

# FOOTBALL INTELLIGENCE and TACTICAL ANALYSIS

*e-book*



MINDFOOTBALLNESS

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## Introduction

It is no secret that over the last few decades football has undergone a significant transformation in the world, but particularly in Europe. In modern football, teams play extremely dynamically, leaving players even less time and space to take appropriate action. High pressure, complex tactical applications, penetrating passes. The game of information; hide your intentions while trying to anticipate your rival's decisions. The diversity of tactical solutions and the characteristics of the best teams in Europe presents us, as a football community, with a great challenge, and despite the fact that catching up, and certainly staying among the best in European football borders on the impossible, we should understand what components determine the advantage of what we call in Poland – a 'Western schools'.

We work hard on the training grounds and our infrastructure and training equipment is of the highest quality. Our activities are monitored, analysed as far as possible, and are often a reference point for further work. We try to control the intensity, but do we know what intensity in football is? One of the training directors at one of Europe's leading football federations and the UEFA educator described intensity as the result between workload and overload. It can be physical, tactical, or mental strain, and the accumulation of all these parameters creates an 'intensity' of work for players in football. The intensity, however, is not tantamount to its volume, although it depends on it. It is no secret that during a match, a player is subjected to many other stimuli and that mistakes that occur over time are not so much due to a lack of physical preparation or technical skills as to a lack of decisions. In football, the effect depends on the quality of performance. Performance depends on the decision taken. The decision depends on tactical awareness and understanding → understanding is determined by the quantity and quality of the information collected, which in turn depends on the level of attention, awareness and how much the player can see. A former Arsenal FC head coach, Arsene Wenger, at one of the conferences indicated that *"The problem in football is that you learn how to play [the wrong] way round - first execution, then decision making and perception last. (...) I have lost many top players because their head was on the ball and they were not seeing what was around them. As a player, whenever I get the ball I have to analyse, then decide and finally execute. Perception plays a huge role in this. Basically, I came to the conclusion that it is about getting as much information as possible before I get the ball. I call that scanning. (...) What is interesting is that very*

good players scan six to eight times in the 10 seconds before getting the ball and normal ones three to four times. That is a major step for improvement. My challenge is to get my players to know which the best choice is and make the optimal decision every time they get the ball.”. This little detail is determined by our standards. Our work culture, the context we give to our training measures and the conditions we want to create in them. That is why the term 'how' we work is more important than the term 'what' we do. **People learn by interacting with their environment, by living in the relevant environment, by experiencing, making mistakes, and drawing conclusions, by communicating.** This very area, in football, depends mainly on the proper use of analysis. Do players want to develop under the guidance of coaches who only tell them "what to do", or is it also important for them "how" - to recognize problem situations and "how" to react to them? We are trying to meet the trends from Western schools, trying to talk more and more about understanding the game, space scanning and decision making. We look for isolated forms of training, we give ready-made solutions to provide our players with the right habits to see, understand and make better decisions. We talk about "going out into position", "looking over the shoulder" whilst forgetting fundamental issues such as intention, awareness, team identity, work culture and just the right intensity, in a context and conditions similar to those in which our players are forced to seek effective solutions when facing their opponent. **We should not confuse understanding of the game with intelligence.** Everyone understands football in their own way but playing effectively means playing intelligently. Intelligence is, to a great extent, the ability to perceive, understand the information gathered and adapt to the external conditions that arise during the match. In this paper, I will use research conducted in the form of interviews and conversations with 15 coaches working at the highest game levels in Europe and the world, to better understand the concept of intelligence in football and to look at possible forms of solutions on how to develop intelligent players. The list of coaches who agreed to answer questions about this work is: Prof. Vitor Frade, Rui Sa Lemos, Jorge Reis, Jorge Maciel, Vitor Severino. Moreover: João Tralhão, Nuño Mauricio, Allan Steele, Adam Owen, Tsuyoshi Takano, Octavio Zambrano Viera, Ljuban Palinić, Dan Micciche, Ian Coll, Kris Van Der Haegen and Kostas Katsouranis. Due to the scientific complexity of perception processes, this document will be partly supported by research done by Geir Jordet from the Norwegian School of Sports Sciences. In this place, I would like to express my gratitude for their involvement, time

and knowledge. Together, we will look at concepts such as cognitive processes, perception and the way intelligence are put into the context of football, and the proper use of tactical analysis as a guiding measure in training work.

Chapters 2 and 3 will be devoted to analysis and its proper use in the planning and implementation of the football training process. **To respect the privacy of the coaches who took part in the research for this work, I decided to keep their quotations anonymous.** With the subsequent reflections and statements of the coaches, we will try to find an answer to the question of how tactical analysis and training under appropriate conditions can help players to achieve a higher level of quick and effective action during a football game.

## **1. The concept of 'intelligence' in football - characteristics, development process.**

While many coaches want to work with players who demonstrate a high level of intelligence in the game, and consequently assess their potential in relation to that level, it is not entirely clear whether the concept of intelligence in the context of football has been properly defined in advance. There is a significant difference between intellect and intelligence. Basing on *Psychology Today* author, Graham Collier, we can state that the intellect was seen to denote cognition - the rational mental processes that constitute 'knowing': the ability to identify and analyze, memorize, and categorize. The physical characteristics and implications of whatever thing or event is perceived by the senses, thus bringing one to comprehend the objective facts of the external situation. Intelligence, however, was regarded as a mental faculty in its own right - a function of consciousness taking one beyond the facts as such, to suggest meaning or purpose, and determine the course of action to be taken. It is a level of consciousness that is triggered by the arousal of feeling: the psychological phenomenon that accompanies every act of cognition - the 'felt-thoughts' that bring to mind one's latent emotions and sensibilities that accompany not only every sensory experience of the external world... but also attend those moments when internally generated abstract ideas and thoughts take over consciousness. It is the way we feel, and the strength of feeling, that determines how we evaluate the facts of life and how we are driven to respond to them.<sup>1</sup> We are therefore faced with the possibility of using two separate methods of teaching football, which in the final phase of players' development (entering the collective stage of perceiving and understanding football) determine the effectiveness of our work. While the duplication of previously prepared scenarios of the game (working in a reproducible way), the enforcement of the given solutions, i.e. working with memory, shapes only the intellect in unnatural conditions, training in structures similar to match situations, where under pressure of time and space (field of play, opponent, teammate) the player is forced to make independent decisions depending on the context prepared by the coach (appropriate working conditions). This has a key impact on the development of intelligence in the game. What is it in reality, and how do the coaches taking part in the research for this work interpret it?

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<sup>1</sup><https://www.psychologytoday.com/us/blog/the-consciousness-question/201205/intellect-and-intelligence>

One of the surveyed coaches, working on a daily basis in one of the best academies in the world, describes intelligence in the context of football as: "consciousness of the context of specific situation on the pitch, with consideration of the ball, teammate, opponent and space. It is a recognition of what, where and why (if) pass the ball in effective way and how to bring the advantage for the team.". However, another trainer refers to it a little differently: "for me, football intelligence manifests itself in all dimensions related to the game's actions. Most of the time, we associate intelligence with the player's decision-making ability in the field, which is associated with the cognitive dimension. However, from my perspective, a player's decision-making results from a set of influences associated with different manifestations of intelligence. For example, emotional capacities are crucial to affect decision making, such as emotional control and the ability to focus on the task. Under the same logic, considering that the social intelligence of the player manifested throughout the process has direct consequences on technical interactions with his teammates, it is also a determining factor to increase the efficiency and effectiveness of his actions.". As coaches, in order to stimulate players in this area properly, we should look at what stands at the very beginning of the cognition process - the cognitive processes that form the basis for the development of intelligence in football.

**Cognitive processes** are all those mental processes that allow a person to gain orientation in their environment. Thanks to it, an individual can obtain information and build knowledge about the outside world as well as themselves. The foundation of this system is **perception**; a process that provides us with contact with reality, which means with events taking place outside the nervous system, from the very first moments of our lives. This is possible because we are born with such neurophysiologic structures, known as sensory systems, which provide the basis for the occurrence of elementary mental processes. A sensory system is a part of our nervous system which consists of the sense organ /receptor/, the nervous pathway and a corresponding centre in the cerebral cortex. A properly built sensory system is the basic requirement for the occurrence of an elementary mental process. The perception process starts with the sensory organs' perception of a stimulus, or more precisely, the nerve cells that specialise in the reception of specific types of stimuli, called receptors. Please note that it starts with the perception of a stimulus, which is

a kind of physical energy /acoustic wave, light, mechanical force, etc./, content neutral, through a receptor where physical energy is converted into bioelectrical energy, which in the form of a nerve impulse reaches the appropriate centre in the cerebral cortex where the sensation occurs. **Sensations** are the simplest mental processes which reflect in the perceiving mind, the individual properties of the recorded stimuli, e.g. colours, smells, sounds, shapes, heat, cold etc. It can be said that this is the stage of the perception process, which runs from sensations to identifying the properties of objects /is the so-called bottom-up process of perception/. As a result of these processes, observations appear in our mind, which are a comprehensive reflection of an object that can be described by the content of impressions. At this stage of perception, I know as much about this object as the information provided by the content of impressions. I can answer the question of what it is and thus describe the object. This is an extremely important stage in the perception process because only in this way can a person gain knowledge about the characteristics of the world around us. (e.g. what is the bitter taste or red colour). It is only at the second level of the perception process (top-down process) that the perceived objects are given meaning. This is possible thanks to the confrontation of perceptual representation with mental data collected in long-term memory both by the subject (multiple perception) and provided by the environment, e.g. about the name or function of the object (an apple, to eat; this is Dad, and this is Uncle). Thanks to thinking, which processes mental data, the perceived objects gain meaning - they become balls, animals, toys, etc. At this stage of the perception process, the questions we can answer change, such as "What is it? What is it for?" The experience gathered in the form of permanent representations guarantees the constancy of perception, which occurs when the perception of an object does not change despite changing conditions, protecting us from errors in perception, although, on the other hand, it may become the cause of errors and illusions in perception. **Perceptual processes improve during a person's actions, the goals of which they serve. Therefore, their development can be stimulated through organising this activity.** Therefore, children must be given the opportunity to undertake activities that require perceptive activity, such as: manipulative and constructive activities, watching, drawing, listening to music. In the process of education, in a form appropriate to the age, tasks requiring targeted, analytical, and synthetic

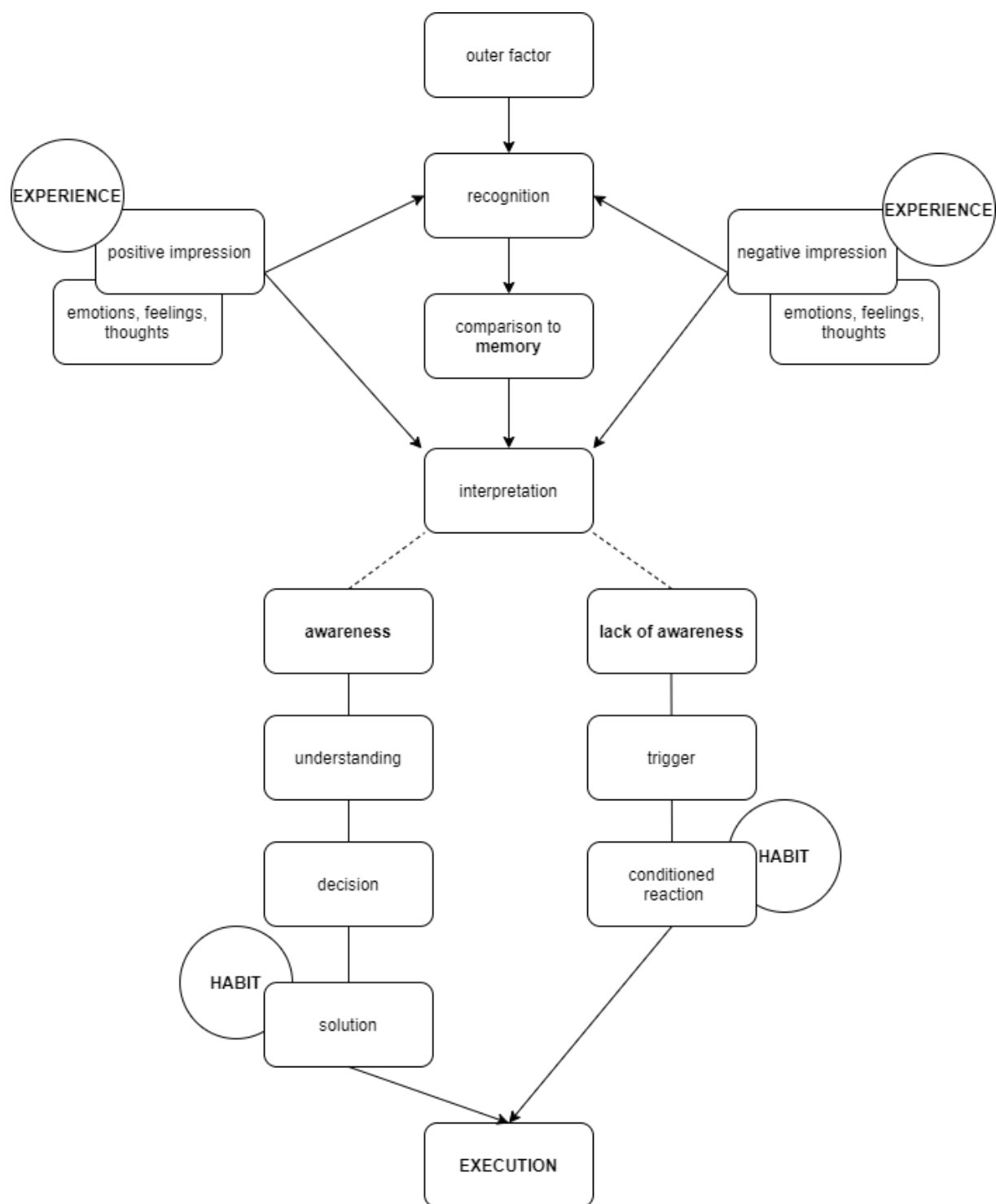


perception should be set. When targeting perception, it is important to ensure that the child has the verbal means to determine the content of the observations.<sup>2</sup>

At this stage, we are able to see the link between the perception processes and the tools we use to teach football, meaning that the conditions we create for our players and the behaviours we expect them to adopt in order to solve their pitch situations effectively. Figure 1, on the next page, shows how the cognitive decision-making process works. Thanks to its understanding, we will be able to refer to decision making as a fundamental process determining the effectiveness of individual and, consequently, collective actions during a football game.

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<sup>2</sup>Anna Żmijewska, *Psychologia*, zeszyt naukowy nr 2/2011, Wyższa Szkoła Ekonomiczno-Humanistyczna im. prof. Szczepana A. Pieniążka w Skierniewicach, Wydział Pedagogiczny, p. 11-13



**fig. 1 – Cognitive process of decision making.**

*Prepared by: Sławomir Morawski, Ljuban Palinić – for: 6th Annual Analytics Summit, 2020.*

As we can see; the very process of observation, of recognising an external stimulus, does not in itself guarantee effective decision-making or implementation. As we have said before, this is determined by memory. That is why it is so important for the athletes to perceive, identify problematic situations and, by means of **guided exploration**, look for solutions in training conditions that are as close as possible to real conditions in which the importance of their actions will be reflected in the sporting result. This is not because the coach said so, but because I, as a player, when making this decision, am experiencing its real value and see a real impact on the quality of my game. This experience has a long-term effect on learning and gives the player a real tool that will positively influence his self-esteem, self-confidence, and the quality of his actions on the pitch in the future. Our tools and the training process should be aimed at stimulating the experience based on positive impressions, with the indication of the stimuli that will be experienced during the match, based on memory, will be interpreted as known with a sense of influence. Only then will the player be able to look carefully at the key factors that make up the context and instead of seeing it as a disturbing reactive stimulus, aware of his skills and previous confrontations with the situation, he will undertake a decision that will lead them to an effective solution. One of the coaches says: "imagine that player A is in a context where decision making is a closed situation between options into option A or option B the football intelligence developed will be something linear, rigid and static. Now imagine that Player B is in a context where decision making is made in a context with variability of choices, different problems, multiple options, options created by the player and opposition. For example: who is the best driver? The driver in the middle of Arizona, with hundreds of miles without others drivers or that moto-driver in the middle of Mumbai City with a lot of complexity and hundreds of stimulus around him?" It is the environment in which our perceptions are formed and in which we are forced to act effectively under the pressure of time, space and competition that determines our effectiveness. How we are acquainted with this environment and to what extent we can make mistakes. Are we forced to follow the instructions of others, or are we learning within a certain framework, but still based on experience? The next participant explains that: "faced with various game situations, the footballer must evaluate the possible solutions and then make a decision. The evaluation of the decision shall take precedence over the solution. The culmination of this evaluation is the decision making. Both concepts – evaluation and decision

making ability - are directly related and lead to an effective performance for the collective good.". The next speaker clearly states that these capabilities „ are what separates the top players from the lower level players. As a coach its vital that we put the players in situations in training that they have to challenge their football intelligence. That's the ability of the player to assess the situation on the pitch and apply a tactical, technical action, physical movement pattern and a psychological response.", while another trainer perceives the decision making process as being: "everything in football - you can be great technically, tactically and physically but making the wrong decisions you can be a poor player". Figure 2 illustrates how the decision-making process in football works.



**fig. 2 - Decision making process in soccer.**

*Prepared by: Sławomir Morawski, Analysis and Cognitive Aspects in Football, 2018*

How much the player sees and knows is one thing, but the quality and how the player will use their knowledge is quite another. Very often the coaches are satisfied that their athletes will raise their heads up, turn their heads to try to scan space or maintain an "open body posture". One of the most underestimated aspects in football training is the explanation of intentions. A factor that determines every decision. How can a player perceive the game, look for information and decide if they do not know what they want? **Perceptual processes are only a tool and our task as coaches is to provoke players to use them during the game so that they can see their usefulness.** Knowing the decision-making process and how it shapes the basis of intelligence in the game, let us answer the question: **what moments in the game and information should a player decide during a football game?** Which information is crucial for his next action with the ball to be effective and how to obtain it during the game? Football, as a team sport, is characterised by 4 key moments which require a player to constantly "update" the playing field situation. In fact, this is quite a challenge because observing the ball as the "most important factor" in a football game is attractive to the brain of an average player. This is because it is the habit that has been rooted in the player's mind for the longest time; it starts already in the egocentric stage (where the player, as a child, sees the world in perspective: me and my ball). This is perfectly natural, because a child expresses itself and pursues its own goals by game, playing, scoring goals, often even running with the ball straight to the opponent. However, things get more complicated for the players, who at the level of the football of eleven still devote most of their attention to the moving ball. How can a player act effectively for the team if their level of intelligence still functions at an egocentric stage? One of the educators says: "during decision making process, all of the components are equally important, but they are all different. If the scanning process isn't right, it will be difficult to take the right decisions. If the decision making of the individual doesn't fit into the collective tactical approach, the player will be misunderstood by his teammates. There will be a lack of efficiency in the decision making process. If the execution of the decision isn't a quality execution, the assessment (the outcome) will be negative. The most difficult part of the decision making is the reading of the scanned environment/data; how does the player read the space and time elements and how does he/she see possible solutions?". So, we see that the demands placed on football players in a collective context are huge. The process of teaching football, in a complex

environment, should encourage players to work with the appropriate level of awareness. I deliberately do not use the concept of concentration here, because concentration, as opposed to awareness, is based on the exclusion of part of the information in order to prioritise only certain factors of the environment, which increases the risk of subjective interpretation and the margin of error. Another of the respondents in his speech pointed out that effectiveness in football depends on: "ability to see, recognize, predict, anticipate and execute the right pass, movement or action with the right speed and into the right space in the correct moment of the game. It of course depends on the process of collecting the correct information with applicable context to the situation and choosing a particular technique, action, or tactic which is of benefit to the desired outcome. This decision will be dependent on intelligence developed through prior experience and learning on how to capture this information which is already stored memory that could have been acquired through trial and error, reflection or repetition that becomes an unconscious skill."

**Many players still confuse kicking the ball to their teammate with passing it.** They do not understand the intentions based on time and space on the pitch. From the perspective of the player as an independent unit, football provides, as we mentioned earlier, 4 moments which should be a signal to "scan" the space, i.e. to look for information about what is happening on the pitch (we will talk about the methods of collecting information at another point); and based on which factors to implement their intentions. These are:

- a) either myself or a teammate has got the ball
- b) either myself or a teammate has lost possession of the ball
- c) the ball is approaching me or a teammate
- d) the ball changes its keeper [sector, zone]

**At the team level in football, technique as an isolated aspect of the game does not exist.** Technical action of the highest quality can only be present during the game if it comes from a clear tactical understanding, since it is a tool, a concrete solution embedded in time and space. We should therefore rely on **technical-tactical** content. Another coach who has gathered experience in some of Europe's best clubs says: „I describe intelligence as a player's thought process from awareness to the moment of action. The action will express everything that the players has

understood, anticipated, judged, decided and intended. For effective decision making, the most important is awareness but it is not about what the player saw. It is about a combination of how the players see and interpreted a situation and a speed of thought process.". Therefore, which factors are the reference points (information) that consequently determine the effectiveness of a player's decision? Due to the characteristics of football as a team game, these are:

**a) the ball**

**b) opponent**

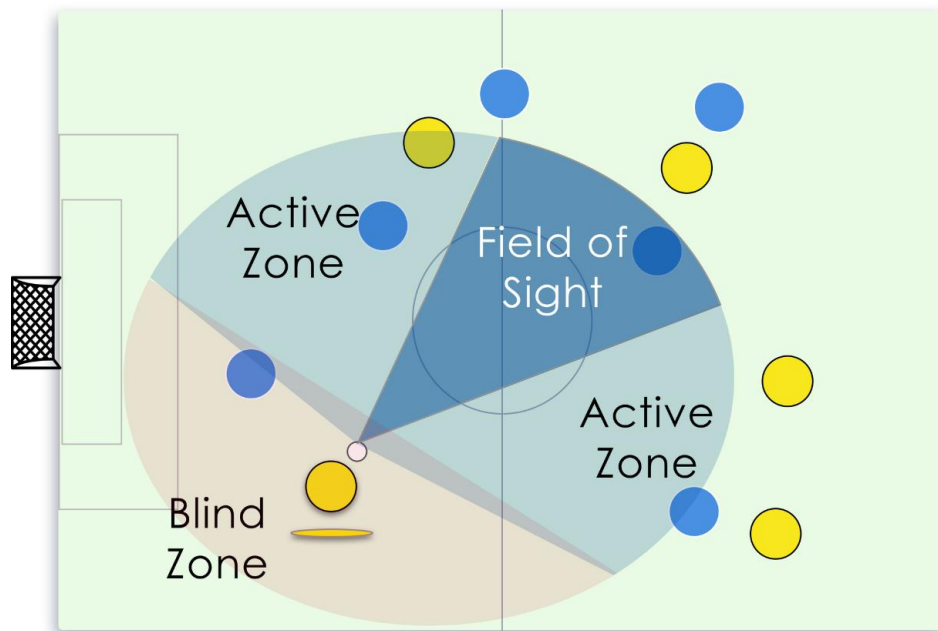
**c) a teammate**

**d) space**(+ *numerical structure of people in area → influence on the amount of **time** to act, potential directions of creating an advantage in the game*)

*(e) the dynamics (the result of correct interpretation of the above information and its volatility)*

*(f) angle and direction of operation (result of correct interpretation of the above information)*

Based on this information, a player may be able to make informed decisions to act effectively during a football game. But how should a player act to be able to properly perceive and interpret this information? Practical perception processes in football are the answer to our determinants as people. As shown in **Figure 3**, the range of our vision is incomplete and, according to various sources, ranges from 30-40 degrees of **optimal vision**, 120-140 degrees of **spatial vision**, up to 160-180 degrees of the whole angle of vision (one-sided: about 60 degrees towards the nose, up to 107 degrees towards the side).



**Figure 3 - Range of vision in the context of a football game**

*Prepared by: J. Genoud, S. Morawski; Cognitive Process During The Game, rondos. futbol, 2018*

The ability to recognize objects that are not directly in front of us (in the optimal field of vision), i.e. in the so-called "active zones", is called **peripheral vision**, while (in the context of a football game) everything that is out of our sight belongs to the so-called "**blind zone**". Proper management of the active zones, the field of vision, and the blind zone requires a number of specific actions from a player during a football game to maintain his attention and knowledge of the changes taking place around him at the highest level, thus directly affecting the quality of their decisions. These are:

- a) conscious observation of the game field by means of the visual organ - **scanning**
- b) maintaining optimal body orientation on the pitch - **open posture**
- c) keeping an appropriate **position** on the pitch - **perspective**
- d) **direct contact** with the opponent



It is worth mentioning that "scanning", mentioned above, as coaches we should understand precisely **as conscious, active observation** of the game field; head movement (scan), eye movement (microscan) and their frequency in relation to the 4 key moments in the game, from the previous subsection. Both in terms of peripheral and **stereoscopic vision (perception of depth)**. In relation to scientific sources, scanning in the context of a football game, as well as other team games, is defined as the perception of components in a specific order. Scanning is supposed to allow us to get the right perception, perspective, a whole range of events taking place around us, but only at a limited interval of time, because everything that takes place around us cannot be seen without interruption. Therefore a scanning is defined as looking at parts of an array in succession. This makes it possible to obtain an appropriate perception of the ambient array, but only over time since the array cannot be simultaneously perceived. Events in the environment may be temporarily occluded, but nevertheless, they are still perceived, because different events seem to coexist phenomenally although they have been looked at sequentially. **Exploratory activity** is activity initiated to detect information, while performatory activity is initiated to achieve something or manipulate some aspect of the environment. The difference is one of intention, not attention. More specifically, exploratory activity denotes scanning for and use of information that involves adjustment of the head and sensory organs to the ambient energy fields.<sup>3</sup> The natural consequence of these activities will be to generate anticipation capacity [based on an understanding of the observed phenomena]. In the context of football, **anticipation is not synonymous to the ability to predict**, although it is this ability that is the key, first foundation for effective anticipation. In simple terms, anticipation is prediction in action, for which cognitive maps are used. **Cognitive mapping** is a process composed of a series of psychological transformations by which an individual acquires, stores, recalls, and decodes information about the relative locations and attributes of the phenomena in his everyday spatial environment. Cognitive mapping can thus be thought of as a marriage between spatial and environmental cognition, where spatial cognition is defined as: ...the knowledge and internal or cognitive representation of the structure, entities, and relations of space; in other words, the internalized reflection and reconstruction of space in thought. In effect, a cognitive map is a mental devise and store which helps

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<sup>3</sup> Geir Jordet, *Perceptual Expertise in Dynamic and Complex Competitive Team Contexts: An Investigation of Elite Football Midfield Players*, Doctoral dissertation, Norwegian University of Sport Sciences, 2004, p. 19-20

to simplify, code and order the endlessly complex world of human interaction with the environment. We can refer to them as 'convenient shorthand symbols that we all subscribe to, recognise and employ'. It is in effect a mental representation of spatial/environmental knowledge. This construct is thought to exist because it is assumed that people store information about their environment which they then use to make spatial decisions which guide behaviour. Cognitive maps then suspend impressions, thoughts, feelings and ideas until, for some reason, consciously or unconsciously, the mind solicits, changes, and often distorts or manipulates its contents for some immediate purpose. In this way cognitive maps (images) allow us to bridge time, by using past experiences to understand present and future situations.<sup>4</sup> In the context of exploratory activity, in addition to scanning, it is also the concept of maintaining appropriate body orientation that is crucial for the effectiveness of the decision made and the continuation of the game with a team advantage. In combination with an appropriate scanning mechanism, the player can act more dynamically and when he comes into possession of the ball, he may be able to enforce his decisions more smoothly. The essence of the attitude, in his statement, was very accurately assessed by one of the coaches: "it's related with plasticity, the capacity of adaptation of the players. It's a connection that should respect the singularity of each one respecting the collective. It means that each player must adjust himself to what emerge. It's something that concerns a player but at the same time add something to the team proposes to solve the problems that emerges during the match." Another coach, on the other hand, aptly adds that: „when visually / spatial and the bodily / kinesthetic types of intelligence converge, then the player must draw into his/her empirical knowledge of the game, and make a decision based on experience, information that has been gathered while playing the game, in order to make a decision; the game is the best teacher." And it is thanks to them that we can create the best conditions for our players to learn and solve problematic situations in a match context. Without considering the six key points of reference, scanning, body orientation or position and direct contact will only be tools in the hands of the player to collect information that does not condition decisions.

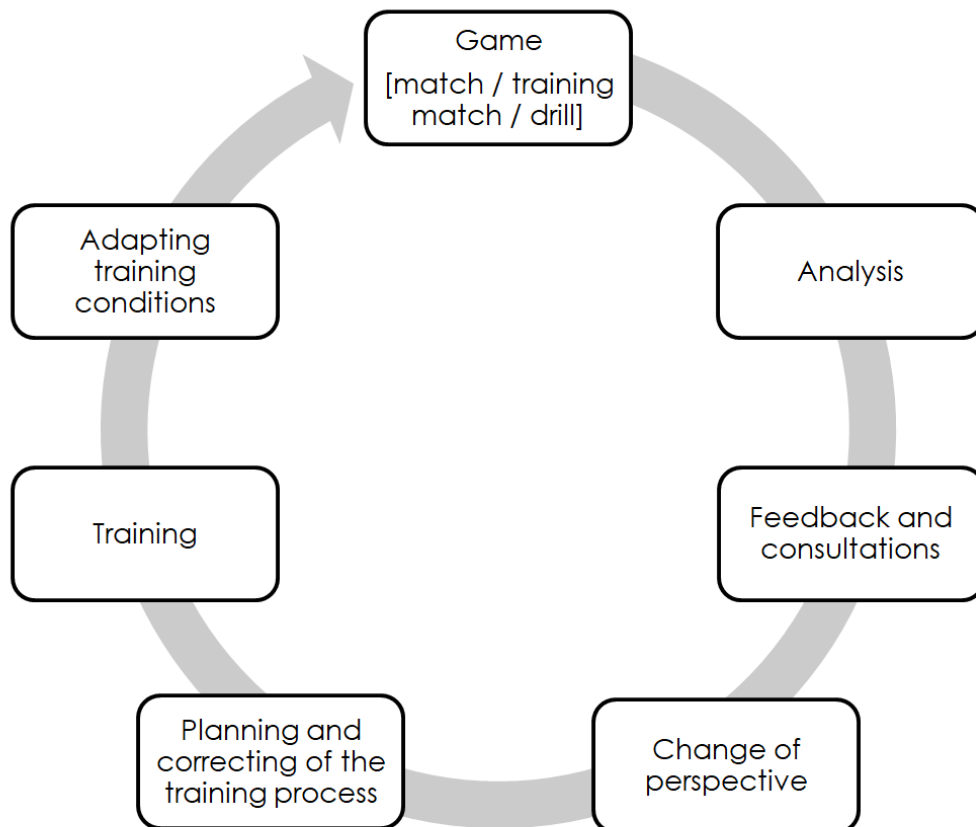
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<sup>4</sup> Robert M. Kitchin, *Cognitive Maps: What Are They and Why Study Them?* Journal of Environmental Psychology (1994), 14, 1-19, p. 1-3

## **2. Process and characteristics of tactical analysis in football.**

Tactical analysis is a specific set of activities consisting of the collection, processing and appropriate use of information leading to an understanding of the cause and effect compounds occurring during a football game. It is a process that is not about describing and making subjective assessments, but rather about careful observation. Regardless of the form in which the information is processed and presented, videos, graphic presentations or descriptions are intended to lead to the creation of a reference point for the training staff for further, more precise and clearly defined work with the team, as well as the visualisation of the trainer's message in relation to the team, thus giving legitimacy to the communication and working methods chosen. This puts the concept of qualitative analysis as a means of determining the effectiveness of work, while most training establishments in Poland at the central level still invest more time in data collection, i.e. quantitative analysis. It should be noted, however, that quantitative data, without being placed in an appropriate situational context, are only numbers, with no substantive value per se. In modern football, analysis is a comprehensive training tool focused on providing constructive feedback and further planning of the training process to optimise it. One of the trainers believes that: „tactical analysis can and should be used to reinforce what the coach delivers on the pitch. We should understand how players learn and then use our tools in relation to what their capabilities are with regards to the types of decisions they need to make within the game.". It is a matter of optimal stimulation of our players to equip them with tools that will make them more effective in realizing their vision of the game (in a team context). As regards individual work, we should know feelings of anxiety and fear are very often present in the heads of players during the game of football. They are linked to the level of awareness and the amount of information a player has about what is happening around them on the pitch. This puts cognitive aspects and analysis at a particularly important level in the development of intelligent players. Another of the coaches characterizes the analysis process as: „1- Performance, 2-Observation, 3-Analysis, 4-Interpretation, 5-Planning, 6- Preparation and 7-Performance again. If the Game is the final scenario or the final test, the training is the key process to prepare the players and team to perform at high level on that test. So, if you usually analyze the players/team performance during and after each game and if you want to apply a scientific

method in your training and game methodology, it's obvious that you also have to analyze the tactical behaviour in the training session, always with an holistic approach, of course, and contextualized with the game model and the training cycle of the team.". The analysis process in the context of working with a team is described in Figure 4.



**Figure 4 - Analysis process in the context of working with a team**

*Prepared by: Sławomir Morawski, Analysis and Cognitive Aspects in Football, 2018*

The starting point for the correct application of tactical analysis in the context of training work is the game. Another trainer clearly states that: "I believe that evaluation will always be the first step in building the process. When we analyse the individual and collective performance of a team, we are mainly evaluating and identifying its strengths and weaknesses. I will divide my view on the relationship between game analysis and training process in two orientations: the analysis of my

team, and the analysis of the opponent. All my training sessions and games are analysed in an objective, specific and detailed way. The objective is to constantly evaluate the individual and collective performance of the team, to increase the effectiveness of the application of our game idea and to increase the quality of each player's individual development. The information collected is treated specifically by the staff and used to assist our planning, but also to be part of it, returned to the players, so that they have greater and constant awareness of their performance. For the analysis of the opponent, in summary, we objectively define the information to be collected about their individual and collective characteristics in detail. After that, we consider this information to build our weekly training plan, to train maximizing our game idea, but also so that at the end of the week we can experiment to anticipate the maximum scenarios that we will encounter in the competition. This is to ensure that we can take control of the game without surprises.". It is therefore not a measure of success how well and in detail we will do the analysis and what we will do with the information that we will be able to obtain in this process. The seven steps in the analysis cycle can be briefly defined as:

- a) a game - a source of potential information,
- b) analysis - collection and processing of information for its presentation and further application,
- c) feedback - presentation of information and its placement in an appropriate context,
- d) change of perspective - confronting existing knowledge with facts,
- e) planning and adjustment of the training process - putting the information collected into practice as a reference point for working in a particular direction,
- f) training - working based on new information (+ analysis),
- g) adaptation of training conditions - intensity and work context management.

When analysing the football game, trying to put our process into practice, we can follow three, and in the modern interpretation of football, four areas of tactical action. However, it is not just a question of trends or repetitive scenarios. Beginning with the perception of the overall picture of the game, trying to explore its nature, we distinguish between: the area of **team tactics**, the area of **group tactics**, and the

area of **individual tactics**, which goes into the area of **cognitive content**; that is, how the player collects and uses information from the playing field:

**a) the area of team tactics, including:**

- a. team structure
  - i. organisation of the game in offensive and defensive phases
  - ii. organisation of the game in transition phases
  - iii. managing the compactness of the setting
- b. space management
  - i. depth and width of the game field
  - ii. managing the numerical structure in sectors
  - iii. increasing or reducing the space within the structure
  - iv. trends and directions for constructing team activities
- c. the distance between the different formations within the structure
- d. sectors and corridors occupied by the team
  - i. creation and use of free spaces
  - ii. reactions after gaining or losing a field (progression, regression)
  - iii. behaviour 'on the other side from the ball'.

**b) the area of group tactics, including:**

- a. formation structure
  - i. width and depth of formation - "amplitude"
  - ii. characteristics of positions within the formation
  - iii. behaviour in relation to the ball, the opponent, free spaces, and other formations
  - iv. the compactness and smoothness of formation passages
- b. The creation of "small games" and rotations within or between formations
  - i. item specificity and change process
  - ii. support from/to the ball, space support
  - iii. influence on ball handling
  - iv. characteristics of group activities, which differ between formations

- v. management of numerical structures (transition between formations)
- vi. trends and directions in the construction of group activities

**c) the area of individual tactics, including:**

- a. the foundations and tactical concepts of the individual positions
  - i. individual training content specific to individual roles (in modern football, **functions** play a greater role than **positions**)
  - ii. individual behaviour regarding external stimuli
  - iii. the role of leader from a team tactical point of view
  - iv. trends and directions for the construction of individual actions
- b. mental attitude
  - i. voluntary features
  - ii. level of commitment and ability to maintain the intensity of the game
  - iii. resistance to stress, pressure, and fatigue
  - iv. managing the sphere of emotions
  - v. verbal and non-verbal communication

**d) cognitive content**

- a. described in the previous chapter

As a complex process, tactical analysis based on the above points should have a qualitative expression, hence the selection of the information provided, and the process of its presentation play a key role. It is not essential whether it is post-match analysis, pre-match analysis, scouting analysis (observation of a player) or scouting the opponent. One of the respondents points out that this is not the case: „tactical analysis, in my opinion, can be present not just in the typical way; like reports, clips, presentations about the performance or opponent. Every day we should consider tactical analysis, every drill, every session. I can't design contexts for training if I don't have a specific idea of my game. So analysis should be something considered on a daily basis.". and the information listed above may serve as a reference for how to group information to present it correctly. Why? As another trainer says: "tactical analysis must show the collective and individual decision making process of the opponent and of your team. This is the foundation to design the training session. Every exercise should be linked with this decision making process of individuals and

the team/units. Example how to press as an individual, as an unit, as a team? How to attack against a low defensive block (how does the opponent make decisions in defending)? How can we find the solutions, based upon the "pictures" we can see during the game. This will help to make your sessions very specific (clear outcomes, clear evaluation, clear coaching points: clarity for the players is the key for success) and reality based . You recognize the real game situation in the training activity (with as much as possible repetitions).". And these are the conditions in which athletes learn most effectively. I will tell you more about introducing the tactical analysis process into the training in the next chapter.

### **3. Application of tactical analysis in the training process in football.**

The common starting point for the correct application of tactical analysis in the training process are tactical principles. These principles, as mentioned earlier, operate on three key levels - collective, group and individual. One of the coaches also concludes that: "the common starting point for analysis and training are the tactical principles . These principles interact on 3 different levels: team principles, sector or group principles and individual principles. The analyst must use the same terminology as the coach and the players to create consistency in the learning/training process. The specificity of the training session must help you as a coach to focus on players (individual principles), on groups of players (collaboration between connected players) or on the whole team (collective pressing for example: how do we press as a team?) These 3 levels of tactical information must be combined and periodized over a week cycle to help the players to be prepared in the best way for the game.". The fact that analysis and training go 'hand in hand' has already been said by one of the previous speakers, but at this point the opinion given by another coach will be more accurate: „if the game model is established and clear to the players the coaches analysis can then give the players more in depth opportunities to grow their decision making process and their football intelligence. The training drills should reflect this analysis and always relate to the teams game model. It can create new behaviors and open new perspectives as an excellent way to enhance performance. ". The specific relationship between the analysis and the training work is dealt with in Figure 5 on the page below.





**Figure 5 - Process of using analysis in training work**

*Prepared by: Sławomir Morawski, Coaching and Intellectual Aspects of Analysis, 2020*

It is not without reason that it is the idea / or in the context of individual work; the intention (as the basis of our football identity ) [1] stands in the first place to start a cycle of our conscious actions. However, to translate our ideas into a pitch, we should skilfully use analysis tools, not only in the context of their visualisation. The right level of communication and efficiency are the biggest challenges for coaches and while communicating [2] to players is easy to do, it is as effective to build a common understanding and explain to players how to do something, this does not include. It is the right place to use the training potential of analysis as a communication tool. While verbal communication may sometimes not be fully understood or forgotten, visualization supported by explanation will certainly prove more effective in clarifying our message [3]. If the players see and understand, they will remember, but if we let them act - they will develop through experience. These experiences, however, should take place, as we mentioned earlier, in the right conditions and in the right context. It is our responsibility as coaches to use analysis as a tool to help create these conditions; to ensure that there is an appropriate simulation [4] that will stimulate the right behaviour in our athletes [5]. This relationship is very well explained by one of the coaches: "the game model is the connection piece between training process and the tactical analysis. That's why the relationship between tactical analysis and training is decisive because both are in the same direction of the specific of the daily demands: to have a football identity to be ready to compete and win in different competitions. So it is like a validation to be certain that we are in a good direction. Define what you want (idea), respect the context of the club/league and the identity of the players that you have (game model) and work it with your methodology (training process). After this for a good process, because you

face opposition, have injuries, things keep changing... so analyzing (tactical analysis) will help you to keep the process in the direction of your idea. In relation to coaching, there is a one important thing: create principles; not rules. Principles are open and give space to creativity and open decision making. Rules are closed like an end point. Be open in the communication that you are using. Because with that you can influence the team to be more creative and to use his intelligence. For example: if you say; let's play short from the back; is different than saying; Let's find the free man; or; let's find the free space". At this point, it is worth quoting the five checkpoints, which one of the coaches has shared with us - **5W**:

**1W - WHO:** who is the subject of the action

**2W - WHAT:** what is the content of the action

**3W - WHERE:** what is the place of operation

**4W - WHEN:** what is the anticipation and timing of action

**5W - WHY:** what is the reason for the action?

This is especially important in terms of creating the right training context, in relation to:

**1W'** - structure and number of players,

**2W'** - training content and expected forms of behaviour,

**3W'** - direction of action, size of the game field, place on the pitch, possible passes,

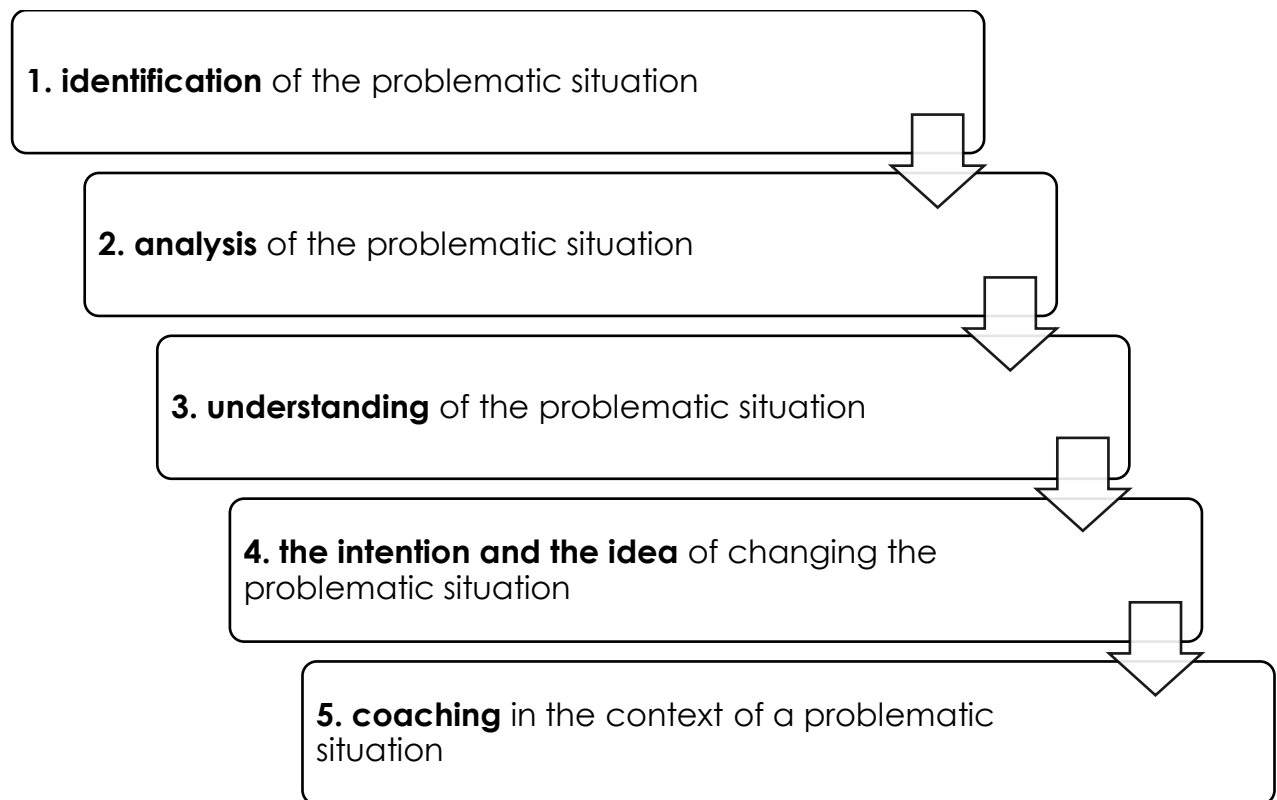
**4W'** - volume, organisation and work intensity,

**5W'** - controlled discovery - coaching questions,

**6: HOW.** - how to solve the problem > what to do to solve the problem

One of the Portuguese coaches comments: "for me the coaches must create problems in the training sessions. More than give to the players the solutions we must create context in which the players must discover by themselves the best ways to adjust. For sure the most important it's the team idea, but are the players the responsible for recreate this philosophy in detail. So our training session must respect the macro dimension of the team but must allow the conditions to the players recreate it in detail, micro dimension. For me the training environment must respect the idea of chaos determinist. First the analysis must respect the macro and the

emergence of new thing and freedom in a smaller dimension. The same idea to create the training situations and the coach intervention.". Let us act within a certain framework, but what appears within it should not give us the constant need for control. Let us remember that athletes need to actively explore the conditions under which they work, they need to be aware of them and they need to experience them in their own way; knowing what we want to achieve, but without imposing the necessary standards on how to do it. The analysis and our working philosophy set the direction; it is a signpost rather than a set of rules. Another trainer says that:,, in football, we are not isolated in context. It's not; me and the ball, no! It's me, the ball, and many other things, that if I had to list them, I would be limiting them, because there are always many more things. The body is contagious, because the body always absorbs much more than we want it to absorb, and hence the side of the unconscious is a determining side, and in competition processes this is very evident. Through training, is playing the game, the first priority! And playing the game, it is the recognition that to develop the game I cannot do the same things every day. In the first place, because I have to focus, and second, because I cannot always be affecting the same structures due to fatigue. And from there, what I have to do is, keeping this intention in mind, mold a process in which the propensities and dominances fall on those that are the purposes.". In order to work effectively in this way, we need an analysis that will bring us closer to the context of certain events, which are the main objective of our work, leaving us free to choose how to implement it. From the individual perspective, from the identification of a problematic situation to the application of appropriate training measures in the training process, it leads to 5 steps:



Each of the above points has its own characteristics, according to which it is possible to move smoothly to the next step of action with analysis in the training process:

1. identification:

- a) what kind of problem occurred during the game? (content)
- b) what cause and conditions forced the player(s) to behave in a certain way during the game? (context)
- c) how, where and when did the problem situation arise during the game? (characteristics)

2. analysis:

- a) what components have emerged within the problematic situation?
- b) characteristics of the problematic situation in terms of individual, group and team behaviour,
- c) Why wasn't the player, group or team able to find the optimal solution to the problematic situation?
- d) Which elements can be improved while maintaining our vision, game model and identity?

### 3. understanding:

- a) As a coach, do I understand the cause and effect of the problem situation?  
(Rule 5W)
- b) do I understand the nature of the conditions that have created the problem situation, without being able to create an optimal solution?
- c) Which contents and training conditions were insufficient and how should I react?

### 4. intention (idea):

- a) based on an understanding, what actions should I take to improve the efficiency of future decisions made and implemented by the players?
- b) by designing training methods, which conditions should be considered and which solutions I expect from the players,
- c) considering work culture and football identity.

### 5.coaching:

- a) introduction of training methods and the creation of a process of providing information,
- b) continuing to seek information for analysis,
- c) managing rhythm and training conditions. (progression, regression, motivation, clarification of rules, coaching questions)
- d) T-E-A rule:
  - i. TEACH: acquisition, ordering and transfer of knowledge, theoretical teaching process,
  - ii. EXECUTE: acting based on external knowledge and information, execution, practical learning process, creation of positive experiences,
  - iii. ADAPT: adaptation to external stimuli and information, intensity management, practical learning in variable conditions, confrontation with problematic situations, emphasis on context, creation of positive experiences.

Appropriate training conditions, like match conditions, will put the player into a state known as "flow". This occurs when the player's brain (mental consciousness) and

body (experience consciousness) recognise the real correlation between what appears inside and what changes outside in an effective way. A state of real influence, involvement, and presence, without "external interference" in a certain volume of time. In this state, individually, with the assistance of a coach, the athletes will begin to create specific models of behaviour, based on the information they have about external conditions. Facing and coping with the problematic situation, the athletes will develop the most effective forms of creating possible solutions. As coaches, our role is to get athletes to use their own technical tools in a context where they will create effective models of action; thus, gaining confidence and trust in their skills (and solutions). Schemes and duplication of prepared scenarios kill the creativity and intellectual aspect of the game if, instead of focusing on appropriate training conditions, they focus on providing solutions. **The methodology of cognitive training** is a work philosophy that focuses on the development of an autonomous individual, a protagonist in a football context. However, it will not be effective without the support of a proper training organization structure and analysis. **Analysis, on the other hand, will not be effective in the context of working on the training pitch if the conditions on the pitch are different from those occurring during a match.**

## Conclusions

Without identity, analysis as a point of reference and self-esteem, every effort we make will be a 'blind spot'. By going blind, working according to top-down guidelines without the ability to reflect, to verify whether what we are doing is right and is reflected in reality, we will not know why others are succeeding and why not. As one questioner concludes: "the process that I consider essential to improve the quality of decision making is built in several stages. The first phase is the definition of which direction the actions should follow. The second phase is to practice and experience them in a specific way. The third phase is the return of information about your actions (feedback and knowledge of the results). This cyclical process is crucial for the player to have, on the one hand, awareness of their actions and, on the other, to have the possibility to train and experience them constantly in a specific and progressive way. Thus, I believe that the relationship between performance analysis, training methodology and, above all, the orientation of our game idea, is total and should always be aligned.". As the work progresses, we can clearly see what views the coaches from the best clubs in Europe have. However, this work is not a set of guidelines, but a certain direction and a proposal for us to consciously adapt certain things so that we can create our own, characteristic Polish football identity. In conclusion, I would like to share a kind of 'summary' - that is, a statement by Professor Vitor Frade - on the issues raised in the work. After receiving the five questions on which the content of this work was based, Professor Frade stated that the complexity of perception, decision-making and, consequently, intelligence, does not allow him to give ordinary answers. As a result, Professor Frade gave me a poem as an answer. The poem uses many kinds of analogies, comparisons and descriptions that make us reflect. On the next page you will find its content, which, with the help of one of his students, has been translated from Portuguese.

Prof. Vitor Frade:

*I think it's consensual  
to anyone who can think,  
that decision making  
as "categorization"  
is a linguistic stereotype.  
A strong word,  
becoming even stranger  
and too much detailed.  
With no explanation.  
For myself, fiction.  
Mutilating, reduced  
and at every moment,  
mutilator,  
regarding interaction  
and both training,  
as well as playing  
will mutilate it and end it.*

*Intelligence has to be  
the only conditional  
condition  
of training....  
If understood as intelligence  
of all intelligences,  
while playing,  
with reference  
of fellow assistance  
how it's understood  
and desired.  
For every here and now.  
Its variable, so*



in the field's  
dimension,  
in the second minute or hour  
priority is diverse.  
As emotional,  
kinesthetic or cognitive,  
more or less rational,  
more or less intuitive.  
With differentiated intimacy.  
Between tonsils, hippocampus,  
and pre-frontal cortex.  
For example,  
with acculturated memories,  
meanwhile, timeous or rushed.

The human being isn't  
a rational animal.  
Since walking  
caused in the rational;  
a lot of "damage".  
And that long period,  
resulted in evolving to  
instant decision making.  
Over an insufficient data base  
and because we can't always  
run away from decisions.  
Consistent as well  
between the ones who are present,  
with more or less mind.  
And both here and in the game  
not only the brain takes part;  
it's the whole body.

*And only the one who is thirsty  
of fake news about training,  
the game and playing;  
has a poor brain,  
for desiring so many hours  
to train...  
Now and with no further delay  
there's no need for "extra minutes"  
to learn.  
Until young age,  
but instead to obligate intelligence  
to be present.  
Dominantly.  
In the "game process",  
with increasing complexity  
and promoting competency.  
This is, feeling to be;  
and therefore to know...*

*it's precisely  
when,  
playing.  
And the exterior circumstances  
are hard, demanding  
for the players;  
that the interior attitude  
if superior,  
counts most.  
Even if a less important one,  
or not expressed;  
But everything is noticeable  
even though transcending.*

PORTUGUESE, ORIGINAL VERSION:

Acho que é concordante  
para qualquer ser pensante  
que a dita tomada de decisão  
como "categorização"  
é já um estereótipo  
linguístico,  
um chavão  
cada vez mais esquisito  
e casuístico,  
sem fundamentação  
e para mim uma ficção  
mutilante  
reduzora  
e em cada instante  
mutiladora,  
no que é a interacção  
e que tanto o treinar  
como o jogar  
mutilando-os os vai matar.

A inteligência tem de ser  
a unica condicional  
condição  
a treinar...  
se se entender  
como inteligência  
das inteligências  
ao jogar,  
cuja referência  
das demais que assistências

o como entende  
e pretende,  
para cada aqui-e-agora  
e variável portanto  
na dimensionalidade  
do campo,  
no segundo-minuto-ou-hora  
e diversa a prioridade,  
como emocional  
quinesésica ou cognitiva  
mais ou menos racional  
mais ou menos intuitiva,  
com intimidades diferenciadas  
entre amígdala, hipocampo  
e córtex pré-frontal  
por exemplo,  
com memórias adulteradas  
entretanto,  
atempadas ou em contratempo.

O humano  
não é  
um animal racional,  
já que chegar  
ao andar em pé,  
causou no racional  
muito "dano"  
e esse muito demorar,  
levou-nos no evoluir  
a ter de tomar decisões  
instantâneas,  
sobre uma base d'informações

insuficientes  
e à decisão não podendo fugir  
nem sempre  
como tal consentâneas  
entre os presentes,  
com mais ou menos mente  
e aqui como no jogo  
não entra só o cérebro  
entra o corpo todo  
e só aquele que é ébrio  
de fake new sobre  
o treinar,  
o jogo e o jogar,  
tem cérebro pobre  
ao querer tantas horas  
p'ra treinar...  
já e sem mais demoras  
não é precisar  
"dar-minutos"  
para aprender  
até os putos  
e sim obrigar a inteligência  
a estar presente  
dominantemente  
no "dar-jogo",  
com complexidade crescente  
e promotora da competência  
isto é sentir para ser  
e assim saber...  
é precisamente  
quando,  
jogando

e as circunstâncias exteriores  
são difíceis, exigentes  
p'ros jogadores,  
que atitude interior  
de superior  
mais conta,  
até se de pouco monta  
e mesmo que inexprimível  
apesar de tudo é dizível,  
se bem que transcendentales!

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Sławomir Morawski  
ur. 18/02/1990 r.  
UEFA A



MINDFOOTBALLNESS