly/38CYKeZ

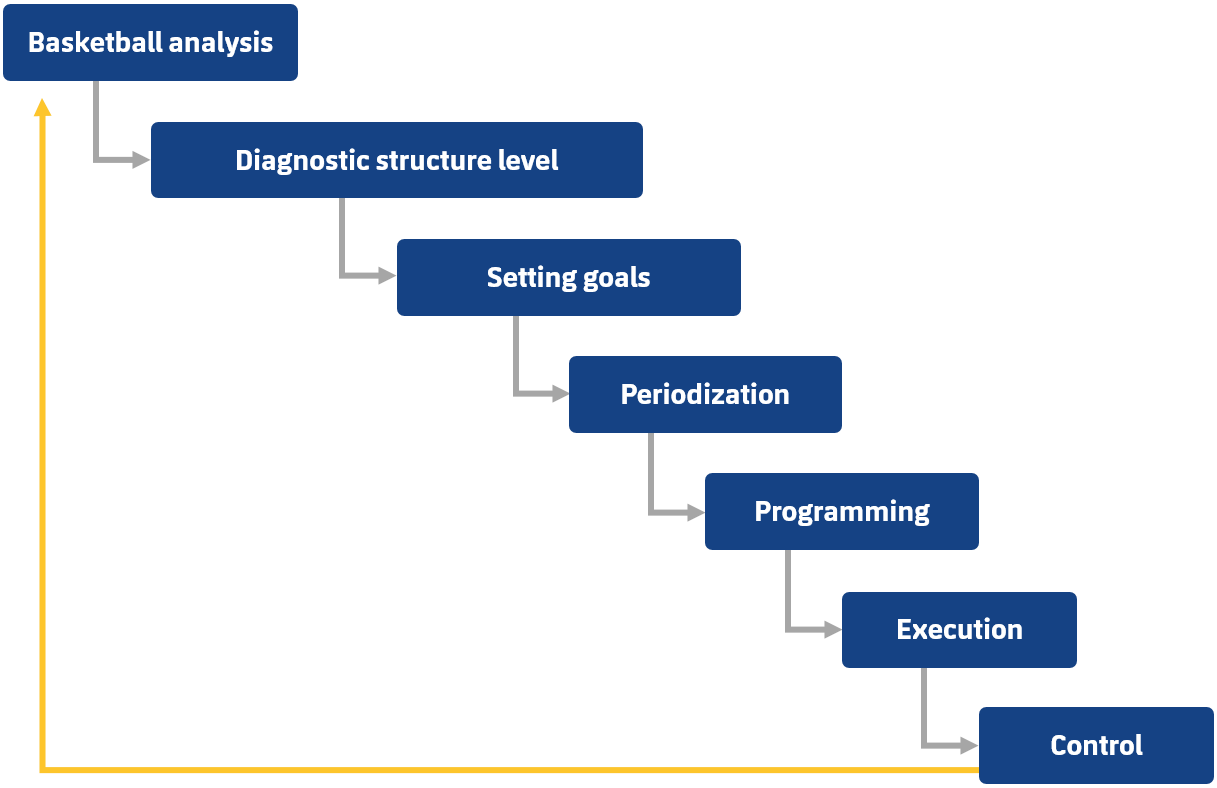
If we focus on the definition for "holistic", we should highlight that it comes from the Greek *olos*, which means "whole, total". It is the idea that postulates that systems, whether physical, biological, social, economic, mental, linguistic or others and their properties must be analyzed as a whole and not only through their parts.

The holism main principle was concisely summarized by Aristotle in his metaphysics: already in the year 384 BC he stated that the whole is greater than the sum of its parts. Therefore, he emphasizes the importance of the whole, which is greater than the sum of the parts and besides he gives relevance to these parts interdependence.

We can mainly distinguish two approaches to understand training: a biological theory and a holistic theory. Each one of them represents a series of different goals. If we focus on biology, we can say that the goals are to achieve a physical, general and specific to basketball development, to master the basketball technique and tactic, and preserve them and benefit health (Harre, 1987). On the other hand, if we focus on the holistic tendency, we talk about wining, having fun, growing physically, psychologically as well as socially.

Living creatures can be defined as complex structures that self-organize themselves and they are characterized by the ability to constantly reproduce by an autopoietic organization. Autopoietic is a quality for the systems that represent a network of processes that can create or destroy elements in the same system in the presence of disturbances in the environment; although the system is modified; said network remains invariant during its whole existence and it keeps its identity. Just as we have pointed out in the previous figure, structured training is considered and organized in two areas of action. The optimizer training's main goal is, precisely, to optimize performance in all competitions; this training prepare athletes to compete during the competition itself and, consequently, it specifies that training tasks be carried out in a specific environment and with specific elements. Figure 12 shows the elements that would be part of optimizer training planning in basketball.

Figure 12: Elements that are part of optimizer training planning in basketball



Source: own creation based on Solé, 2002.

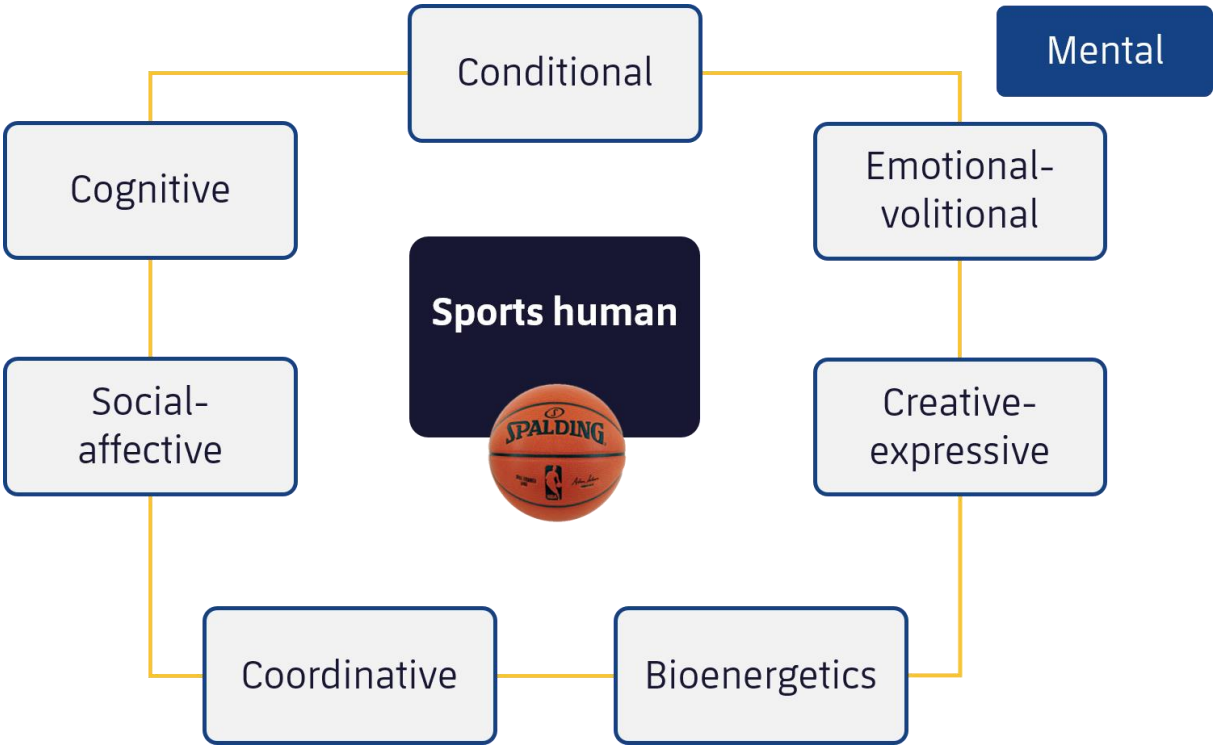
And if we talk about adjuvant training, we can say that it includes all type of practices that provide sports human beings that play basketball well-being and health protection, necessary to carry out tasks that optimizer training implies every day and to optimize the conditional structure. These practices have their focus in systems demanded by basketball and which allow sports human beings that play basketball to achieve the desired performance level, based on elements and on an environment typical for basketball, whether in parts or as a whole.

Structured training foresees competition requirements and tries mainly to adjust stimuli to the needs and evolution of sports human beings that play basketball. In structured training they talk about self-conformation and optimization for all structures and they say it requires interaction, cooperation and synergy among the systems that are part of the structures of sports human beings that play basketball.

Each structure identified during basketball practice is conformed, in turn, by different systems and subsystems' processes, many of them are shared by diverse structures and they are, therefore, in constant interaction. We distinguish then a series of structures proposed by Seirul.lo and Tarragó (2019); we will define said structures below:

- **The bioenergetic structure:** it is related to energetic channels. Provide with and renew bioenergy and, consequently, it fosters development of all the structures, the own energy included.
- **The cognitive structure:** it is responsible for the perceptive-motor process. Its functionality is shown in getting, identifying and treating relevant information related to game environment.
- **The coordinative structure:** it is related with laterality, limbs dissociation, rhythm, space. Its functionality is manifested in the possibility of executing the desired movement, no matter the environment conditions in which it has to be done. It pretends mainly to develop two concepts: efficiency and effectiveness. Efficiency refers to the number of resources necessary to achieve a goal, while effectiveness will be the completion of that goal.
- **The conditional structure:** it is related to physical abilities, that is, to force, speed, movement range and resistance. Its functionality is manifested in the ability to generate intramuscular tension, what we know as "muscle force" and the different manifestations related to speed and resistance space-time.
- **The creative-expressive structure:** it is related to expressive ability and match/training interpersonal relations. This structure builds communication ways that are useful, necessary and related to game identity and the ways of living and interpreting it. It represents the self in relation to our team.
- **The social-affective structure:** it includes relation and identification with partners and the role of each of them inside the team. Its functionality is manifested in quality and stability of interpersonal relations based on emotions and affection that occur during basketball specific practices.
- **The emotional-volitional structure:** it is related to emotions and own moods, such as anxiety, tiredness or stress. This way it identifies and regulates emotions and desires that drive to move or not. It is the structure related to the effort and dedication that are necessary to achieve desired goals.
- **The mental structure:** it is related to self-organization that sports human beings have about all structures, that is, it would include all the structures that are part of sports human beings.

Figure 13: Structures that are part of sports human beings

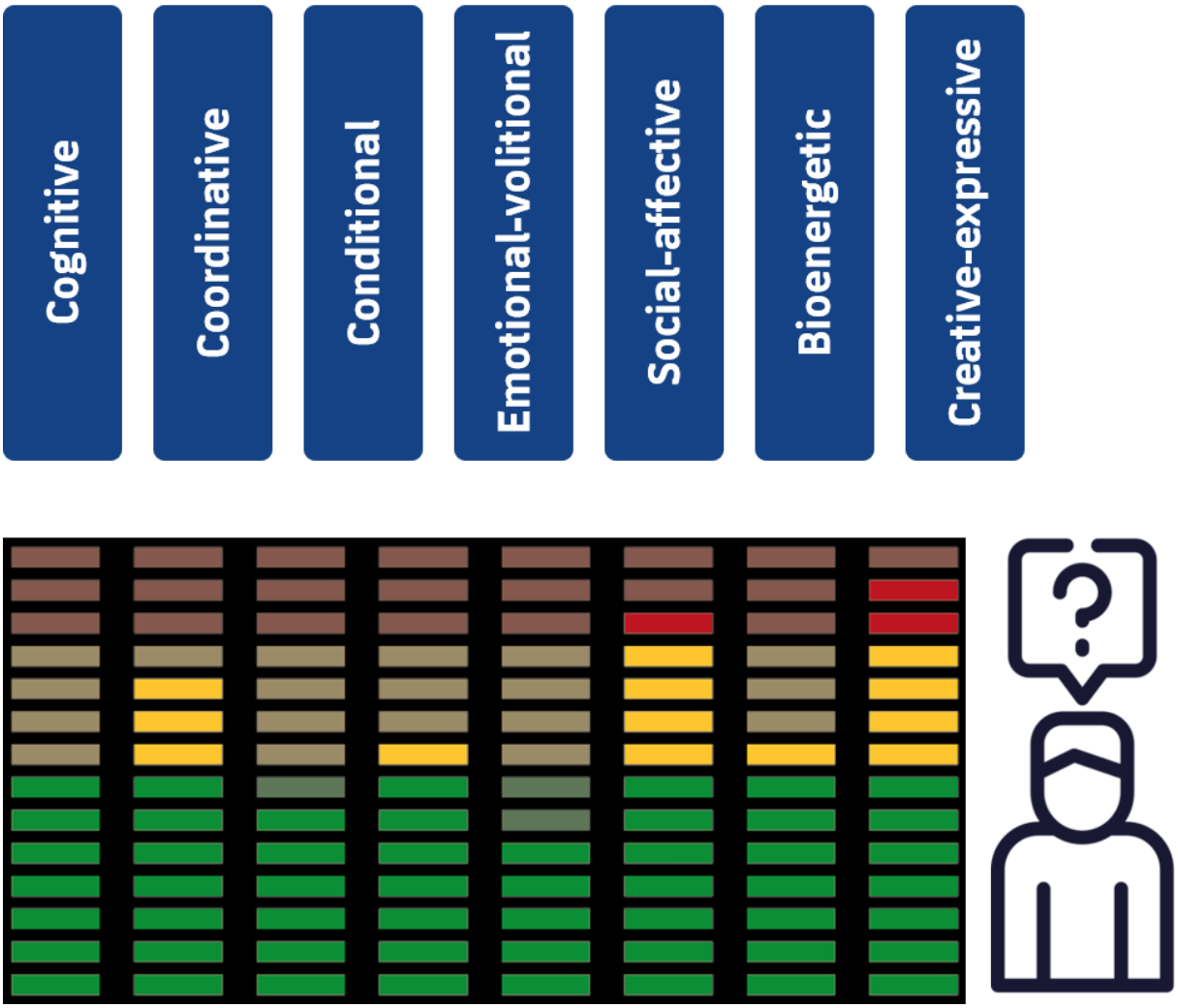


Source: own creation.

Performance in basketball depends on structures interaction. That way, performance or athletic shape in basketball will be achieved thanks to optimization in structured training. To optimize structured training we should value interaction, cooperation and synergy of all the systems that are part of different structures, in such a way that this global whole gives them a functional ability that is different to the ones they possess separately. There is a need to support inter and intrasystemic interactions that result in optimization.

This way, we could understand this interaction, this cooperation, this synergy as a musical equalizer in which we should try to modulate the different structures and this equalizer, in one way or another, has an effect on our training to foster interactions and synergies that will provide self-regulation for sports human beings that play basketball, in a way that optimizes sport performance.

Figure 14: Modulation in the different structures that are part of sports human beings



Source: own creation.

The development of sports human beings that play basketball, that is, their evolution in performance will be achieved when all described structures are optimized in order to influence performance.

We will now deal with the basis for structured training practice in basketball. Just as Solé (2002) points out that, thanks to interaction with environment, e.g., energy, material and information interchange, sports human beings' functional abilities fluctuate in a certain range of dynamic instability, which can allow performance optimization.

According to complex dynamic systems theory, instability is a necessary concept to optimize systems. Structured training will be optimized through the planning of design, execution and control of an activity to obtain desired results based on what is specific to basketball, according Varela, Maturana and Uribe (1974) expressions in relation to complex dynamic systems and instability.

Variability is another concept we should take into account within the basis of structured training in basketball; varied practice in training sessions corresponds also to essential basis. It´s been decades that various authors have supported other ways of approaching motor learning. Schmidt, for example, in the year 1975 proposed variability in child motor learning. For this author, motor learning happens as an answer to different game situations and it is adjusted to demands in the game itself.

New response parameters appear by modification of speed, distance covered and necessary force for response, by motor action against the goal we want to achieve in each of the new situations that may occur. That way, basketball motor schemas will be reinforced by practice variability; it will be based on nature and living creatures' complexity by change models that are based on non-lineal comprehension of causality where small things can generate big effects and vice versa.

This way, in relation to this last observation we distinguish the well-known butterfly effect. This effect comes from chaos theory and implies that if there is a small initial disturbance in a system, it may generate, by an amplification process, a considerably big effect in the mid or long term. This way, if we start from two almost identical global worlds or situations, but in one of them in the future there will be a butterfly flapping its wings and not in the other one, in the long term, the world with the butterfly and the world without the butterfly would end up being different. In one of them a large-scale tornado may hit the world and in the other one nothing would happen. And all of this would happen due to the butterfly flapping. This finds its basis in the proposal made by Edward Norton Lorentz (1963), who described this phenomenon.

Learning processes seem to be more successful and they induce a change of behavior when the teaching processes are deviated from a lineal approach. The differential learning approach takes advantage of fluctuations in a complex system. In the case of sports human beings that play basketball, they increase it through non repetition and constant change in movement tasks, that is, in the motor action when they add stochastic disturbances fluctuations appear, just as Shalloon (2012) indicates.

Then, variability is proposed as a resource against repetition, since repetition does not produce the necessary fluctuations to modify its state in involved systems. Therefore, variability introduction would be necessary in training sessions.

Later on, by introjection, that is, appropriation of external aspects to sports human beings and retroactions that influence system activity or productivity, it will be possible to optimize all of the structures that are part of sports human beings that play basketball.

Another great principle for basketball practice is specificity; training has to be specific to basketball. This way, for example, ball displacement and conduction in football are

carried out with the legs, arms are necessary for balance and for protection against rivals in contact. However, in basketball, displacement is carried out by the legs, while the interpersonal relation ability among partners is done with the ball, through the hands, which makes a whole difference with football.

Therefore, there appears a different motor expression and, consequently, training to develop or to optimize both sports should be different. That is why training according to specificity is proposed. This way, analytical and closed tasks will not be the most appropriate for the structured training proposal in basketball.

After understanding sports human beings that play basketball as complex beings, as we said before, tasks must be built in another dimension and they would require specific basketball training. These adjustments and interactions among systems and structures are in a constant imbalance in order to be in optimizer predisposition and, that is why, training situations cannot be analytical, closed or homogeneous. This way, trainers are compelled to build situations typical to team sports and precisely basketball.

In order to include different training elements, like basketball specific qualities or abilities, it is necessary to describe how those qualities or abilities are manifested in this sport and to see the subjective value that each of sports human beings that play basketball gives to this quality in their own performance configuration.

We will now deal with another important issue that is planning structured training in basketball. Structured training proposal is to adjust loads and contents to the needs of sports human beings that play basketball.

In order to achieve it, there is a need to identify the composition conditions of what is called "player´s sport life". It is a complex task, since each player has lead his/her life in a unique different way through all his/her experiences. Their self-conformation, therefore, depends on these previous experiences that will have to do mainly with the type of sport life they have led.

Here we see an essential part of structured training: the preferential simulating situations, training organization by tasks called “preferential simulating situations”. They are groups of situations that predispose to a state of action and response in a certain environment that allows imitation of behaviours that will be simulations in a basketball team and which coincide in a preferential way in different systems, according to the imperative intention of the task in question, directed, for example, by rules, space and number of players.

These preferential simulating situations will be defined and extracted from game analysis and interpretation, and they have to be optimizers for sports human beings that

play basketball through global tasks, preferably in groups and not with the goal of learning a determined exercise, but with the goal for the basketball game itself.

Then, using motor tasks that include basketball essential elements facilitates the development of specific motor abilities (technique), that is, development of coordinative structure and of varied execution patterns that the competition itself will demand.

Therefore, the characteristics and abilities of sports human beings that play basketball will be the guide for their training process through structured training, mainly through preferential simulating situations.

Another important block would be the one that includes planning, structured training cycle and structured microcycle. In this section, we believe it is important to highlight that Spanish basketball league (ACB) and the Euroleague imply that competitions be held during long periods of time and, that way, they can get to 90 matches by season. These competitions include at least a match every seven days and often two or three competitions per week. Because they are long periods of time. These long periods of time put sports human beings that play basketball under a very large competitive stress. This load must be accepted as a highly specific load and it is collected and considered as such in planning for structured training microstructure. Structured training develops a way of organizing training called “structured microcycle” and it becomes the smallest structure in programming; during season microcycle will include the whole period in which there is a competition. It considers competition as a load that modifies and conditions the different structures from the training period that goes from competition to competition. We call “structured microcycle” to the time that passes from one competition to another and "structured training cycle" to the three weeks for training planning.

Structured microcycle must get the best possible training and consider competition loads in dynamics of week load; it is the most important element that conditions the rest of the sessions. Therefore, different types of loads and recovery will be applied, according to needs. These loads will be of different intensities: high, medium and low. The structured training cycle should allow us to plan in the short term with more or less structured microcycles, according to competitions held in that period; the fourth week is planned after the first one is finished and so forth.

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