

A model for the game of futsal and subsidies for teaching

*Rafael Batista Novaes**

*Thiago André Rigon***

*Luiz Eduardo Pinto Bastos Tourinho Dantas****

Abstract: This study aims to propose a model for the game of futsal in order to help structuring didactics for that sport. The model was based on the authors' experience with the sport and specific literature. We chose a systemic approach to the phenomenon in order to overcome the technician perspective in which action in a game is seen as juxtaposition of technical movements and to highlight the importance of decision-making.

Keywords: Sports. Teaching. Techniques to support decision. Concept formation.

1 INTRODUCTION

Futsal (indoor football) is a Team Sport that is very popular in Brazil, with strong presence in the curriculum of Physical Education and sport “schools” in general. As a result, issues related to its teaching are highly relevant.

Bayer (1986) defines a Team Sport as a set of games with the following common features: an object (usually spherical) that can be launched with either one's hands or feet or through some

*University of São Paulo. School of Physical Education and Sport. São Paulo, SP, Brazil.
Email: batistaefe@gmail.com

***University of São Paulo. School of Physical Education and Sport. São Paulo, SP, Brazil. Email:
tarigon@uol.com.br

***University of São Paulo. School of Physical Education and Sport. São Paulo, SP, Brazil. Email:
ldantas@usp.br

instrument; a delimited playing field where the game takes place and restricts players' actions; a target/goal to be attacked and another one to be defended; teammates who cooperate according to a common aim; opponents that establish oppositional relations; and rules governing the way to play and barring or authorizing actions.

In the literature on teaching Team Sports, proposals that consider the game from a systemic perspective have established themselves as hegemonic. From that perspective, the game is more than mere juxtaposition of technical movements. Its dynamics emerge from the relations between its constituent elements. The complexity of those relationships provides great variety of events and requires permanent decisions by players – most of the time under heavy time pressure. Therefore, the pedagogical process should focus on exercises in which students are encouraged to make decisions and reflect on the game's problems, going beyond mere repetition of technical gestures devoid of context (GARGANTA; GREHAIGNE, 1999).

Even though those proposals have consolidated, coaches still face major challenges to organize teaching programs. Some authors argue that a model that grasped the dynamics of the game would help to derive coherent intervention tools. That would not mean reducing the game to an abstract notion, but trying to identify its constituent aspects, which would allow understanding its dynamics and guide the construction of didactics to form players suitable to its nature (GARGANTA; OLIVEIRA, 1996; GARGANTA, 2002). Thus, this essay attempts to create a model for the game of futsal with the main purpose of guiding the organization of teaching programs.

The model was based on questions and discussions about opposition and cooperation actions that empirically characterize the game, supported by literature on teaching (MAHLO, 1974; BAYER, 1979; BUNKER; THORPE, 1982; GARGANTA; OLIVEIRA, 1996; GREHAIGNE; GODBOUT; BOUTHIER, 1997; HERNANDÉZ, MORENO, 1998; GREHAIGNE;

GODBOUT; BOUTHIER, 1999; GARGANTA, 2002; GRAÇA; RICARDO; PINTO, 2006; GRECO; 2007), models of other collective games (GARGANTA; GREHAIGNE, 1999; SEABRA, 2010; LAMAS, 2012) and the authors' own experience with futsal.

The two first authors of this essay are coaches of school and university futsal teams in the Greater São Paulo area, with over ten years of experience working with several age groups (children, adolescents and adults). They also have over twenty years of experience as players in amateur competitions.

Initially, futsal's general features are described. Then a game model is presented not only to represent the game itself, but to subsidize its systematization for didactic purposes. Based on this model, heuristics (generic structures to solve the problems faced during the game of futsal) are proposed to guide teaching.

2 MODEL FOR THE GAME OF FUTSAL: GENERAL FEATURES

Futsal is an invasion team sport, because there is no barrier preventing the displacement of the teams to the opposing field, which allows free occupation of spaces. Besides being invasion-based, it is a simultaneous participation team sport, since ball remains under direct dispute (HERNANDÉZ MORENO, 1998).

Futsal has two main levels of organization: the game itself, identified by global confrontation between two teams; and the team, based on cooperation relations established between players. Global confrontation between teams is divided into two sub-levels: partial confrontations, identified by the relationship of cooperation and opposition established between groups of players (two or more) in certain situations and game zones; and elementary confrontations, i. e., the cooperation and opposition relationship from the point of view of an individual. (GARGANTA; GREHAIGNE, 1999). From a team point of view, there are two main sub-levels of organization: the group of players, that is, the relationship established between two or more players; and players themselves.

The game dynamics (macrosystem) emerges from the relationship between its internal logic, the rules and the field that regulate it (structure) and teams' competence. The internal logic is the confrontation between two teams trying to coordinate their actions in order to move the ball to their opponent's goal and prevent opponents from moving it to their goals (GREHAIGNE; GODBOUT; BOUTHIER, 1997, 1999). The rules and the field set the behaviors and physical limits that are allowed. Teams' competence, in turn, is represented by coordination of relations between players to solve problems that emerge in the game. In general, there are two main categories of problems faced by teams: problems related to the use of space and organization-related (strategic) problems.

Problems related to space can be illustrated as follows: to overcome their opponents, the team should coordinate offensive actions in order to complete successful and defensive actions to prevent successful shooting by the opponent. For successful shooting, the team must create and select shooting opportunities. On the other hand, to prevent opponents' successful shooting, they must prevent the creation of opportunities for that shooting. To create shooting opportunities, they need to create space and progress to areas favorable to shooting. On the other hand, to prevent the creation of such opportunities, they must avoid the opponents' progression to zones susceptible to shooting.

Organization-related problems, in turn, can be described as follows: to achieve the game's goal (victory), teams (and players) face organizational problems and act strategically, that is, they develop plans to converge actions (increase their synchronization) in order to increase their probabilities of success. To converge actions and increase the probability of success, they need to reduce uncertainty in relations among the team's own players and increase doubt/conflict in relations among players of the opposing team. Given the opposition relation established between the teams, a team seeks to converge or facilitate the actions of its players (cooperation) while seeking to hinder the action of opposing

players and the opposing team (opposition).

The complexity of these cooperation- and opposition-based relations causes the game to present high unpredictability. Permanent clashes generate constant changes in the game's configuration. These changes represent disturbances to teams' organization, leading to permanent need for updates to manage disorder and preserve internal coherence (SEABRA, 2010). Therefore, teams (and players) continuously engage in problem-solving to adapt to conditions or to modify them in order to achieve their goals.

Teams seek to prescribe strategies to coordinate collective behavior in order to overcome their opponents' organization. Such prescriptions are possible because, despite the high unpredictability of that sort of phenomenon, the events show patterns that are repeated over time and are thus open to be modeled. Assuming that it is possible to identify several organizational levels (or subsystems) in the game, it would be possible both to observe more general patterns that relate to the dynamics of opposition between teams (global confrontation, partial and elementary confrontations) and more specific patterns concerning the organization of each team, the behavior of certain groups of players and that of players themselves. Thus, it becomes possible to build more general prescriptions that meet the basic demands of any game and more specific prescriptions for teams, groups of players and individual players.

As noted earlier, since futsal is an invasion game with simultaneous participation by both teams, cooperation/opposition and attack/defense actions are present all the time, setting up permanent clash between two entirely antagonistic forces seeking to move the ball towards the opposing goal and at the same time to take it away from their own goal. Understanding the game from that point of view, notions that the team holding the ball is attacking and the team not holding it is defending should be viewed with caution. This means that, whether a team is holding the ball or not, there are

both offensive and defensive problems all the time (GREHAIGNE, GODBOUT, BOUTHIER, 1997, 1999). For example, teams also defend in situations in which they hold the ball (with balanced ball circulation, keeping the ball, etc.) and attack in situations in which they do not hold it (by inducing opponents' circulation to a favorable point for their team, pressure marking and stealing the ball near the opponents' goal, etc.).

Based on this conception of the game, we propose that collective action of a futsal team includes two main phases: when they hold the ball and when do not hold it; and two sub-phases: a time of transition with recovery of the ball and a time of transition with its loss. Actions carried out while holding the ball represent the active movement of the ball, while those done without it represent induction of opponents' action to move the ball.

Although it was intended to represent the game of futsal, the above can also represent other collective invasion sports such as football, basketball, handball, among others. However, futsal has some particular features that are worth mentioning. First, there is no rule to press for shooting as in basketball (24 seconds) or handball (prohibition of play without intention to attack – “passive play”). This feature enhances the defensive potential of holding the ball, because as long as one team holds it, the other one cannot score. Being predominantly played with players' feet, which is one of the support bases for controlling the ball, it makes balance, locomotion and the very control of the ball more difficult.

Moreover, unlike basketball or handball, in which ball can be grabbed, in futsal (and in football in its many forms) it will never be under players' absolute control (except for goalkeepers). Thus, controlling the ball generally demands continued visual pursuit and the more players choose to view it directly, the more their visual fields are limited and their reading of the game are impaired. On the other hand, the more the players choose to raise their heads and look at the field, the harder it is for them to control the ball, and, of course, the more they are exposed to losing it. When compared

with a football field, however, it is less difficult (and maneuvers on the ground are easier to perform) because the field is flat and smooth and the ball bounces less and is smaller.

The restrictions of being played with feet, together with the relatively small size of the goal, also create other peculiar condition: the difficulty of shooting towards the goal in favorable positions and thus scoring – although, if compared once again to football, given its smaller field, futsal has a higher proportion of zones susceptible to successful shooting. Therefore, it is not uncommon that a team is defeated even when it holds the ball for longer and/or a shoots more times towards the goal. Due to the field's reduced dimensions, the goalkeeper play a major role in the game, both defending the goal from opponents' shots and performing passes and shots. This player is often used as a "line" player ("line goalkeeper") to obtain numerical advantage despite some restrictions imposed by rules. The use of the line-goalkeeper (entry of a "line" player to replace the goalkeeper), while providing a numerical advantage to the team holding the ball, is a risky situation because the goal is less protected.

3 A MODEL FOR THE GAME OF FUTSAL: A DIDACTIC APPROACH

Based on the above, we attempted a didactic transposition of the futsal model while proposing heuristics that would guide the learning process.

At first, we proposed general heuristics that would help solving organizational and spatial problems found throughout the game. Then we tried to articulate heuristics that were more specific to the phases (teams' actions with the ball and without it), sub-phases (transitions) and respective categories of action. It is important to note that merely having these heuristics does not generate effective actions, but it seems to be a general way to understand and deal with the problem or, in other words, a framework of reference to think what to do in the game.

3.1 ORGANIZATIONAL PROBLEMS

Heuristics: identifying patterns of action with the ball and without it; identifying strengths and weaknesses; seeking superiority; concealing actions and intentions; collectively responding to movements.

To increase the likelihood of team success, the analysis of opponents' patterns of action with the ball and without it and identification of strengths and weaknesses would allow more effective strategic design. Numerical superiority and the concealment of actions and intentions would promote reduction of the opponents' certainties, which would facilitate their imbalance.

Responding collectively to movements implies thinking and executing individual actions at collective level, which would increase the team's synchrony.

3.2 SPATIAL PROBLEMS

Heuristics: creating shooting line; achieving an effective space; marking and evading opponents' marking.

In order to score, players must shoot towards the goal. For that to occur, a shooting line (favorable opportunity to shoot) must be created. Since this is a game in which a team must invade the opponent's field to have opportunities for shooting and, at the same time, opponents must be prevented from invading the team's field, conquering space is crucial in order to succeed. That space it is necessary to overcome the opponent team, that is, marking when the team is not holding the ball, and evading the opponent's marking when it is.

3.3 ACTIONS OF THE TEAM WHILE HOLDING THE BALL

The actions of the team holding the ball were divided into

three categories based on their complexity (number of interactions between players from the same team). The first level includes individual actions; the second level includes group activities (two or more players); and the third level includes collective action (the team as a whole).

3.3.1 INDIVIDUAL ACTIONS BY PLAYERS OF THE TEAM HOLDING THE BALL

Individual actions by players from the team holding the ball were subdivided into individual actions with the ball (ball holder) and individual actions without the ball.

3.3.1.1 INDIVIDUAL ACTIONS WITH THE BALL

Individual actions with the ball were described as follows:

a) Reception/Control (thigh, foot, chest, sole, etc): action to control the ball when it is passed by another player; Heuristics: dominating it in progression when possible; controlling it with player's sole when the ball is rolling on the ground; stopping the ball; analyzing the space around before receiving the ball.

In-progress control is an action in which the player controls the ball while already projecting it to more favorable zones, thus hindering defenders' action.

Controlling with soles is generally easier when the ball is moving on the ground, although that action can be effectively performed with other parts of the foot.

Slowing the ball is a movement against the ball's trajectory to reduce its speed, which would contribute to effective reception.

Analyzing the space around it would be important for individuals who will receive or who have already received the ball to be aware of what is happening around them.

b) Protection: action of protecting the ball from opponents' reach;

Heuristics: using the body (arm, shoulder, hip, etc.) to protect the ball; keeping the ball moving.

Some parts of the body such as arms, shoulders and hips can be used to hinder opponents' approach to the ball.

Keeping the ball moving would also hinder defenders' action and help to protect the ball.

c) Pass (ground-level, "dug out", long; foot-side; instep, head, etc.): action of driving the ball towards a teammate.

Heuristics: analyzing the space (raising one's head, examining the space around); passing to teammate in better position; balancing one's body.

To increase the probability of an effective pass, that is, of passing to a teammate in a better position, players holding the ball should analyze the space (raise their heads and examine the space around them) and balance their bodies when passing. To balance their bodies, some tips such as putting one's place foot aside the ball and moving the arm on the other side to stabilize the movement can help in action.

d) Shooting: action of kicking the ball towards the goal;

Heuristics: looking at goal and goalkeeper; balancing one's body; taking the ball from goalkeeper and defenders.

Some strategies can help to increase the probability of a successful shot, such as looking at the goal and seeking to take the ball from the goalkeeper and defenders. Furthermore, body balance at the time of shooting may be essential. Therefore, some tips like putting one's place foot aside the ball, moving the arm on the opposite side to stabilize the movement and make a countermovement of thigh and leg to hit the ball more strongly can help in implementing the action.

e) Dribbling (driving the ball): action of progressing and maneuvering with the ball.

Heuristics: raising head; analyzing space; penetrating if there is free space; changing direction and changing pace.

Players doing a dribbling action should raise their heads and examine the space around them to be more aware of what is happening, because, as the ball is driven on the ground, they tend to look down for better control.

Penetrating free space would ensure control of the ball and less effective marking by opponents.

The change of direction and pace would help to overcome opponents.

3.3.1.2 INDIVIDUAL ACTIONS WITHOUT THE BALL (BY PLAYERS OF THE TEAM HOLDING THE BALL)

Individual actions without the ball (by players of the team holding the ball) were described as follows:

a) Supporting the ball holder and the team: action of supporting the ball holder and the team. To support the ball holder and the team, players without the ball may seek to provide a pass option, open space for their teammates and seek defensive balance.

Heuristics: moving to an empty space; seeking to receive the ball in a more favorable position; changing direction; changing pace; escaping the defender's visual field; infiltrating it if there is no pressure on the ball and coming closer if there is pressure on the ball holder.

To create an effective passing option, players must seek to receive the ball in a more favorable position to the team. Therefore, they have to escape marking by seeking to move to an empty space. If opponents tries to prevent the creation of such space by following this shift, the player must seek to trick them. Therefore,

some strategies may be used such as changing direction quickly, changing pace, escaping the defender's visual field. In addition to seeking to create options to receive it, players without the ball may try to open space for their teammates. Therefore, they can attract defenders to a particular part of the field, opening space in other sectors for other players to act. In addition to opening space for teammates, players without the ball should be concerned about defensive balance to maintain the team balanced in case the ball is lost. The heuristics "infiltrating it if there is no pressure on the ball" and "coming closer if there is pressure on the ball holder" would help guiding the movements of players without the ball. If the ball holder is under pressure and therefore with less space to make a pass, it would be more effective if players without the ball approached for support. If the ball holder is not under pressure, he or she will have more space for a pass. So players without the ball would be able to invade more of the opponents' territory and remain supporting the player with the ball.

3.3.2 GROUP ACTIONS BY PLAYERS OF THE TEAM HOLDING THE BALL

Group activities by the team with the ball were described as:

a) "Backboard": rapid exchange of passes between two players. A passes the ball to B who quickly returns it to A.

Heuristics: approaching the defender to drop the ball.

If the ball holder approaches the defender before passing the ball, the defender will have less room to run and will be available to receive the second pass.

b) Triangulation: rapid exchange of passes between three players. A passes it to B who quickly passes it to C;

Heuristics: advancing the second pass.

Player C's advance to receive the second pass would be essential for triangulation.

c) Dummy: action of passing or moving without contact with the ball;

Heuristics: deceiving.

Deceiving the opponent implies not showing the real intentions in one's action.

d) Exchange of positions: action to change places or space with a teammate.

Heuristics: gaining space.

Position exchange (to spaces near the goal or away from the opponents' action radius) makes sense when effective space is gained.

3.3.3 COLLECTIVE ACTIONS BY PLAYERS OF THE TEAM WITH THE BALL

Collective actions by players of the team with the ball were described as:

a) Moves (triggers): represent previously established coordination of actions by players in dead ball situations;

b) Maneuvers: coordinated movements used by a team in certain situations (parallel, diagonal, halfback-wing exchange, etc.);

c) Schemes: the teams' static positional structure according to the number of players they have by line (3:1, 2: 2, 4:0, etc.).

Heuristics: entering opponents' system in a balanced way; changing pace, changing direction; balance; depth; amplitude; offering as many support actions as possible; getting the ball out of the pressure zone; approaching.

To attempt a successful shot, a team usually has to invade its opponents' system. During the invasion, the team must remain balanced, trying to use its offensive potential without losing sight

of defensive balance.

In order to imbalance the opponent, changing pace and direction of the ball's movement would be crucial.

Balance is a balanced occupation of the field's longitudinal corridors.

Depth is the vertical occupation of the game space, whereas amplitude is horizontal occupation.

For intelligent occupation of space, players must keep in mind that they are acting to provide support to the team's actions.

The more support actions are carried, the greater the chance of success of the team's action.

Taking the ball out of the pressure zone means clearing it from direct opposition, which would reduce the chance of it being taken, increasing the team's possibility to organize their actions and be more successful in unbalancing the opposing team.

Properly approaching team members would facilitate the use of space, keeping the ball holder safe and closing the opponent's effective spaces in a possible transition with the loss of the ball.

3.4 ACTIONS OF THE TEAM NOT HOLDING THE BALL

As in the actions of the team holding the ball, the actions of the team without it were divided into three levels based on the number of elements: individual actions, group actions (two or more players), and collective actions.

3.4.1 INDIVIDUAL ACTIONS BY PLAYERS OF THE TEAM WITHOUT THE BALL

Individual actions by players of the team without the ball were described as:

a) Following: selection of an opponent player to be marked and following that player until the sequence of the ball ends or marking changes;

Heuristics: keeping contact with the opponent (visual, tactile, auditory, etc.); positioning oneself between the opponent and the goal.

In order to follow the opponent, keeping contact is critical, whether it is visual, tactile or auditory. Keeping that contact can be facilitated by communication of companions.

Positioning oneself between the opponent and the goal implies forming a barrier to protect the goal.

b) Approach: Action of approaching the opponent holding the ball;

Heuristics: inducing an unfavorable space; analyzing space; communicating the space for approach and approaching the dominant foot when near the goal.

As in any other action, the player approaching the ball holder should seek to induce the opponent to an unfavorable space.

Analyzing the space around would be important in order to be aware of the opponent's induction.

Communication with teammates about the space to be approached may also help in the action. When the ball holder is close to the goal, one strategy to prevent a successful shot would be to approach the dominant foot, thus inducing the opponent to his or her less effective side.

c) Interception: action to prevent a pass or a shot by the opposing team;

Heuristics: inducing the opponent; back tackle during trajectory.

Induction of opponent would facilitate intercepting and recovering the ball.

Back tackle during the ball's trajectory is a peculiar form of interception in which the player throws him/herself at the ball trajectory preventing its normal course.

d) Tackling: action of taking the ball from opponent;

Heuristics: keeping one's balance and inducing error.

Keeping one's balance and inducing error would increase the chance of successful tackling.

e) Defensive balance movement: covering an important space for defensive balance.

Heuristics: analyzing space.

Analyzing the space around is crucial to perform a balancing movement.

3.4.2 GROUP ACTIONS BY PLAYERS ON THE TEAM WITHOUT THE BALL

Group actions of the team without the ball were described as:

a) Exchange: action of changing marked opponent;

Heuristics: communicating the change; analyzing the space to make the change.

Communication between players and analysis of space around increase the chances of successful change.

b) Cover: action of supporting the defender marking the ball holder so he or she is safe;

Heuristics: communicating the cover space.

Communication among players and analysis of space around increase the chances of successful cover.

c) Double marking: action of marking opponents with two players;

Heuristics: putting pressure on the ball; analyzing space; timing.

Pressure on the ball holder would reduce his or her field of action and facilitate taking the ball.

Before performing double marking, it would be important to analyze the space around and select the appropriate time for it (timing), because if it is overcome the opposing team will be numerically superior.

d) Help: Retreating to aid teammates.

Heuristics: retreating when the ball passes the marking line.

When opponents have the ball and it goes beyond a player's marking line, this player can return to help teammates and increase the chances of regaining the ball.

3.4.3 COLLECTIVE ACTIONS BY PLAYERS OF THE TEAM WITHOUT THE BALL

Collective actions by players of the team without the ball were described as:

a) Patterns: ways in which the team works on certain situations;

b) Schemes: the team's static positional structure according to the number of players it has per lines (3:1, 2:2, 4:0, etc.).

Heuristics: staying behind the ball's line whenever possible; putting pressure on the ball carrier; returning; setting; proportionality.

Placing the highest possible number of players behind the ball line would increase effectiveness of the protection of the goal because of the amount of obstacles.

Putting pressure on the ball holder would leave the opponent in a vulnerable situation, since it would reduce his or her space and time of action and facilitate taking the ball.

Retreat is the situation of recomposing lines of action without the ball if they are unadjusted.

Adjustment is the balanced configuration of action lines without the ball.

Proportionality means keeping an appropriate distance among teammates in order to close spaces (compaction).

3.5 TRANSITION WITH BALL RECOVERY

Heuristics: retaining the first ball; getting the ball out of the pressure zone; carrying out an attack before the opposing team reorganizes.

Retaining the first ball is key when the team has recovered the ball and is in the phase of recomposing action lines with it. In this case, the loss of the first ball could result in an unbalanced condition.

Retaining the ball would be easier if it were taken out of the opponent's pressure zone.

While seeking to retain the first ball and taking it out of the pressure zone, the team may choose to perform an attack before the opposing team recomposes.

3.6 TRANSITION WITH LOSS OF THE BALL

Heuristics: seeking recovery of the first ball; timing; trying to quickly rearrange action lines without the ball.

Seeking to recover the first ball becomes relevant when seeking immediate recovery of the ball from the opponent team in

an unbalanced transition.

The team that lost the ball should seek to time the opposing team's actions, that is, to delay opponents' action to ensure its own re-balancing.

The team that lost the ball should try to recompose its lines of defense quickly in order to recover the defensive balance.

4 FINAL REMARKS

Even with major advances in teaching proposals for team sports (MAHLO, 1974; BAYER, 1979; BUNKER; THORPE, 1982; GRECO; 2007; GRAÇA; RICARDO; PINTO, 2006), there are still major challenges for the organization of intervention programs.

This essay consists in proposing a model representing futsal and helping to guide its teaching. The intention is not to create a step-by-step manual showing formation of players, but rather to map and organize relevant knowledge. Thus, the use of the proposed model only makes sense with critical appropriation that allows re-interpretation according to context. We started from the systemic perspective in order to avoid reducing the game to mere combination of technical movements, stressing the importance of relationships in shaping its dynamics and of decision-making for more efficient action.

In effect, it is crucial to underscore that any model to grasp reality is limited and that futsal is of course much more complex than what has been presented above. This study attempted to view futsal only at the level of efficiency and stressing decision making. Other dimensions (sociological, psychological, historical, physiological, etc.) were not even mentioned and require more attention when systematizing a futsal teaching program.

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Correspondence address:

Rafael Batista Novaes

Rua Antonio de Siqueira, 481 – São Paulo – SP

CEP: 08070-190

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