

# Informing the Coaching Pedagogy of Game Modification in a Game Sense Approach with Affordance Theory

## Impregnando la pedagogía del entrenamiento del juego modificado en el enfoque centrado en el sentido del juego con la teoría de las *affordances*

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**Abstract.** The Game Sense coaching approach is founded on expectations of game-based practice as the game (or game form) becomes the focus and starting point of practice. The theory of affordances, a conceptual pillar of ecological modelling of perception and action in sport leading to a constraints-led game design perspective, provides a basis for understanding the modifying and adapting games as a pedagogical emphasis of the Game Sense approach. We review affordance theory leading to a demonstrated application of constraints-led learning in Touch Football. We conclude with the proposition of constraints-led game design as a logical semantics for the game-based practice assumptions of the Game Sense approach. This paper demonstrates the potential of affordance theory as a means of analysis of the task dynamics of Touch Football to inform a Game Sense coaching perspective for the sport.

**Keywords:** Coaching; game sense; affordances; constraints; Touch Football.

**Resumen.** El enfoque del entrenamiento centrado en el sentido de juego se basa en expectativas de prácticas basadas-en-el-juego en las que el propio juego (o la forma del juego) se convierten en el foco y punto de partida de la práctica. La teoría de las *affordances* –un pilar conceptual del modelo

ecológico de la percepción y la acción en el deporte, conducente a una perspectiva de diseño de juegos mediante “limitadores” (*constraints-led*)<sup>1</sup>– proporciona una base para la comprensión de la modificación y adaptación de los juegos en el marco pedagógico del enfoque basado en el sentido del juego. Repasamos la teoría de las *affordances* a fin de mostrar una práctica de aprendizaje mediante “limitadores” en *Touch Football*<sup>2</sup>. Concluimos con una propuesta de diseño de juego mediante “limitadores”, como una lógica ejemplificación de los supuestos de la práctica basada en el juego desde el enfoque del sentido del juego. Este artículo muestra el potencial de la teoría de las *affordances* como medio para el análisis de la dinámica de trabajo del *Touch Football* y, con ello, pretende enriquecer una perspectiva del entrenamiento deportivo basada en el sentido del juego.

**Palabras clave.** Entrenamiento; sentido del juego; *affordances*; limitadores-condicionantes; *Touch Football*.

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## INTRODUCTION

The Game Sense coaching approach (GSA) is founded on expectations of game-based practice as the game (or game form) becomes the focus and starting point of practice (Australian Sports Commission, 1996). The theory of affordances, a conceptual pillar of ecological modelling of perception and action in sport leading to a constraints-led game design perspective, provides a basis for understanding the modifying and adapting games as a pedagogical emphasis of the GSA (den Duyn, 1997). In this conceptual paper, we review affordance theory, leading to a demonstrated application of constraints-led learning in Touch Football. We conclude with the argument of constraints-led game design as a logical semantics for the game-based practice assumptions of the GSA. There is a growing interest in the benefits for athlete learning in and through games-based coaching which recognises the dynamics and complexity of invasion sports like Touch Football, such as that of the GSA (Pill, 2014).

Touch Football is a complex and dynamic invasion game, and more specifically sits within line invasion games along with the rugby codes,

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<sup>1</sup> La expresión *Constraint-Led* ha sido traducida en algunos lugares como teoría de los “limitadores”; sin embargo, en el campo de la EF y el deporte se mantiene a menudo la expresión inglesa (*constraint-led approach* o *constraint-led perspective*). En líneas generales, es una forma de intervención indirecta (a través de los condicionantes: entorno, tarea, jugadores) en la que se destaca la importancia del proceso de toma de decisiones del alumno o deportista. (Nota de los editores)

<sup>2</sup> El *Touch Football*, se explica en la introducción, es un complejo deporte de invasión que tiene cierto parecido con el rugby y que se practica mucho en Australia. (Nota de los editores)

involving short periods of low intensity movement with bursts of high velocity running. Depending on field position of the play of the ball, the attacking phase consists of a drive by an individual to gain field position as well as attacking the line to score. During the defensive phase, teams try to reduce opposition gain of field position and to defend against an attacking play closer to the score line. Touch Football is unique amongst all other invasion games or rugby codes in that the only way to progress the ball forward towards the score line is by running with the ball. As in Rugby League and Rugby Union the ball must be passed backwards in relation to the direction of attack. The game permits unlimited substitutes and so during the phases of play there will be player substitutions occurring to manage player fatigue and optimal player and team intensity. Touch Football is a high profile and extensively played sport in Australia with a relative absence of empirical and scholarly research consideration, unlike other popular invasion sports such as Australian football, the rugby codes and soccer (association football) where theoretical and practical modelling has occurred (Walsh, Heazlewood & Climstein, 2012).

### **Coaching considerations**

A historically common linear drill-before-play coaching approach, colloquially called ‘skill and drill’, which focuses coach attention on recall and replication of motor patterns as techniques to be mastered before one is ready to play is recognised in Australia (Lauder, 2001; Light, 2005, 2013). Practice is planned to manage information loads through task decomposition into sub-routines and micro-components to be practiced before practice of the complete task (Davids, Renshaw & Glazier, 2005; Pill, 2014). In this coaching paradigm, time for play at practice frequently depends on players’ attitude, effort and aptitude within the drill component of the practice session (Browne, Carlson, & Hastie, 2004). A focus is on ‘what’ to coach, operationalised as idealised motor behaviour sometimes referred to as ‘textbook techniques’ (Pigott, 1982; Pill, 2014). This linear approach is considered reductionist as it isolates techniques to be practiced without adequate representation of the performance environment within which a technique is applied. The reductionist ontology of what Kirk (2010) described as the pedagogy of sport-as-techniques leads to a behaviourist epistemology requiring order, compliance, and highly structured engagement through directive coaching of skills that have to be mastered or be evident before play engagement occurs (Pill, 2014). Coaching this way is

not able to account for the complexity of decision-making inherent in dynamic and multifaceted movement contexts, such as that of Touch Football (Lauder, 2001; Light 2005, 2013; Light, Harvey & Mouchet, 2012; Pill, 2014).

From a constructivist epistemological perspective, learning to play a sport is an evolutionary process that is emergent from a co-created adaptive and self-organising response arising from repeated engagement within a complex structure, called a game (Hopper, 2011). In other words, learning to play is most likely to occur in game play, as it is an authentic context. Game based coaching provides both meaning and relevance to movement behaviour and the learning that can occur from the behaviour (Gray & Hall, 2015; Light, 2008, 2013) consistent with a constructivist perspective. The GSA is an Australian sport coaching approach emphasising the use of games (den Duyn, 1996) to play with purpose (Pill, 2012) to engage player game understanding (Australian Sports Commission, 1996).

## **1. THE GAME SENSE APPROACH**

The GSA was purposefully developed to challenge traditional decomposition of games into movement techniques and the coaching separation of technical and tactical movement perspectives (Australian Sports Commission, 1996; den Duyn, 1996; Light, 2006). The driving force of the GSA is the development of thinking players (Den Duyn, 1996; Pill, 2012). A coaching priority is developing athlete game understanding through game-based practice in preference to technique first isolation of movement performance into drills. The GSA therefore organises on the pedagogical principle of game-based coaching whereby practice sessions are coordinated through an element of play (such as maintaining possession of the ball) and therefore the game (or a game) as the first engagement of the practice session after the introduction or warm-up is completed (Australian Sports Commission, 1996; Pill, 2012). This is illustrated in Table I.

(Table I, next page)

**Table I.** Contrasting Game Sense and Technical (Sport-as-techniques) Touch Football Training Approaches

	<b>Game Sense Coaching Plan</b>	<b>Technical Coaching Plan</b>
<b>Warm-Up Phase</b>	Game sense discussion to focus the sessions learning intention Closed to Open Drills (for older players)	Running laps around the pitch Static and then Dynamic Stretching
<b>Practice Phase</b>	Game Play: Multiple games of Modified 3v3 Touch Freeze play: Play analysis. Drill practice if necessary Game Play: Return to 3v3 game play Repeat cycle	Drill 1 – Line passing (no defender) Drill 2 – 2v1 Line passing ‘beat the defender’ Drill 3 – 3v2 Line passing ‘beat the defender’ Game Play: Multiple games of 3v3 Touch
<b>Conclusion</b>	Isolation practice on aspects of game development (for older players) Game sense discussion to focus the sessions learning intention	Warm-Down: Running laps around the pitch followed by static stretching

The GSA is a pedagogical ‘toolkit’ distinguished from the technical perspective on sport coaching by the GSA preference for the pedagogical tools of game play and inquiry to build ‘game intelligence’ through coaching that asks questions in preference to giving instructions (Australian Sports Commission, 1996; den Duyn, 1997). Pill (2007, 2012) progressed the GSA proposition into a description of a developmental framework. The framework is composed of three stages of game development:

1. Teaching fundamental sport skills through ‘game sense games’ (Australian Sports Commission, 1999; Schembri, 2005) that respect the complementarity of technical and tactical elements of skill development (Smith, 2016)
2. Modified and designer small sided games, which Bhaskaran (2000) described as a small-sided games pedagogy. The 3v3 game form of Touch indicated in Table I is an example of this scaling effect of reducing field size and playing numbers; and
3. Designer games (Charlesworth, 1994) and match simulations that ‘chunk’ technical, tactical, psychological, competitive and physical skills into a game form that conditions technical, tactical and fitness dimensions of performance. The game is constructed (or constrained) to achieve a specific game understanding.

The coaching process of game design through modifying, adapting and constraining games to create play with purpose has been explained as the process of “eliminating, refining, simplifying or adding to game rules and playing conditions to focus attention on specific technical or tactical game understanding” (Pill, 2013, p. 9).

Sport teachers and coaches can modify the game of Touch Football by: i) Adapting the playing area (e.g. size and/or shape); ii) Changing equipment (e.g. size of the ball, feel of the ball, type of ball); iii) Changing or specifying the task (e.g. score out wide, score from a scoop and run play, play a ‘shooter’ early in the touch count, etc); and iv) Modifying the rules (e.g. substitute turnover for a ‘touch’ when infringements made to ensure opportunity for purposeful practice, acting half must pass from the ground, etc).

The pedagogical purpose of this teaching behaviour is to link information in the environment to game behaviour in a representative manner (Pinder, Davids, Button, Renshaw, & Araujo, 2011). Acknowledging Touch Football as a complex system, coaching is then the process of developing players ability to identify information and flexibly assemble movement responses that meet the situated coordination dynamics of the moment of play (Magias, Pill, Elliott, & Bell, 2015; Pill, 2014). The efficacy of this coaching perspective is explained by the theory of affordances.

## **2. AFFORDANCE THEORY**

Gibson’s (1979) ecological theory of direct perception suggests meaning is in the environment. There is a mutuality between the individual and what they perceive in the environment. Perception of the environment therefore leads to action. The implication for Physical Education (PE) teaching and sport coaching is the need to identify the relevant information sources that players can use to coordinate actions in specific performance contexts. This understanding requires a different ontology to the reductionist view of a physical world constructed from its component parts. This ontology is Gibson’s theory of affordances (Chemero, 2003). Affordances are properties in the environment that indicate possibilities for action (Turvey, 1992). According to Turvey (1992), affordances are dispositional properties, meaning that the property will reveal itself in certain circumstances. This means, that in some circumstances certain properties

will be apparent. An actualising circumstance is therefore necessary for the property to manifest. In a sporting context, the implication is that the properties of an environment can therefore only be an affordance if the athlete is paired with an actualising circumstance.

If the properties of an environment can only be an affordance if the athlete is paired with an actualising circumstance (Turvey, 1992), affordances are complimented by the ability of the athlete. Therefore, there are properties of the athlete that enable them to make use of affordances. Affordances are thus not properties of the environment alone (Chemero, 2003), they are features of the whole situation of which the athlete and other players are integral components. The affordances are therefore relations between the athlete and game environment.

Ability is the functional property of the athlete. Defined as a functional property, an athlete's ability depends on the individual's evolutionary history with the game. The implication of this understanding from the theory of affordances, is that the disposition for action may be present but its actualisation is only possible if the athlete has the functional ability to perceive and take action that takes advantage of the disposition (Chemero, 2003). If we assume the athlete to be a set of abilities, then there is the possibility of a niche set of affordances for a particular athlete. For example, two players may be in the same moment of action during play, but their niches do not overlap and the player with greater functional ability will have a competitive performance advantage.

For the PE and sport coaching practitioner, the implication of this theory of affordances is that the athlete gathers information from a meaning-laden environment. Sport performance cannot therefore be merely physical, with perception-decision making competency a distinguishing feature in the ability of athletes to perform in the context of the dynamics of play (Davids, Button & Bennett, 2008). This is at odds with the common perspective in PE and sport coaching that pedagogically positions sport performances as techniques in an environment characterised by directive instruction (Kirk, 2010; Light, 2013; Pill, 2013) and progressive part pedagogy.

In summary, ecological theory is about information, and the ontological explanation of affordances explains how information is perceived. Applied to a sport setting, at any given moment in a game an athlete finds oneself in an environment that provides them some affordances and not others. Therefore, the appropriate way to describe the action context of the game is in terms of dynamics. To understand game dynamics, we look at the game environment to figure out what it offers the athlete. This leads to the

coaching prerogative to design a practice setting to prepare players to perform in the game – in other words the task dynamics of the moment (Pill, 2014).

The task dynamic creates information to be perceived from the relationship between the performer and the environment. Where two athletes have learned the same information for a performance dynamics there is the possibility for a stable perceptual basis for creating coordinated activity. Information is used by athletes to interact with the task demands (dynamics) of the moment. Therefore, game behaviour is shaped by how athletes perceive the game environment and learning or preparing to play is about the athlete learning to detect and use information to coordinate and control their game behaviour. Coaching for this outcome is then about creating practice contexts that enable the athletes to become perceptually attuned to the complex dynamics creating opportunities (dispositions) for action.

An implication arising from this ecological understanding of the game as a sport performance context is how to make coaching (learning) transfer from practice to the game. The suggestion is that the information from coaching will transfer if the contexts of practice and play overlap in a meaningful way – where meaning is a function of the information presented to the athlete in each performance context, because this means the contexts share information. In preparing a practice schedule, a coach (or PE teacher) needs to be able to undertake a task dynamics analysis of skill as observed behaviour in the game context the coach wants to improve (Davids, Araujo, Vilar, Renshaw & Pinder, 2013). Practice then is an environment that represents the same affordances and therefore the same information as the game, at task relevant complexity for the readiness of the players. This is a shift in thinking from a reductionist notion of core physical skills (sport-as-techniques) to skill existing in contexts that are dynamic, creating information that must be perceived by the athlete in order to behave. This also means a shift in thinking from practice as creating a set of techniques that can be reproduced on demand to practice as developing stable perceptual expertise with a context (Snapp-Childs, Wilson & Bingham, 2015; Wilson, Weightman, Bingham & Zhu, 2016).

An important conclusion is that teams can be trained to perceive the same affordances through perceptual attunement to the performance conditions that make team synergies possible. Individuals in teams can be coached to be attuned to the affordances of their teammates in the dynamics of performance situation and to refine their actions to functionally adapt to the actions of teammates and opposition. Further, athletes in a team can

learn to behave to create favourable affordances as athletes and their practice context co-determine each other as both athlete and practice environment interact with the potential to be impacted and transformed by the interactions (Araujo, Fonseca, Davids, Garganta, Volossovitch, Brandao, & Krebs, 2010).

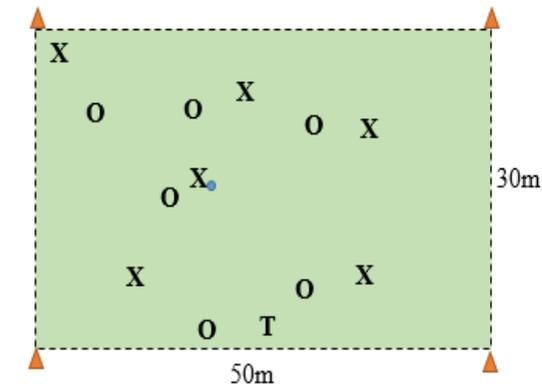
A key consideration is then that coaching can facilitate or inhibit team synergies with respect to a set of game performance dynamics (Araujo & Davids, 2016). The coaching influence through which to achieve attunement to affordances is the manipulation of game constraints (Dicks & Upton, 2017). We therefore borrow from Araujo (2007) to define expertise in a sport like Touch Football as an athlete's engagement in movement transactions through their affordances and within a functionally defined (information constrained) sport performance context.

### **3. DISCUSSION: A DEMONSTRATED APPLICATION IN TOUCH FOOTBALL COACHING**

Having briefly introduced and described the pedagogical expression of the GSA and grounded it in the field of skill acquisition through the theory of affordances, we will now provide practical examples of the pedagogical action of a GSA for Touch Football skill development, something that is absent from the literature. We intentionally set out this section as game (3v3) – practice (play practices) – game (3v3) to mimic the pathway a GSA might take in a practice session.

(Kabi Kabi Buroinnjin, next page)

Kabi Kabi Buroujin – modified version (Australian Sports Commission, 2009)



**Key**  
 Team 1 X  
 Team 2 O  
 Teacher T  
 Cones ▲  
 Boundary - - -  
 Ball ●  
 (pp 14-15)

### Teacher Questions

- What happens when we stand still in attack?
- How can we use communication to speed up the roll ball and use this to our advantage?
- How can we create space when we have the ball to give our team time to make decisions?

### Focus for Learning

- Scanning the field and making decisions by reading the play.
- Using movement to create space with and without the ball.

### Playing the Game

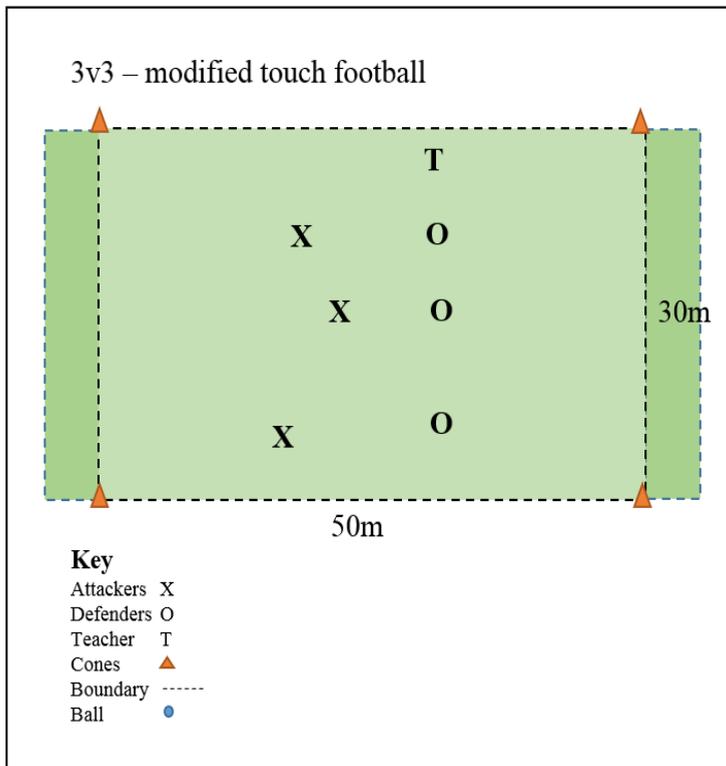
The aim: To score by running the ball over the 'score line' into the 'end zone' and placing the ball on the ground.

- The game begins with one team passing the ball in from their defensive line. Opposition players may not interfere with the first pass.
- Players in possession of the ball may run with it as far and as long as possible, unless touched by a player on the opposing team while in possession. You may also pass the ball in any direction.
- A player who is touched must return to where they were touched, face their attacking score line, place the ball on the ground and step over it (roll ball).
- Another player from their team becomes the acting half by picking the ball up and passing to a team mate (for the purpose of this game the acting half cannot run with the ball). The defense must be at least 5m away from the roll ball.
- A score can only be made by running the ball into the 'end zone' and placing the ball on the ground (cannot pass into the 'end zone').
- Passes may be intercepted but contact cannot be used to interrupt a pass, a player receiving the ball or to dislodge the ball (the touch is the only acceptable contact in the game).
- The number of touches a team has is determined by the number of players in each team (eg. 6 a side = 6 touches per set). This may however be increased for novices.
- The referee calls out the 'touch count' and a changeover only results either once a score is achieved or a team reaches the end of their 'touch count'. A 'touch' is counted each time a player in possession is touched, the ball is dropped or goes out of play. If the ball is dropped or goes out the 'roll ball' is performed where the infringement occurred.
- If the defensive team uses unnecessary or excessive contact the touch count is reset to 0.
- The game restarts either where the final 'touch' in the 'touch count' occurred or the score was achieved.

## **Kabi Kabi Buroinnjin**

Kabi Kabi Buroinnjin is a traditional Indigenous game played predominantly in Southern Queensland (Australian Sports Commission, 2009). This version of the game has been modified for the teaching of Touch Football using a GSA. This modified version of a tagging game allows players to quickly apply a range of considerations within line invasion games. The 'chaotic' environment encourages learners with the ball to scan the field for open space and decide whether the best option is to run or pass the ball. An additional constraint may be imposed that two touches from two separate defenders are required in order for an attacking push to stop. This affords additional time for a player in possession of the ball to perceive available space to drive into, take a touch and identify possible passing options. An additional touch rule also creates gaps or space in the defensive set-up as two defensive players need to pressure and touch the ball carrier. This creates open passing options that are perceptually exaggerated. Attacking players without the ball aim to position themselves for an available pass by using width and depth on the field as well as being able to recognise when an acting half is needed to speed up the play of the ball. A technical focus on how to pass is removed to allow players to begin to apply tactical movement for invasion games. The Touch Football primary rule of backward passing has been removed so that players are able to actively engage in the crucial element of running in the game by initially removing this complexity. Defenders look at how to position themselves in order to protect the score line.

(Modified Touch Football, next page)



**Teacher Questions**

- How can you speed up the role ball and take advantage of the fact that the defence has to retreat?
- What direction are you aiming to run with the ball?
- What are you aiming to do once you have rolled the ball or passed from acting half?
- In defence, why is it important to move as a straight line?

**Focus for Learning**

- Reading the play to time runs into holes.
- Applying specific rules of the game such as backward passing in attack and offside in defense.
- Demonstrating the beginning of rucking patterns but resetting behind the play in attack when you don't have the ball and running onto a pass.

**Playing the Game**

The aim: To score by running the ball into the 'end zone' to place the ball on the ground.

\*The change from the previous activity is that now the ball must be passed backward in relation to direction of travel toward your scoreline.

- The game begins in the centre of the field with the defensive team 10 metres back toward their defensive line. The ball starts on the ground and must be tapped with an attacking players' foot before being picked up.

- Players in possession of the ball may run with it as far and as long as possible, unless touched by a player on the opposing team while in possession. You may elect to pass before this happens.
  - A player who is touched must return to where they were touched and perform a roll ball.
  - An acting half must pass the ball from the ground in this modified version of the game.
  - After a touch is performed the defensive team must retreat 5 metres before attempting to engage in any further play and not move forward until the acting half has passed the ball (to ensure time for players to be successful). Cones may be placed on the sideline at 5 metre intervals to allow players to monitor their own distances. This may be modified to 10 metres if more space and time is needed.
  - A score can only be made by running the ball into the 'end zone' and placing the ball on the ground.
  - Teams have 6 touches in a 'set' to score. As well as being touched with the ball a touch is counted for mistakes in the game (drop ball, running out of play) and 2 touches are added for penalties committed by attacking team (passing the ball forward, passing the ball after you have been touched, not rolling the ball where you were touched, shepherding).
  - The touch count resets if the defensive team commit penalty offenses (not retreating 5 metres before engaging in the next play, excessive force in the touch, interfering with the roll ball).
  - The referee (or defensive line) calls out the 'touch count' and a changeover only results either once a score is achieved or a team reaches the end of their 'touch count'.
- The game restarts either where the final 'touch' in the 'touch count' occurred or from the centre line if a score is achieved.

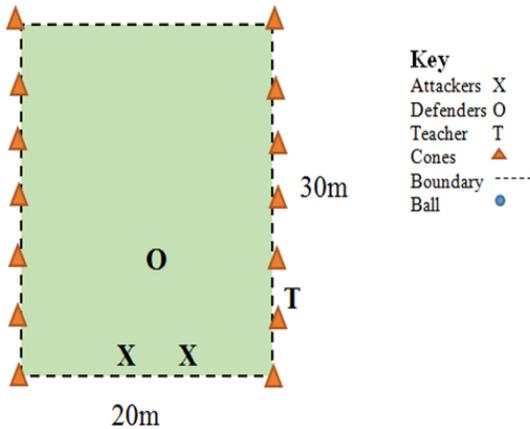
### 3v3 Modified Touch Football

This game progression continues task constraints imposed above with the addition that only backwards passing is permitted. Key rules of offside and direction of pass can be indicated during the demonstration and specific infringements can be identified during play as they occur. The use of 'teaching in the game' then allows the practitioner to ask relevant questions of the learner as they arise and consider how the learner is perceiving the game environment.

The ball must now be rolled back or stepped over after each touch with responsibilities of the acting half and first receiver a learning focus. Through observations of play, participants can be questioned to think about the benefits of running a slight angle without the ball and straight lines with the ball.

The backward pass now highlights the importance for off-the-ball players to reset behind the play, creating an imperative for the acting half to receive the ball quickly and recommence attacking by passing to a first receiver that is moving forward. The defensive line should be guided to the value the proposition of moving up as a straight line to reduce the gaps between them as well as moving back quickly after a touch.

### 2v1 weighted number game sense game



#### Teacher Questions

- As the ball carrier what are you trying to make the defender do?
- When would you pass?
- What should you do once you have passed?
- As an attacker without the ball how and where are you aiming to run?
- How do we use the ‘draw and give’ in the game?

#### Focus for Learning

- Using speed and agility to progress forward in attack.
- Holding the ball in two hands so that a pass is always an option.
- Using space to enable a successful ‘draw and give’.

#### Playing the Game

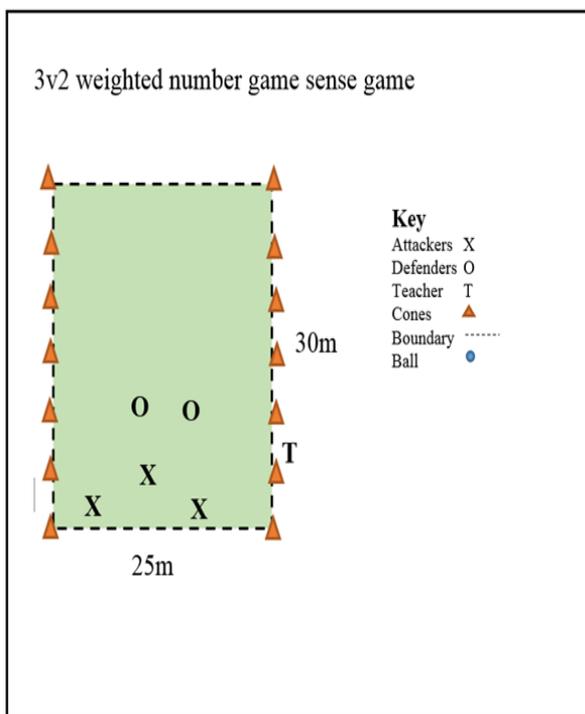
The aim: To score by running the ball into the ‘end zone’ to place the ball on the ground.

- The game begins at one end. You may choose to play that pairs have one attempt to score, 6 touches to score or see how many touches it takes before you can score.
- Players in possession of the ball may run with it as far and as long as possible, unless touched by a player on the opposing team while in possession. You may elect to pass before this happens.
- If playing with touches the defender must retreat 5 metres after a touch before attempting to engage in any further play and not move forward until the acting half has passed the ball (to ensure time for players to be successful). Cones may be placed on the sideline at 5 metre intervals to allow players to monitor their own distances. This may be modified to 10 metres if more space and time is needed.
- The touch count resets if the defensive team commit penalty offenses (not retreating 5 metres before engaging in the next play, excessive force in the touch, interfering with the roll ball) or touch the ball without making a ‘clean’ intercept.

### 2v1 Weighted Number Game Sense Game

Creating and exploiting space in order to penetrate a defensive line is one of the more difficult tactical abilities in Touch Football. Increasing attacker numbers in this learning activity affords novices with increased time and space around the decision making imperative to pass or run. A minimum of two attacking players are used to be able to ‘play in touch’ –

one to play the 'roll ball' who then can become the 'first receiver', one to act as the 'acting half' receiving the roll ball. This means that players have to be able to read what the defender chooses to do, and decide whether to run for the line to score or pass the ball to their team mate. This requires players to effectively time runs so that a pass still travels backwards, holding the ball to draw a defender so that teammates can run onto the pass into space, and how to position in defence.



### Teacher Questions

- How can we change lines if defenders are able to shift and cover the extra player?
- How can the ball carrier create space to allow for a wrap or switch to be run successfully?
- What should the player without the ball do to effectively execute these change in lines represented as wraps and switches?

### Focus for Learning

- Applying an understanding of rules.
- Identifying and exploiting space.
- Applying tactical principles of supporting with width, setting with depth and improvising as a result of game perceptiveness.

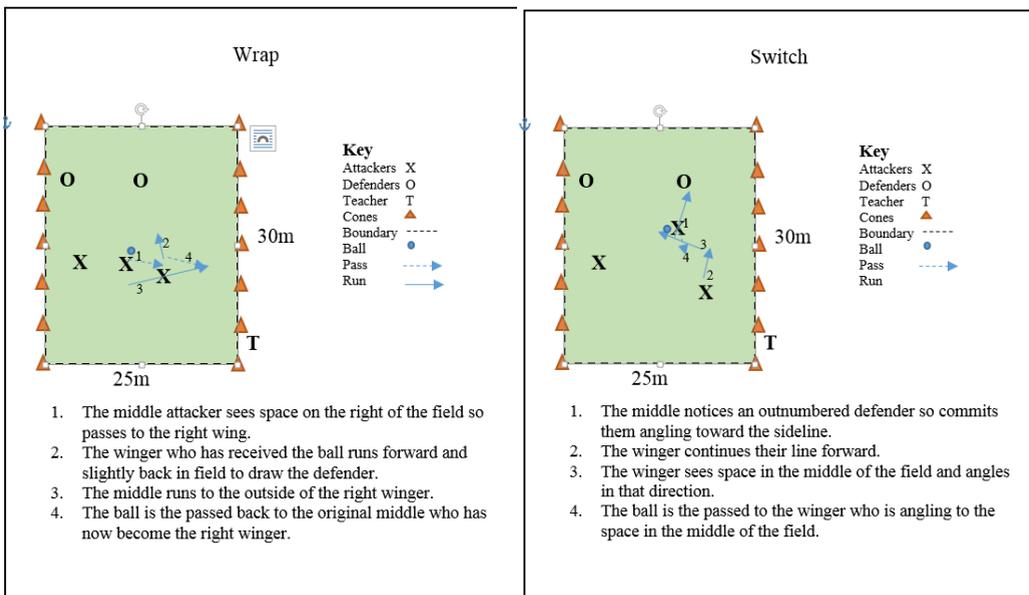
### Playing the Game

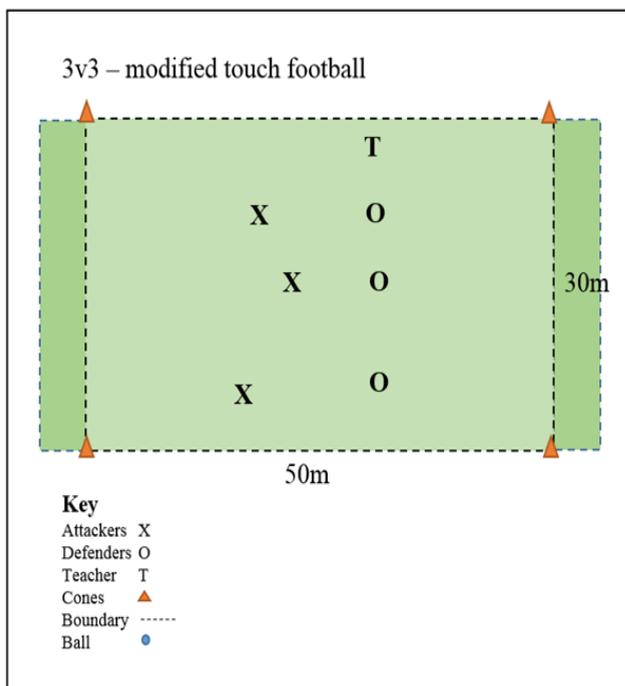
The aim of the game: To score by running the ball into the 'end zone' to place the ball on the ground.

- The game begins at one end and teams have 3 touches to score. This will represent the opportunity to attack the line once the ball has been moved beyond half way.
- Players in possession of the ball may run with it as far and as long as possible, unless touched by a player on the opposing team while in possession. You may elect to pass before this happens.
- Defenders must retreat 5 metres after a touch before attempting to engage in any further play and not move forward until the acting half has now touched the ball (Cones may be placed on the side line at 5 metre intervals to allow players to monitor their own distances. This may be modified to 10 metres if more space and time is needed).
- The key change from the 2 v 1 is that the acting half may now elect to run with the ball but is not permitted to score and if touched by an onside defender immediately loses possession.
- We also now remove rules that have up until now substituted a turnover for touches. Mistakes by the attacking team now result in loss of possession.

### 3v2 Weighted Number Game Sense Game

This weighted number game representation extends on a players ability to take advantage of space that is created in defence introduced in the 2v1. This game again simplifies the constraints posed to students but is an opportunity to use guided discovery (Pill, 2007) to introduce attacking patterns, such as a wrap or switch, to expose space. Players will now need to decide whether it is best to take a touch, pass or run with the ball. At this point we should see players now using a range of lines in their running as well as using different depths before receiving the ball. The wrap can be viewed as a transitionalary pattern to the switch (see diagrams below) as it can be simpler to effectively execute for novices.





### Teacher Questions

- How can we use the 'draw and give' to create holes in the defensive line?
- How have you explored running different lines both with and without the ball?
- What are some different options for us once we have passed the ball?
- What role do we see communication playing in attack and defence?
- How can the touch be used tactically in attack?

### Focus for Learning

- An application of learning throughout the lesson considering tactics, rules and communication

### Playing the Game

- This game now applies the rule changes made in the 3v2 to align the game more closely to Touch Football.
- The teacher may choose to revisit some of the rules that were made apparent due to previous game play.
- The aim of the game is to score by running the ball into the 'end zone' to place the ball on the ground.
- The game begins in the centre on the field and teams have 6 touches to score.
- Players in possession of the ball may run with it as far and as long as possible, unless touched by a player on the opposing team while in possession. You may elect to pass before this happens.
- Defenders must retreat 5 metres after a touch before attempting to engage in any further play and not move forward until the acting half has now touched the ball (Cones may be placed on the side line at 5 metre intervals to allow players to monitor their own distances. This may be modified to 10 metres if more space and time is needed).
- A range of Touch Football rules may become apparent in this game such as dummy half caught, drop ball, etc. and can be discussed as problems are presented in the game.

## 3v3 Modified Touch Football

This game applies the learning from the 2v1 and 3v2 activity. By reading the defensive play on the field, attackers support the ball carrier with

width, running lines into gaps, and making choices about when to run, pass or take a touch. However, evenly numbered teams now provides the basis to force players to draw defenders in order to break the defensive line. ‘Freeze replay’ moments (Lauder, 2001) may be used in the early stages to pause play and through the use of questioning, highlight momentary configurations related to the ‘draw and give’ or attacking patterns. The idea of maintaining defensive positions rather than following an attacker can be identified and discussed. Depending on learners’ skill ability to successfully pass and receive, rule adjustments may be made to regulate the complexity of techniques required for participation. For example, drop ball may result in a turnover. Throughout these modified games, 3 players have been used as it represents one of each of the three key Touch Football positions; a middle, link and wing. This effectively utilises half of the number of players in a full game (6 players). Moving next to 4v4 allows players to explore the roles of two middles and two links to discover how play is created in the middle of the field, or to begin to ask questions about how wingers might be used in the game. This then leads to the opportunity to move to the full version of 6v6 with purpose. Changing constraints through player number modifications in this way will allow performers to perceive a range of instances experienced in the game.

#### 4. CONCLUSION

The proposition of constraints-led game design is a logical semantic for the game-based practice assumptions of modified games of the GSA. In this paper, we have demonstrated the flexibility of a GSA as a ‘non-linear’ coaching process (Table 1) (Light, 2013; Pill, 2006). The coaching examples outlined exemplify manipulation of attacker-defender relationships through the use of task constraint modification around time and space. Understanding Touch Football as a complex dynamic system, it is acknowledged that these examples may need to be further adjusted depending on player behaviours. Ultimately, coaching from a constraints-led framework emphasises a pedagogical imperative to construct learning opportunities that afford specific task-orientated behaviours.

#### REFERENCES

- Araújo, D. (2007). Promoting ecologies where performers exhibit expert interactions. *International Journal of Sport Psychology*, 38(1), 73–77.

- Araujo, D. & Davids, K. (2016). Team synergies in sport: Theory and measures. *Frontiers in Psychology*, 7, Article 1449. Retrieved 15 March, 2017, from <https://www.frontiersin.org/articles/10.3389/fpsyg.2016.01449/full>. doi: 10.3389/fpsyg.2016.01449
- Araujo, D., Fonseca, C., Davids, K., Garganta, J., Volossovitch, A., Brandao, R., & Krebs, R. (2010). The role of ecological constraints on expertise development. *Talent Development and Excellence*, 2(2), 165-179. Retrieved 15 March, 2017, from <https://eprints.qut.edu.au/40901/1/40901.pdf>
- Australian Sports Commission. (1996). *Game Sense perceptions and actions research report*. Belconnen, ACT: Australian Sports Commission.
- Australian Sports Commission. (1999). *Game sense cards: 30 games to develop thinking players*. Belconnen, ACT: Australian Sports Commission.
- Australian Sports Commission. (2009). *Yalunga traditional Indigenous games*. Belconnen, ACT: Australian Sports Commission.
- Bhaskaran, V. (2003). *Level III hockey coaching course*. Bangalore, India: Karnataka State Hockey Association.
- Brown, T. B. J., Carlson, T.B., & Hastie, P. A. (2004). A comparison of rugby seasons presented in traditional and sport education formats. *European Physical Education Review*, 10, 199–214. Retrieved 15 March, 2017, from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.839.5091&rep=rep1&type=pdf>. doi: 0.1177/1356336X04044071
- Charlesworth, R. (1994). Designer games. *Sport Coach*, 17(4), 30-33.
- Chemero, A. (2003). An outline of a theory of affordances. *Ecological Psychology*, 15(2), 181-195. doi: [http://10.0.4.183/S15326969ECO1502\\_5](http://10.0.4.183/S15326969ECO1502_5)
- Davids, K., Araujo, D., Vilar, L., Renshaw, I., & Pinder, R. (2013). An ecological dynamics approach to skill acquisition: implications for development of talent in sport. *Talent Development & Excellence*. 5(1), 21-34.
- Davids, K., Button, C., & Bennett, S. (2008). *Dynamics of skill acquisition: A constraints-led approach*. Champaign, Ill: Human Kinetics.

- Davids, K., Renshaw, I., & Glazier, P. (2005). Movement models from sports reveal fundamental insights into coordination processes. *Exercise and Sport Sciences Reviews*, 33(1), 36–42. Retrieved 15 September, 2016 from [https://journals.lww.com/acsm-essr/Fulltext/2005/01000/Movement\\_Models\\_from\\_Sports\\_Reveal\\_Fundamental.7.aspx](https://journals.lww.com/acsm-essr/Fulltext/2005/01000/Movement_Models_from_Sports_Reveal_Fundamental.7.aspx)
- den Duyn, N. (1996). Why it makes sense to play games. *Sports Coach*, 19(3), 6-9
- den Duyn, N. (1997). *Game Sense - developing thinking players workbook*. Belconnen, ACT: Australian Sports Commission.
- Dicks, M., & Upton, M. (2017). Integrating decision-making into training. In R. Thelwell, C. Harwood & I. Greenless (Eds.), *The Psychology of sports coaching* (pp. 249-264). New York: Routledge.
- Gibson, J. J. (1979). *The ecological approach to visual perception*. Boston: Houghton Mifflin.
- Gray, S., & Hall, E. (2015). Coaching tactics. In C. Nash (Eds.), *Practical sports coaching* (pp. 148-174). New York: Routledge.
- Hopper, T. (2011). Game-as-teacher: Modification by adaptation in learning through game-play. *Asia-Pacific Journal of Health, Sport and Physical Education*, 2(2), 3–21. doi: 10.1080/18377122.2011.9730348
- Kirk, D. (2010). *Physical education futures*. New York: Routledge.
- Lauder, A. (2001). *Play practice: The games approach to teaching and coaching sports*. Champaign, IL: Human Kinetics.
- Light, R. (2005). Making sense of chaos: Australian coaches talk about game sense. In L. Griffin & J. Butler (Eds.), *Teaching games for understanding: Theory, Research and Practice* (pp. 169–182). Champaign, IL: Human Kinetics.
- Light, R. (2006). Game sense: Innovation or just good coaching? *Journal of Physical Education New Zealand*, 39(1), 8-19.
- Light, R. (2008). Complex learning theory-its epistemology and its assumptions about learning: Implications for physical education. *Journal of Teaching in Physical Education*, 27, 21–37. Retrieved 15 September, 2016 from <https://journals.humankinetics.com/doi/pdf/10.1123/jtpe.27.1.21>

doi: 10.1123/jtpe.27.1.21

- Light, R. (2013). *Game sense: Pedagogy for performance, participation and enjoyment*. New York: Routledge.
- Light, R. L., Harvey, S., & Mouchet, A. (2012). Improving 'at-action' decision-making in team sports through a holistic coaching approach. *Sport, Education and Society*, 1–18, iFirst Article. Retrieved 15 September, 2016 from <https://www.tandfonline.com/doi/pdf/10.1080/13573322.2012.665803?needAccess=true>. doi: 10.1080/13573322.2012.665803
- Magias, T., Pill, S., Elliott, S., & Bell, E. (2015). An application on non-linear learning in Netball: Game sense coaching. *Active and Healthy Magazine*, 22(2/3), 35-40.
- Pigott, B. (1982). A psychological basis for trends in games teaching. *Bulletin of Physical Education*, 18, 17–22.
- Pill, S. (2006). Teaching games for understanding. *Sports Coach*, 29(2), 27-29.
- Pill, S. (2007). *Play with Purpose*. Hindmarsh, SA: ACHPER Publications.
- Pill, S. (2012). Teaching game sense in soccer. *Journal of Physical Education, Recreation & Dance*, 83(3), 42-52. doi: 10.1080/07303084.2012.10598746
- Pill, S. (2013). *Play with Purpose: Game sense to sport literacy*. Hindmarsh, SA: ACHPER Publications.
- Pill, S. (2014). Informing game sense pedagogy with constraints-led theory for coaching in Australian football. *Sports Coaching Review*, Published online 14 March, 2014. doi: 10.1080/21640629.2014.890778
- Pinder, R. A., Davids, K., Button, C., Renshaw, I., & Araujo, D. (2011). Representative learning design and functionality of research and practice in sport, *Journal of Sport & Exercise Psychology*, 33, 146-155. Retrieved 15 September, 2016 from [https://eprints.qut.edu.au/47250/1/47250\\_PUB.pdf](https://eprints.qut.edu.au/47250/1/47250_PUB.pdf). doi: http://10.0.4.99/jsep.33.1.146
- Schembri, G. (2005). *Playing for life: Coaches' guide*. Canberra, Australia: Australian Sports Commission.

- Smith, W. (2016). Fundamental movement skills and fundamental game skills are complimentary pairs and should be taught in complementary ways at all stages of skill development. *Sport, Education and Society*, 21(3), 431-442. Retrieved <https://www.tandfonline.com/doi/pdf/10.1080/13573322.2014.927757?needAccess=true> (15 May, 2017). doi: 10.1080/13573322.2014.927757
- Snapp-Childs, W., Wilson, A., & Bingham, G. P. (2015). Transfer of learning between unimanual and bimanual rhythmic movement coordination; Transfer is a function of task dynamic. *Experimental Brain Research*, 233(7), 2225-2238. Retrieved 15 September, 2016 from <https://link.springer.com/content/pdf/10.1007%2Fs00221-015-4292-y.pdf>
- Turvey, M. (1992). Affordances and prospective control: An outline of the ontology. *Ecological Psychology*, 4(3), 173-187. doi: 10.0.4.183/s15326969eco0403\_3
- Walsh, J., Heazlewood, I. T., & Climstein, M. (2012). Modelling touch football (touch rugby) as a Markov process. *International Journal of Sports Science and Engineering*, 6(4), 203-212.
- Wilson, A. D., Weightman, A., Bingham, G. P., & Zhu, Q. (2016). Using task dynamics to quantify the affordances of throwing for long distance and accuracy. *Journal of Experimental Psychology: Human Perception and Performance*, 42(7), 965-981. doi: 10.1037/xhp0000199