

## Teaching basketball to sampling-year athletes: a game-centered and situated learning perspective

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### Abstract:

Game based coaching such as that of Teaching Games for Understanding (TGfU), although pedagogically challenging in its practice, has been suggested as an effective approach for promoting players' psychomotor and affective responses to learning. The purpose of this study was to investigate sampling year athletes' learning progress within a TGfU unit of basketball, and interpret it naturalistically and in regards to their adaptation to contextual constraints. Participants were 35 boys (5-8 years;  $M=6.17$ ,  $SD=1.01$ ) from a sport club in Greece. Two coaches taught 16 basketball sessions to either a TGfU group ( $n= 14$ ) or a placebo group ( $n=21$ ), which received skills-first direct-instruction and was included in the study to rule out confirmation biases. Pre-and-post measures were completed using: (a) basketball skill tests and, (b) the game performance assessment instrument. Qualitative data in the form of a journal narratives based on the first author's lived experience of both groups' coaching sessions were also collected. Quantitative results revealed significant changes overtime in dribbling for both groups and game involvement for the placebo group. No significant changes between pre and post phases of the study in passing, decision-making, and skill execution scores were noted in either group. Qualitative findings supported the notion that for all children technical skills developed earlier than tactical awareness, being dependent upon institutional interacting constraints, as well as on coaches' ability to understand features of instruction and give them a culturally sensitive educational form. This study suggests that games can be a valued part of sampling year athlete training only in cases when the coach handles interacting constraints with developmental and contextual sensitivity.

**Key Words:** - Sports coaching, basketball, learning, skills, game performance

### Introduction

Coaching sampling-year (5-8) athletes is a demanding task that requires pedagogical competence and a multitude of skills and knowledge. According to the Developmental Model of Sport Participation (DMSP) (Côté, Horton, MacDonald & Wilkes, 2009), children aged 6 to 12 should take a sampling route and participate in high levels of deliberate play (i.e. loosely-monitored and simple-rule games) and low levels of deliberate practice (i.e. activities focused on performance improvement) for psychosocial and sport-related advantages to occur in the long run. Following the guidelines given by the International Olympic Committee (IOC) consensus statement (Bergeron et al., 2015), short-term episodic coaching sessions that focus on fun and enjoyment are appropriate for this age group, since these are more relevant to their developmental characteristics. On the other hand, overly-structured coaching, although bringing performance gains initially, may adversely influence young athletes' motor skills and engagement and at this stage is not suggested (Williams & Hodges, 2005). Despite the above, previous research reports that sports coaches mainly use traditional skills-first instruction (Williams & Hodges, 2005), an approach located within outcome-oriented discourses to skill development (Roberts & Fairclough, 2011). A typical lesson format of this approach is divided into: (a) an introductory activity, (b) a skill phase focusing on techniques and (c) a game that is played only after skills have been developed (Blomqvist, Luhtanen & Laasko, 2001). This form of instruction has been criticized for being inappropriate for young learners, especially in cases when sessions give limited opportunities for athlete autonomy (Ford, Yates & Williams, 2010) and put an overemphasis on high-repetition activities that are external from game realities (Harvey, Cushion & Massa-Gonzalez, 2010). In contrast, researchers have suggested that game-based coaching in the form of purposefully conditioned games enable the learning of skills and the accumulation of the experiences needed to develop a solid foundation for sport participation (Côté, Baker & Abernethy, 2003).

Game-Based Approaches (GBAs) such as the Teaching Games for Understanding (TGfU) model (Bunker & Thorpe, 1982) and the associated 'game-practice-game' format enables the activation of convergent and divergent tactical thinking (Memmert & Roth, 2007), making skill learning consistent with situational

demands without compromising the authenticity and meaning of sport (Mitchell, Oslin & Griffin, 2006). The use of GBAs has been linked with positive gains in learners' off-the-ball skills, (Lee & Ward, 2009), tactical creativity (Greco, Memmert & Morales, 2010), decision making and game-related motor skill execution (Rovegno, Nevett, Brock & Babiarz, 2001; MacPhail, Kirk & Griffin, 2008), tactical skill transfer (Memmert & Harvey, 2010) and motivation (Fry, Tan, McNeill, & Wright, 2010).

During the last decades, research carried with GBAs has recognized the need for adopting situated and constraints-led approaches (CLAs) to the study of learners' performance (Memmert & Harvey, 2010). CLAs acknowledge the emergent and self-organizing nature of learning and suggest that the dynamic interactions between individual, activity and environment are inseparable and need to be studied naturalistically (Chow, Renshaw, Button, Davids & Wee Keat, 2013). Furthermore, since the regularities and patterns of practice within each setting will ultimately construct the individual as a learner, the focus of every educational endeavour should primarily be the optimization of the social organization of learning (Lave & Wenger, 1991). Despite the above, until today, evidence considering learning within games is not abundant in GBA coaching literature, both in regards to its ecological theorizing and in research made with sampling year athletes. This seems an oversight considering that this age range is critical for developing positive attitudes toward sport (Light, Harvey & Memmert, 2013).

Therefore, the aim of the study was to investigate sampling year athletes' learning progress within a TGfU basketball unit, and interpret this progress in regards to their adaptation to the constraints imposed by the context of study. Similar to the "teaching experiment" of Rovegno et al. (2001), our purpose was not to prove the superiority of TGfU in relation to other coaching models, but instead bring attention into how cultural/institutional norms can guide coaching practice and judge it as being effective or not. In doing so, we followed the recommendations of Harvey and Jarrett (2014) and adopted varied data collection techniques in order to generate information located (a) in the situatedness of young children's learning and (b) in researchers' personalized accounts of challenges that arise when the normative traditions of coaching contexts are confronted.

## **Material & methods**

### *Participants*

The study took place in a local sport club, in a large metropolitan area in Greece. The entire sample consisted of 35 boys, aged five to eight years old ( $M=6.17$ ,  $SD=1.01$ ), who were enrolled in two sampling-year basketball groups. All players had no previous experience of participation in structured basketball programs and were heterogeneous in terms of abilities. Before the beginning of the study, informed consent was obtained from parents and guardians. At the time of our arrival, the two coaching groups were already practicing at the sport club by the means of skills-first instruction, with an emphasis on early-sport specialization. The process of getting research access was not an easy undertaking, since the managing board wanted reassurance that our suggested practices would not deviate from their demand-oriented coaching practices. For this purpose, evidence-informed IOC recommendations and perspectives (Bergeron et al., 2015) were presented to the head coaches, outlining the need for a game based agenda for young athlete instruction. Research access was gained, but IOC criteria for grouping athletes could not effectively be met. Furthermore, the thematic content of TGfU sessions was designed so as not to deviate significantly from the sport club's coaching curriculum (Table 1). A 33-year old basketball coach with five years of coaching experience in the sport club and an assistant coach (who was a 20 year old undergraduate student specializing in basketball coaching) were assigned as both groups' coaches. They both had experience with traditional practice basketball sessions but had no previous experience with TGfU. An education period took place before the beginning of the coaching experiment and was delivered by the first author in the form of three one-hour theoretical sessions. The first author had a working experience as a PE teacher educator and an active TGfU scholarly activity and was keen to embrace a researcher attitude to sampling year coaching with an intentionally informed game-based approach.

Acknowledging the challenges of applying theoretical knowledge and understandings "on the coaching ground", a decision was made to support coaches' training mainly through the use of collaborative learning processes (Armour & Yelling, 2007). Thus, an informal collaborative network was established between the coaches and the first author, which involved on-site and online exchange of views, practices and ideas concerning young-athlete instruction. Essentially, this network limited barriers in coach engagement and availability, and facilitated the first author's acceptance to the sport club as a colleague that would work with them towards "already envisaged" practices. Instead of doing a single group study, we decided to use an educational experiment methodology whereby one of the coaching groups was a TGfU group ( $n=14$ ) and the other was a placebo group ( $n=21$ ). From a methodological perspective, a placebo group was required not to address our research aim but to rule out Hawthorne effects related to TGfU group's participation in the study. Further, from the perspective of the sport club's culture, the use of a placebo group would also rule out potential parent confirmation biases towards the coaching experiment.

### *Procedures*

Coaching in the placebo group was developed under a skills-first approach with skill training activities and end up games determined by the head coach of the sport club, who we had already observed using this approach. Each session in the unit included an introductory warm-up activity, followed by technical skill

development, all with a large amount of deliberate practice with exact guidelines. At the end of the session, games were played either in the form of relays, or in the form of loosely structured play with no strict uniforms of practice (Table 1).

Table 1. Features of the basketball unit

TGfU Group			Skills-first Group		
Tactical goal	Technical content	Session Layout	Technical goal	Skill practice	Session Layout
<b>Pre-test</b>	-	-	<b>Pre-test</b>	-	-
Maintaining ball possession	Dribbling	<ul style="list-style-type: none"> <li>• Warm-up (Game)</li> <li>• Initial Game with questioning</li> <li>• Skill practice (relevant to game form)</li> <li>• Deliberate play</li> <li>• Final Game with Questioning</li> <li>• (Shooting relays/contests)</li> </ul>	Introduction to dribbling	Static & progressing dribble	<ul style="list-style-type: none"> <li>• Warm-up</li> <li>• Stretching</li> <li>• Skill practice</li> <li>• Game</li> <li>• Shooting relays/contests</li> </ul>
Maintaining ball possession	Dribbling & stopping		Body balance	Dribbling & jump stop	
Maintaining ball possession	Dribbling & stopping		Body balance	Stride stop, jump stop, dribbling	
Maintaining ball possession	Passing, dribbling & stopping		Passing	Passing with jump stop & stride stop,	
Attacking a target	Passing, dribbling & shooting		Shooting	Dribbling, jump stop, & lay-up	
Maintaining ball possession up to a static target	Passing, dribbling & dodging		Shooting	Body balance during lay-up	
Maintaining ball possession and supporting player with the ball	Passing, dribbling with cold defense		Pivoting I	Body balance in pivoting	
Maintaining ball possession and supporting player with the ball	Passing, dribbling & shooting with cold defense		Pivoting II	Body balance in pivoting	
Maintaining ball possession and supporting player with the ball	Passing, dribbling & shooting with warm defense		Passing under pressure	Different types of pass with cold defense	
Maintaining ball possession and supporting player with the ball	Stealing and passing with warm defense		Passing under pressure	Different types of pass with cold defense	
Maintaining ball possession and progressing player with the ball	Rebound & dribbling		Rebounding	Body balance in rebound	
Maintaining ball possession and progressing player with the ball	Rebound, dribbling & dodging		Rebound & dribbling	Body balance in rebound and dribbling with cold defense	
Attacking a goal	Jump shot & lay-up with cold defense		Jump shot	Jump shot from a standing position	
Maintaining ball possession and attacking a goal	Jump shot & lay-up with warm defense		Passing & jump shot	Jump shot from a moving position	
Maintaining ball possession and attacking a goal	Passing, faking & shooting with warm defense		Passing & jump shot	Jump shot from a moving position with cold defense	
Maintaining ball possession and attacking a goal	Passing, faking & shooting with warm defense	Passing & jump shot	Jump shot from a moving position with cold defense		
<b>Post test</b>	-	-	<b>Post-test</b>	-	-

The initial design of the TGfU basketball unit was developed by the first author with a focus on designing coaching plans that could promote young players' skills and game-awareness. TGfU group sessions started with an introduction to game forms, e.g., 1-on-1, 2-on-2, or 3-on-3 small-sided games, supplemented with observation and tactical questioning by the coaches. Situations of numerical equality (e.g. 3 × 3), inferiority (3 × 4), and superiority (3 × 2) were often used, along with content and context specific changes to practice areas. The initial game form was followed by practice on skills and technique that related to the tactical content of the games. During the final part of each session, TGfU participants played a modified basketball game with rule and

equipment modifications. However, compromises were often made to the initial structure of TGfU session plans upon coaches' and parents' requests for free-play activities and relay contests. Throughout the research, the first author was present at all sessions for both groups to support the coaches in the delivery of the scripted lesson plans and verify the teaching methods used in both groups. After each training session, selected observations of both coaches' practice were discussed by all and contextual or operational modifications were made to activities. Both groups trained on weekends, for two 70-minute sessions each day of the weekend and training sessions were carried out in divided courts that were shared with training groups not participating in the study. Therefore, instructional content was adjusted accordingly, by also including long break periods for children's hydration, late coming, transition between courts and coach-parent communication.

*Data collection*

Data were collected by recording and observing young players' ways of operating and interacting within each session (Cobb et al., 1997). Following the suggestions of Rovegno et al. (2001), we collected data on both technical and tactical facets of performance and interpreted these in relation to contextual affordances and interactions. All participants' technical and tactical skills were tested at two different time points: one weekend before the start of the experiment (pre-test) and one weekend after its end (post-test).

For the technical performance, we used one passing (Harrison, 1969) and one dribbling (AAHPERD, 1984) test as representative items of basketball technique. The passing test recorded the total number of accurate passes each player could perform in 30 seconds, while the dribbling test recorded the time (in seconds) each player needed to dribble in a slalom-like movement around a straight line with cones. Both tests have been tested for reliability in young player populations (Mastrokalou et al., 2005) and were carried out indoors. For children's tactical performance, we used the Game Performance Assessment Instrument (GPAI) (Oslin, Mitchell & Griffin, 1998). Each player's game performance within a modified 4 vs. 4 invasion game was recorded and evaluated by an expert coder. The coder tallied and calculated measures of appropriate and inappropriate actions on three game components: game involvement, decision making, skill execution, according to the guidelines given by Oslin, Mitchell, and Griffin (1998). These three game components were chosen as being more salient for evaluating young children's general and game unspecific play competencies.

Prior to the start of the experiment, the coder, who was a physical education teacher and active basketball player, was trained to the use of GPAI by watching and analyzing two training videos, featuring a 4vs4, 10-minute modified invasion game. During the viewing and analysis of these videos, modifications and adjustments were made to the GPAI assessment criteria. Intra-observer reliability obtained by the training videos was calculated by the formula:  $\text{agreements}/(\text{agreements} + \text{disagreements})/100$  and proved to be acceptable (84% - 89% range) (van der Mars, 1989).

Qualitative data were collected through journal entries made by the first author, who used an auto-ethnographic perspective to write detailed descriptions of her lived experiences within the context of study (observations, concerns, micro-realities). These narratives were depicted as "the metaphor of a camera" (Ellis & Bochner, 2000) that would be used to further consider the complex realities and dynamic processes of optimizing young athlete learning within the culture of sport contexts.

*Data analysis*

To assess differences between pre (t1) and post scores (t2), paired-sample T-tests were run separately for both groups to test whether the means of technical and tactical game performance changed significantly overtime for one or both of these groups. The alpha level was set at  $p=.01$  and statistical analyses were conducted using Statistical Package for Social Sciences (SPSS) Version 20.0.

To analyze the transcripts of journal entries, a constant comparison method was used (Glaser & Strauss, 1967), to identify categories that allowed researchers to make connections to the quantitative data. Raw statements that were recorded within the journal entries and revealed the presence of mutually exclusive concepts were classified in main themes and sub-themes, as shown in Table 2. Trustworthiness of qualitative data was established by the first author's persistent interaction with the context of study, the detailed descriptions of the coaching episodes, as well as the reflective stance adopted in all journal writings throughout the study (Creswell, 2007).

**Table 2.** Raw data examples from qualitative themes and sub-themes

Raw data	Sub-theme
'...they always want to play the "Numbers" game at the end of each session. It is a rally. They stand in opposite parallel lines and the coach calls one or two numbers. Those who hear their number run to get possession of the ball and then play 1x1 or 2x2 until someone scores. They love this game!..' (multi-skill group, session 8)	Games of low complexity
'...there are one or two players in the group that can do everything. Most of the others however do not know what action to anticipate and from whom..' (TGfU group, session 9)	Stage of motor development
'...I saw changes in my son's social skills. He is not shy as he was before and he is rather motivated to come to practice..' (TGfU group, personal communication with a mother at the end of the unit) '...They enjoy coming to practice. They like it more when they play games..' (multi-skill group, personal communication with a father at the end of the unit)	Emotional practice of instruction

**Results**

The section below provides an overview of the coder reliability process, pre and post-test quantitative data findings, followed by the main qualitative themes that were identified, namely: session content, individual behaviors, and teaching. Even though data are presented separately in sub-sections, an attempt is made to address the interdependent and holistic nature of practice.

*Inter-observer reliability*

Inter-observer reliability was calculated with the same formula by coding a selection of the total number of research videos and ranged from 73% to 76%. Due to moderate interobserver agreement levels, extra coding sessions took place, with coders being introduced afresh to the functional definitions of GPAI criteria and categories (Reid, 1982). At the end of these sessions, percentages of interobserver agreement ranged within acceptable levels (81%-85%) (van der Mars, 1989).

*Quantitative data*

Results for the experimental group revealed significant differences over time only in dribbling ( $t_{(13)} = 3.553, p = .004, d = .94$ ). Similarly, significant differences over time were found for the control group in dribbling ( $t_{(16)} = 3.581, p = .002, d = .86$ ) but additionally game involvement ( $t_{(19)} = -2.877, p = .009, d = .64$ ). No significant changes between pre and post experiment phases of the study in passing, decision-making, and skill execution scores were noted in either group (Table 3).

**Table 3.** Descriptive statistics of players' pre-test and post-test scores and t-test

	TGfU Group		t	Sig	Skill-first Group		t	Sig
	Pretest M (SD)	Posttest M (SD)			Pretest M(SD)	Posttest M (SD)		
<b>Passing</b>	12.9 (2.84)	14.53 (2.64)	$t_{(13)} = -2.085$	p = .057	8.35 (2.64)	8.45 (3.58)	$t_{(16)} = -.757$	p = .460
<b>Dribbling</b>	17.27 (3.11)	15.14 (2.61)	$t_{(13)} = 3.553$	p = .004	26.25 (9.09)	21.7 (5.12)	$t_{(16)} = 3.581$	p = .002
<b>Game Invo/ment</b>	80.33 (24.78)	72.87 (19.89)	$t_{(14)} = 1.134$	p = .276	60.3 (26.84)	85.55 (33.60)	$t_{(19)} = -2.877$	p = .009
<b>Decision Making</b>	4.16 (2.50)	3.43 (2.01)	$t_{(14)} = 1.701$	p = .111	4.7 (4.08)	2.32 (2.07)	$t_{(19)} = 2.448$	p = .024
<b>Skill Execution</b>	2.9 (1.89)	4.14 (4.57)	$t_{(14)} = -1.252$	p = .231	1.92 (1.33)	2.12 (1.76)	$t_{(19)} = -.537$	p = .598

*Qualitative data*

*Session content*

In the TGfU group, the tactical problem addressed in most sessions was finding ways to 'maintain possession of the ball', with the skills used by the learners being different each time. In contrast, training sessions in the skills-first group were focused on discrete skills such as passing, dribbling, dodging, etc. However, regardless of the form of instruction and pedagogy used by the coaches, most children in both groups were unable to consistently send or receive catchable passes unless they already possessed such skills prior to the study:

'Paul keeps looking at nearby courts. He does not notice that somebody has sent him a pass. As for Peter it seems that he can pass everywhere and receive everything' (TGfU group, session 6).

'It is their turn but many of them cannot receive a pass successfully, and the ball usually goes out of bounds' (skills-first group, session 3).

Instead, the notion of fun and enjoyment was a pre-cursor to all children's game involvement. For example, both groups participated in a small-sided game called Numbers-game:

'The Numbers-game is a rally. They stand in opposite parallel lines and the coach calls one or two numbers. Those who hear their number run to get possession of the ball and then play 1x1 or 2x2 until someone scores' (skills-first group, session 8).

'They have seen their older siblings playing this game (the Numbers)... they believe that only this is basketball' (TGfU group, session 5).

The Numbers-game required shorts bouts of attention and effort and this seemed to align with children's physical and perceptual needs. In the skills-first group, the Numbers-game was practiced almost at the end of every session, as a form of deliberate play activity. On the other hand, even though similar deliberate play activities were designed for the TGfU group, these were not so favored or accepted by children who kept asking 'when are we going to play the Numbers-game'.

'They keep asking for this game...It reminds me of the time I was working as a PE teacher when students kept asking me to play football, in its media-promoted adult form...' (TGfU group, session 11).

Data from the journal entries showed that what children needed was loosely structured basketball time that would strengthen their sense of belonging to the performance culture of the sport club, and when they did not get it, they felt disaffected:

‘The coach uses the Numbers-game as a reward for on the task behaviors, and everyone practices so that they can play basketball at the end’ (skills-first group, session 9).

‘When the coach does not let them play the Numbers-game, they get really frustrated’ (TGfU group, session 11).

*Individual behaviors*

A frequently observed behavior for children in both groups was ‘travelling’ with the ball in their hands. This action was primarily used when the children were trying to get free from opponents and it was performed rather implicitly. In both groups, children chose first to run with the ball and then stop and dribble in place, as if they wanted time to concentrate and decide on their next move. As a result, most of the games that involved dribbling were implemented more like ‘tag’ games and less like games where object control was the central purpose:

‘It seems to me that they are playing chasing and fleeing games’ (TGfU group, session 4).

‘They use both hands to control the ball and when they decide to run towards the basket, they do it with the ball in their hands’ (skills-first group, session 2).

However, dribbling was the only technical skill that showed improvement with both instructional approaches. All children seemed to value this skill per se and kept finding opportunities to practice it at a developmental level. Session observations showed that the more they demonstrated their dribbling capabilities, the more competency and acceptance they achieved:

‘The most competent ones use the dribble to move towards the basket, and when they do, everybody stops and watches’ (TGfU group, session 5).

‘Dribbling, when used successfully, makes them feel really proud’ (skills-first group, session 5).

In every case, the holding and bouncing of the ball seemed to give meaning to all children’s basketball performance and constitute them as active game players. Being intrinsically task-oriented due to their developmental level, children in both groups perceived the ball as a great toy, one that everybody wanted to take the possession of to feel joyful, physically competent and happy. Overall, it seemed that it was the amount of effort they put in playing with the ball as opposed to playing with or against the others that made them feel active game participants:

‘They do not want to give the ball to others or lose it’ (skills-first group, session 2).

‘They complain when their teammate does not pass to them’ (TGfU group, session 14).

Children’s desire to have a contact with the ball as much as possible appeared to be equally significant with their need to socialize with their peers. Indeed, socialization was witnessed by the research team as a major inducement for all children’s participation in the session activities. However, the structure of instruction in the two groups shaped slightly differently the social nature of players’ sport membership. For instance, in the skills-first group, children spent lots of time standing in lines, a coaching practice that had long been adopted by the sport club. Such an instructional aspect, although being inappropriate for conditioning on-task behaviors, facilitated children’s socialization which occurred in the form of teasing teammates, asking others to tie their shoelaces, or watching nearby court players’ performance while waiting:

‘They stop talking to each other when the coach shouts at them but standing still in the lines continues to be an uncomfortable situation for them’ (skills-first group, session 7).

On the other hand, in the TGfU group, both the layout of game activities and the product-oriented nature of their implementation (i.e. rigid rules and emphasis on the lesson-plan scripts) limited the time that children had for socializing.

‘I realize that keeping children on task for most of the time is not a welcome situation for many’ (TGfU group, session 7)

They frequently asked for water or breaks, and when they were given time off, they sat on the side of the court with peers resting and talking about their favorite toy or television show:

‘John seems to constantly find excuses for asking time off practice. His dad always brings him back to court’ (TGfU group, session 2).

*Teaching*

In both groups, the institutional-cultural dimensions of the sport club conditioned both children and their parents to expect a specific format of instruction, one that focused on competition and repetitive skill training. Due to the space limitations of the sport club, both children and their parents often compared their own practice with the skill-and-drill training that was happening in nearby courts. However, in both groups the coach’s decisions and practices were undeniably accepted by all, since the culture of the sport club encouraged members to respect their coaches’ authority.

In the present case though, it was more the coach’s affective stance and less his authority that determined all children’s nature of participation. Having years of experience as a player and sampling-year coach in the sport club, the coach had developed positive interactions and social bonds with other coaches, administrators and parents. Being also a young father himself, he approached each child with remarkable sensitivity, lifting it up in the air for fun and kneeling down whenever he wanted to talk with it or explain something they had not understood. In this regard, parents often encouraged their children to sustain effort and performance, no matter



under what conditions of practice, since they perceived their children's learning as something worthwhile for their development:

'I saw changes in my son's social skills. He is not shy as he was before' (TGfU group, personal communication with a mother at the end of the unit).

'They like it more when they play games' (skills-first group, personal communication with a father at the end of the unit).

Indeed, conditions of lesson organization, instructions and feedback differed between the two groups. Within the TGfU group, sessions were based on small-sided games, which were organized around 'if-then' rules. The latter were usually verbalized as feedback during questioning breaks. However, the fact that TGfU activities were determined beforehand without an input from the two coaches made teaching in this group move in a more conservative function. On the other hand, tactical learning within the skills-first group was not done in such an explicit way, but it was designed mainly around skill-oriented activities (e.g. relays, shooting contests). The latter were loosely structured in terms of instructions that had to be given to children and the choice or timing of feedback was left to the autonomy of the coach. As a result, even though teaching the skills-first group was a more comfortable endeavor, this did not seem to be the case with TGfU, possibly due to coaches' limited experience and fragmented understanding of the model:

'He (the coach) has not read the lesson plan thoroughly and does not remember the activities. He coaches holding the script in his hands!' (TGfU group, sessions 1, 6).

'He feels so comfortable with lesson organization and management that the other coach has an assisting role, keeping children in lines or getting out-of bounds balls within the court' (multi-skill group session 6).

### **Dicussion**

The purpose of this study was to examine under an ecological and situated-learning perspective sampling year athletes' progress within a TGfU basketball unit. The major finding was that selected elements of young children's game-play behavior did not show the progress that was expected and this was attributed both to their developmental characteristics and to domain specific conditions of practice. Previous research carried out under an ecological perspective, has shown that sport-specific progress and development is based on learners' ability to appropriately arrange the cognitive-response selection with the movement-response execution components of their performance in the form of condition-action pairs (Rovegno & Bandhauer, 2013). For sampling year players, such perception-action couplings can be achieved more easily within deliberate play activities (Cote & Hay, 2002). Research has shown that deliberate play activities provide unique contexts for technical or tactical skill learning (Pellegrini, Dupuis & Smith, 2007) and can help sampling-year players to become more focused and self-regulated during play (Baker & Côté, 2006). In our case, the Numbers-game was regularly practiced as a form of deliberate play activity only in the skills-first group, a fact that could possibly be linked with this group's development of game performance scores at the end of the program.

However, in both groups, children chose to travel with the ball in their hands, and this low-complexity behavioral reaction was purposefully selected since it was more relevant with their developmental capabilities. Holding onto the ball seemed to help them regulate their attentional focus and manipulate interacting constraints, (e.g. boundary lines, scoring goals, equipment and player roles) more easily. As reported by Rovegno (2010), young children find tag games easier to understand and play in terms of tactics, since they do not have to worry about performing skills like passing or receiving.

Evidence from session observations however showed that the outcomes of all participants' performance were ultimately determined mainly by the structure and organization of instruction in each group and not the coaching approach per se. A basic feature of instruction within the skills-first group was the use of variable practice (training with variations of the same skill), and the employment of individually oriented activities (e.g. relays, shooting contests). On the other hand, instruction within TGfU sessions seemed to be overly organized (mostly due to coaches' lack of experience), in terms of time limits and uniforms of practice, with a frequent use of augmented feedback and explicit guidance. Recent interest in CLA perspectives suggests that implicit learning is more appropriate for young children's level of cognitive maturity and appears to happen more often in low complexity situations of group interaction (Cote, Erickson & Abernethy, 2013). On the contrary, rigid game structures and an overemphasis on rules may be the cause for children's loss of interest to put effort, due to great demands placed on their working memory (Master, van der Kamp & Capio, 2013). The first author's lived experience from the context of study revealed that either during "skill-work" or within "game-based" play, the adoption of a "hands-off" coaching stance (Cushion, Ford & Williams, 2012) was more beneficial for young learners. In both groups, children needed time to effectively control their motor patterns and regulate their emotions and cognitive performance accordingly and when time was not given their motivation for engagement and effort was adversely affected.

For children, both the functional (e.g. keep the activity running) and the social (e.g. practice with teammates) dimensions of game and practice seemed to be of equal importance, determining both the intensity and the meaning given to their participation. This was evident in our case by the positive developmental trends that both groups showed in their dribbling behaviors at the end of our coaching experiment. Justifying previous

research in sports such as football (Psotta & Martin, 2011), and hockey (Turner & Martinek, 1999), dribbling was the only ball-in-use skill that developed equally for all players, and this could be attributed to the pleasure that children derived while performing this skill. Quennerstedt, Almqvist and Öhman (2011) argue that, depending on the context, the ball-in-use becomes an artifact that can facilitate forms of expression and successful experiences of participation, which, especially for low skilled athletes or late developers, are rather useful for learning and engagement. However, the dominance of dribbling-in-place movement patterns in our case reinforced the notion that young players all need a ball in 1 vs. 1 or play in low organized situations in order to feel competent (Rovegno & Bandhauer, 2013).

The challenge for caring for mixed-ability groups and addressing most players' desire to play rather than to practice, made the design of TGfU modified games difficult in the present study. Informed by children's motor responses and the club's notions of skillful performance, a major pedagogical dilemma we witnessed was how far to break skills and activities down. As research has shown, choice of instructional content and teaching approach needs to be situation specific (Harvey, Cushion & Massa-Gonzalez, 2010) and based on players' previous experience and knowledge in order to have a positive impact on their performance (Raab, 2007). In the present case, such a representative learning design was not facilitated for the TGfU group, since critical aspects of the context were not successfully taken care of during session design. Learner capabilities and physical development levels in this group were handled more with a "how do I teach" and less with a "how do they learn" manner, an insight that the first author gained after reflectively drawing on the feelings that arose at the end of the coaching experiment.

Indeed, the TGfU group's witnessed desire to play the Numbers-game was so strong that set out a challenge to the successful implementation of any other game that was not perceived by them as real basketball. This attitude was not relationally handled and this was a limitation of this study, since children had perceived this game as an already set up positive influence, both from a participant and a spectator perspective (Rovegno & Bandhauer, 2013). As it was observed, participants in both groups had both a declarative and a procedural knowledge of the Numbers-game and were already able to deploy its tactics. We believe therefore that if connections were made during session design between new game forms and the Numbers-game, positive changes would have been observed in the TGfU group's game appreciation and involvement.

From a situational learning perspective, shared practices within spheres of activity, such as sport contexts, constitute individuals as learners and thus shall be carefully inspected (Lave & Wenger, 1991). Indeed, young athletes may become disappointed by modifications made to what they already know and perceive as authentic sport practice (Brooker, Kirk, Braiuka & Bransgrove, 2000). A need for developing a caring attitude of "working-with" rather than "working-on" young athletes was further realized by the first author during her presence in the field of study, and remains to be adopted in future sampling year athlete projects. Especially in the TGfU group, both coaches' lack of experience with the model restricted their ability to develop a relational approach to their players' learning. Even though coach guidance and instructional monitoring were given by the first author throughout the basketball unit, coaches' lack of game observation and analysis abilities or questioning skills constrained the emergence of expected outcomes. This was not the case for the skills-first group, since both coaches' previous experience with this approach helped them to balance "what to teach" with "how it should be taught". As a result, club-specific situational constraints (e.g. sharing of facilities, parent disruptions, superior coach attitudes, etc.) were handled with less effort in this group, and more time was left for coaches to pay attention to players' emotions and affective responses. Berry, Abernethy and Cote (2008), state that the emotional practice of coaching creates a landscape of positive interactions, for both children and their parents, and maximizes opportunities for learning.

## Conclusions

The purpose of this study was to explore the impact of game-based coaching via TGfU on young athletes' learning how to play games. Adopting the methodology of teaching experiments, both the manifested learning trajectory of sampling-year basketball athletes and the specific circumstances needed to support that learning were explored. One major noteworthy item was that the use of ecological and situated perspectives in planning and delivering instruction for this age group is arguably a way for dealing effectively with issues related to their developmental characteristics. Bearing in mind that early specialization may have negative influences for children's healthy sport identity development, findings from this study showed that sampling-year coaches should judiciously move their focus from competition and performance to game-based practices that provide greater amounts of 'enjoyable time on task'. As such, it is our contention that in the future researchers should advocate for GBA coaching by first developing an insider's experience of the coaching culture they are studying, so as to articulate their theoretical knowledge in a manner that coaches can relate to. Such a shift could be particularly relevant to the needs of the Greek sampling-year athlete population, for whom research regarding game-based approaches has so far been scarce. However, larger sample sizes, recurring observation sessions and specifically devised assessment practices are needed to gain a better understanding of sampling year players' learning progression. In the present study the length and type of coach training that was implemented was not enough for TGfU enactment. Additionally, the Game Performance Assessment Instrument that was used was



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somewhat ineffective in being able to specifically trace the affective aspects of young learners' egocentric game play, and only the qualitative narratives could explicate this process.

While exploring the implications of the present study for sampling year coaching, we are led to the conclusion that although game-based coaching, such as TGfU, can help children to accumulate progress, age-appropriate pedagogies of and for learning should foremost support instructional design. Considering that the sampling years is a foundation period for children's future sport commitment, a careful examination of espoused pedagogies and manifested coaching practice are definitely key issues that need further attention.

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