**THE IMPACT OF A HYBRID SPORT EDUCATION-INVASION GAMES COMPETENCE MODEL
SOCCER UNIT ON STUDENTS' DECISION MAKING, SKILL EXECUTION AND OVERALL GAME
PERFORMANCE**

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PALAVRAS-CHAVE: ENSINO DO FUTEBOL; MODELO DE EDUCAÇÃO DESPORTIVA; MODELO DE COMPETÊNCIA DOS JOGOS DE INVASÃO; UNIDADE DE ENSINO HÍBRIDA; TOMADA DE DECISÃO; EXECUÇÃO MOTORA; PERFORMANCE EM JOGO.

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ÍNDICE GERAL

RESUMO.....	IX
1. INTRODUÇÃO.....	1
1.1. <i>Justificação e enquadramento do estudo</i>	3
1.2. <i>Objectivos do estudo</i>	7
1.3. <i>Estrutura da Dissertação</i>	8
1.4. <i>Referências bibliográficas</i>	8
2. ESTUDO EMPÍRICO	15
<i>The impact of a hybrid sport education-invasion games competence model soccer unit on students' decision making, skill execution and overall game performance</i>	17
ABSTRACT	19
INTRODUCTION	20
METHOD	23
RESULTS	27
DISCUSSION	33
CONCLUSIONS	38
REFERENCES	39
3. CONSIDERAÇÕES FINAIS	47
ANEXOS	53

ÍNDICE DE TABELAS

Table 1 - Descriptive statistics of pre-posttests performances of girls and boys, in the main categories of game play performance and in offensive and defensive categories of decision making and skill execution	28
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Table 2 - Descriptive statistics of pre-posttests performances of students of low, medium and high skill level, in the main categories of game play performance and in the defensive and offensive categories of decision making and skill execution.	31
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ÍNDICE DE FIGURAS

Figure 1 - Performance patterns along the assessment points of girls and boys in the three main categories (decision making, skill execution and game performance)28

Figure 2 - Performance patterns along the assessment points of low, medium and high skill level students in the three main categories (decision making, skill execution and game performance)31

RESUMO

Este estudo pretendeu aferir o impacto da aplicação de uma unidade de ensino híbrida na aprendizagem do futebol, nomeadamente na tomada de decisão, na execução motora e na performance em jogo. A unidade de ensino de futebol aplicada inseriu-se na cultura desportiva do Modelo de Educação Desportiva e sustentou as suas tarefas de aprendizagem no Modelo de Competência dos Jogos de Invasão. Participaram no estudo 26 alunos (uma turma completa) do 5.º ano de escolaridade (17 raparigas e 9 rapazes) numa temporada de futebol com a duração de 22 aulas. O pré-teste e os dois pós-testes (1 e 2, imediatamente após a unidade de ensino e teste de retenção, uma semana depois, respectivamente) foram aplicados para avaliar a tomada de decisão, a execução motora e a performance global de jogo dos alunos, antes e após a aplicação da unidade de ensino, respectivamente. O instrumento de observação aplicado foi o de Blomqvist, Väntinen & Luhtanen (2005).

Os resultados obtidos mostraram que esta unidade de ensino ofereceu aos estudantes a oportunidade para melhorarem a sua performance de jogo, nomeadamente ao nível da execução das habilidades motoras, da tomada de decisões tácticas e no desempenho geral do jogo. A estrutura das tarefas da unidade influenciou particularmente na performance dos alunos ao nível da tomada de decisão e nas categorias relacionadas com esse domínio, nomeadamente no somatório das decisões sem bola e nas decisões defensivas sem bola, onde todos os alunos melhoraram significativamente. Todavia, as variáveis género e nível de habilidade interferiram nos resultados das aprendizagens. Os resultados dos pós-testes (1 e 2) mostraram que o impacto do programa foi particularmente determinante nas aprendizagens das raparigas e dos alunos com níveis menores de habilidade. De facto, as diferenças verificadas na avaliação inicial, quer em função do género quer em função do nível de habilidade, desapareceram quase na totalidade com os progressos mais acentuados das aprendizagens das raparigas e dos alunos de baixo nível de habilidade. Contrariamente, o impacto da unidade foi menor nos rapazes e nos alunos de nível de habilidade médio e elevado, uma vez que não melhoraram a sua performance na execução motora global e ofensiva e nas decisões com bola.

Vários aspectos podem explicar estes resultados. A estrutura das tarefas pode ter limitado melhorias adicionais nos alunos de desempenho motor superior, pois estas proporcionaram aos menos capazes melhores condições para progredirem nas

aprendizagens. Adicionalmente, os diferentes níveis de habilidade dos alunos à entrada da unidade poderão ter delimitado as suas aprendizagens, uma vez que o elevado nível técnico inicial dos alunos mais hábeis poderá ter circunscrito as suas melhorias. Em oposição é possível que os baixos níveis na performance motora à entrada da unidade tenham aberto um caminho mais alargado para melhorias aos alunos menos hábeis. Contudo, no final da unidade de ensino, os alunos mais proficientes mantiveram uma performance elevada na tomada de decisão com bola e na execução das habilidades.

Neste estudo, um achado particularmente importante foi o facto do pós-teste 2 (teste de retenção) se ter revelado crucial para se aferirem os ganhos dos alunos, porquanto 45% dos ganhos totais ocorreram do pré-teste para o pós-teste 2. Através do teste de retenção foi igualmente possível concluir que a tomada de decisão é uma componente estratégica na qual os alunos têm uma elevada margem de progressão, pois as melhorias nesta categoria continuaram a evidenciar-se do pós-teste 1 para o pós-teste 2.

Os resultados deste estudo sustentam a crença de que a investigação deve centrar-se mais frequentemente na estrutura das tarefas de aprendizagem das unidades de ensino. No momento de organização das unidades de ensino, os professores devem ter em conta os diferentes níveis de habilidade dos alunos, de modo a proporcionar a todos iguais oportunidades para melhorarem a sua performance em jogo. Assim, as tarefas devem assistir os alunos em transição para formas de desempenho táctico mais sofisticadas e do mesmo modo assegurar as necessidades dos menos hábeis. Nesta condição, o desempenho táctico com e sem bola deve ser valorizado, sem contudo, se negligenciar o desempenho técnico que pode ser melhorado através das formas básicas de jogo.

Palavras-Chave: Ensino do futebol; Modelo de Educação Desportiva; Modelo de Competência dos Jogos de Invasão; Unidade de ensino híbrida; Tomada de decisão; Execução motora; Performance em jogo.

1. INTRODUÇÃO

1.1. Justificação e enquadramento do estudo

Do ponto de vista curricular, o programa da disciplina de educação física é ainda consubstanciado no modelo de múltiplas-actividades, particularmente em Portugal. Este modelo caracteriza-se pela abordagem de diversas modalidades ou actividades físicas segmentadas em períodos curtos de tempo sob a pretensão de expor os alunos ao maior número possível de experiências motoras e de modalidades.

Do mesmo modo, a investigação empírica tem evidenciado que o modelo “tradicional”, o qual coloca o professor no centro do processo de ensino-aprendizagem, é o dominante (Brown, Carlson e Hastie, 2000). O professor assume o papel de líder instrucional durante toda a actividade, com espaço de decisão reduzido para os alunos, mormente nos jogos desportivos colectivos, onde estes aspectos são essenciais (Mesquita, Graça, Gomes e Cruz, 2005).

Ainda que este modelo pretensamente deseje organizar as actividades didácticas numa lógica de progressão pedagógica, na verdade os blocos de trabalho são não raramente demasiado curtos, a instrução é menorizada e nem sempre os alunos são responsabilizados pelo seu desempenho (Ennis, 1999).

É também reconhecido que a abordagem de ensino do modelo das múltiplas-actividades é prevalentemente molecular onde a aprendizagem das habilidades técnicas é concretizada na ausência dos problemas colocados pelo jogo (Graça, Musch, Mertens, Timmers, Meertens, Taborsky, Remy, De Clercq, Multael e Vonderlynck, 2003; Oslin, Mitchell e Griffin, 1998; Veal, 1993). Acresce-se que, esta aproximação ao ensino dos desportos de equipa ausenta-se muitas vezes da transferência de conhecimentos para o jogo em si (Quinn e Carr, 2006) sendo que, uma prática correctamente orientada deve atender ao desenvolvimento de competências em planos diferenciados de percepção, compreensão e tomada de decisão (Brooker, Kirk, Braiuka e Bransgrove, 2000; Garganta, 1994). A agravar este cenário vem o reconhecimento da existência de aulas de educação física, frequentemente despojadas de equidade, em que poucas oportunidades de participação e de aprendizagem são oferecidas aos alunos menos hábeis e às raparigas (Ennis, 1999; Hastie, 2003).

Perante estes constrangimentos e preocupações, investigação iniciada na década de 80 sustentou a ideia da necessidade de se utilizarem modelos de instrução no ensino dos jogos que sublevassem o conhecimento e a aquisição de habilidades no

jogo e pelo jogo, para além da simples reprodução de técnicas e destrezas motoras (Hastie e Curtner-Smith, 2006), envolvendo os alunos numa participação proactiva, entusiástica e equitativa (Graça e Mesquita, 2007). Neste caminho, surgiram dois modelos curriculares pioneiros, o *Teaching Games for Understanding (TGfU)* de Bunker e Thorpe (1982) e o *Sport Education (SE)* de Siedentop (1994).

O *TGfU* teve a primária preocupação de deslocar o centro das aprendizagens do ensino isolado das técnicas, para o desenvolvimento da capacidade de jogo e da sua compreensão táctica (Bunker e Thorpe, 1982). Na verdade, neste modelo a performance e a execução técnica não são negligenciadas mas desenvolvidas após o reconhecimento pelo praticante da utilidade que poderá ter o domínio de determinados recursos motores para a resolução dos diferentes problemas do jogo. Os defensores deste modelo procuraram suspender a assumpção de que a proficiência técnica é necessariamente sinónima de boa performance, destacando a importância do conhecimento estratégico do jogo para a tomada de decisões mais eficientes.

A investigação inicial incidente neste modelo não clarificou com firmeza a sua superioridade em termos de eficácia no ensino dos jogos desportivos, quando confrontado com o modelo tradicional. Turner (1996) mostrou que os alunos que aprenderam hóquei no campo com o modelo *TGfU*, tomaram melhores decisões do que o grupo da instrução técnica. Por sua vez, diferentes estudos (Rink, French e Werner, 1991; Mitchell, Griffin e Oslin, 1995; Turner e Martinek, 1992) não encontraram significância estatística indicadora de vantagens educacionais na abordagem estratégica do ensino dos jogos. Mitchell et al. (1995) no entanto viram a eficiência dos movimentos dos jogadores sem bola evoluírem com o ensino dos jogos para a compreensão.

Não obstante, apraz que na globalidade tem sido advogada pelos professores e investigadores a eficiência do *TGfU* em promover a melhoria da capacidade de tomada de decisão dos alunos (Allison e Thorpe, 1997; Griffin, Oslin e Mitchell, 1995; Harrison, Blakemore, Richards, Oliver e Fellingham, 2004; Harvey, Cushion, Wegis, e Massa-Gonzalez, 2010; Mitchell et al., 1995; Turner, 1996, 2003; Turner e Martinek, 1999) e na execução das habilidades motoras (Allison e Thorpe, 1997; Blomqvist, Luhtanen e Laasko, 2001; French, Werner, Rink, Taylor e Hussey, 1996; Lawton, 1989; Harvey et al., 2010; Turner, 2003; Turner e Martinek, 1999). O *TGfU* não se reconhece como um modelo cristalizado e fechado entendido como inalterável ou perfeito (Graça e

Mesquita, 2007) e esta característica tem sustentado a sua prevalência no ensino dos jogos desportivos. A preocupação recente em se rever, contextualizar e aperfeiçoar os processos pedagógicos e instrucionais do TGfU, sem perder de vista o que constituiu o seu eixo estruturante, atestam *per se* o reconhecimento de que continua a representar uma ferramenta válida para o ensino dos jogos desportivos (Holt, Streat e Bengoechea, 2002; Kirk e MacPhail, 2002).

Por seu lado, o SE foi edificado na vontade de se proporcionarem experiências desportivas autênticas aos alunos. O modelo pretendeu formar pessoas desportivas competentes, entusiastas e literatas desportivamente (Siedentop, 1994). O SE idealizou formar desportistas, com habilidade e conhecimento tático suficientes que lhes permitissem participar com sucesso nos jogos, valorizando simultaneamente as regras e tradições desportivas distinguindo as boas das más práticas. A premissa capital passa pela protecção da cultura desportiva com entusiasmo, justamente pela forma em como os praticantes interagem nas diferentes práticas (Hastie e Curtner-Smith, 2006). Associados ao SE têm sido divulgados progressos nos alunos essencialmente ao nível dos aspectos sócio-afectivos. Os alunos na presença do SE têm aumentado o gosto pelas práticas (Tjeerdsma, Rink e Graham 1996; Wallhead e Ntoumanis, 2004); têm progredido no seu sentido de identidade de grupo e afiliação (MacPhail, Kirk e Kinchin, 2004); e no seu sentimento de inclusão, principalmente nas raparigas e no que concerne ao desempenho dos papéis inerentes ao modelo (Brunton, 2003). O SE tem igualmente sido associado positivamente a aumentos da autonomia dos alunos (Clarke e Quill, 2003), proporcionando oportunidades para a discussão de injustiças sociais (Kinchin e O'Sullivan, 2003) e enfatizando as habilidades sociais dos alunos (Alexander e Luckman, 2001). A tentativa de se verificar a eficiência deste modelo na promoção do desenvolvimento motor dos alunos tem-se inserido num plano secundário.

Contudo, a literatura tem atestado a eficiência do SE em promover nos alunos a aprendizagem das habilidades motoras no hóquei em patins (Hastie e Trost, 2002) tanto nos jogadores de alto nível de perícia como nos alunos de baixo nível. No estudo de Pritchard, Hawkins, Wiegand e Metzler (2008) realizado no voleibol, os alunos em geral melhoraram tanto na capacidade de execução técnica como na capacidade de decidir taticamente com correcção. O estudo de Hastie, Sinelinkov e Guarino (2009) no badminton, reportou melhorias mais abrangentes na capacidade de jogo dos rapazes e das raparigas, na medida em que estes aperfeiçoaram a capacidade de escolher os

movimentos mais adequados às diferentes situações de jogo, bem como a capacidade de executar os diversos elementos técnicos.

Mais recentemente, e no contexto do ensino dos jogos desportivos, tem sido defendido que estes modelos (SE e TGfU) têm as suas próprias limitações se aplicados isoladamente (Curtner-Smith, 2004; Hastie e Curtner-Smith, 2006). Contudo, uma vez que o corpo comum do *TGfU* e do *SE* se centra na aplicação de pedagogias mais democráticas e equitativas tem-se advogado que a utilização coligada destes modelos poderá promover a sua complementaridade, preenchendo-se deste modo as limitações específicas de cada um deles (Dyson, Griffin e Hastie, 2004; Curtner-Smith, 2004; Hastie e Curtner-Smith, 2006). A investigação levada a cabo por Hastie e Curtner-Smith (2006) confirmou esta alegação pois demonstrou pela aplicação de uma unidade de ensino híbrida SE-TGfU de futebol, incrementos na capacidade dos alunos de apreciar e compreender tacticamente os jogos bem como na execução das diferentes habilidades técnicas inerentes ao jogo.

O *Invasion Games Competence Model* (IGCM) (ESEP, 2005) é um modelo mais actual, que recebe o mesmo enquadramento conceptual da linha de acção construtivista do *TGfU* e do *SE*, bem como de outros movimentos e ideias de renovação dos métodos de instrução (Balan e Davis, 1993; Gréhaigne, Billard e Laroche, 1999; Griffin, Mitchell e Oslin, 1997; Rovegno, Nevett e Babiarz, 2001). Este modelo é inovador na medida em que vem responder às especificidades didácticas dos jogos de invasão (Musch, Mertens, Timmers, Mertens, Graça, Taborsky, Remy, De Clercq, MultaetL e Vonderlynck, 2002), aspectos descuidados pelos modelos anteriormente referidos. As unidades de ensino do IGCM focam-se primariamente na melhoria da performance dos praticantes e na estruturação das tarefas didácticas atendendo à natureza específica dos jogos de invasão. Assim, o IGCM tem sido associado a ganhos ao nível da performance geral de jogo (Tallir, Musch, Valcke e Lenoir, 2007) particularmente em alunos de baixa habilidade e em raparigas na modalidade de basquetebol (Ricardo, 2005).

Perante este enquadramento, ressalva-se a importância capital de se utilizar modelos e estratégias de ensino que abranjam verdadeiramente todos os aspectos do processo de ensino-aprendizagem, promovendo um ensino mais holístico centrado no aluno. Nesta conjuntura, uma coligação entre o SE e o IGCM no ensino do futebol, reveste-se de elevado sentido. Por um lado é acautelada a importância dos aspectos da

formação pessoal e social imbuídos nos desígnios do SE, por outro lado possibilita-se que os alunos tenham a oportunidade de desenvolverem uma aprendizagem autêntica de natureza estratégica e técnica dos jogos de invasão, atendendo à natureza específica das tarefas didáticas que lhes são apresentadas pelo modelo IGCM.

As crianças necessitam de gostar da Educação Física e de manter o entusiasmo pela prática desportiva, factores concorrentes da filiação ao “Desporto para a vida”. É crença que as abordagens instrucionais do IGCM centradas no jogo veiculam essa vontade atribuindo ao aluno um papel activo na construção das suas aprendizagens (Graça e Mesquita, 2007). Uma vez que no âmbito dos jogos de invasão é reconhecida importância considerável ao futebol enquanto matéria nuclear nos programas nacionais de Educação Física, exige-se que se potenciem oportunidades para que as crianças tomem decisões e resolvam problemas dentro do envolvimento do jogo e entre pares no sentido de melhorar a sua capacidade de performance no jogo.

1.2. Objectivos do estudo

Atendendo ao enquadramento conceptual de referência plasmado no ponto anterior, o presente estudo pretende aferir o impacto de uma unidade híbrida SE-IGCM, na aprendizagem do futebol, partindo do pressuposto que o seu carácter mais abrangente poderá ser realmente potenciador de avanços pedagógico-didáticos no ensino dos jogos de invasão.

Em termos de objectivos específicos o nosso estudo pretende:

- Aplicar uma unidade híbrida, coligando os modelos educativos SE (Sport Education) e IGCM (Invasion Games Competence Model) no ensino do futebol;
- Aferir o impacto da unidade nas aprendizagens dos alunos em função das variáveis Género e Nível de Habilidade, especificamente nos domínios nucleares da tomada de decisão, da execução motora e da performance geral de jogo;
- Comparar a performance dos alunos em função das variáveis Género e Nível de Habilidade.

1.3. Estrutura da Dissertação

A estrutura da presente dissertação divide-se em três secções diferenciadas.

A primeira das partes pretende realizar numa breve introdução à temática, contextualizando o presente trabalho através de uma nota introdutória que intenta enquadrar e esclarecer a sua pertinência.

A segunda parte é constituída pelo artigo propriamente dito, o que constitui o corpo principal deste trabalho. Este artigo intitula-se “*The impact of a hybrid sport education-invasion games competence model soccer unit on students’ decision making, skill execution and overall game performance*”. A opção de o redigir na língua inglesa prende-se com a intenção de o submeter a publicação em revistas internacionais, com revisão de pares.

Para terminar, a terceira fracção apresenta-nos de forma sintética as considerações finais sobre o trabalho nas quais se encerram as principais conclusões aferidas com o estudo e se sugerem novos caminhos para a investigação dos conteúdos nos quais assentou o eixo estruturante do nosso trabalho.

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2. ESTUDO EMPÍRICO

The impact of a hybrid sport education-invasion games competence model soccer unit on students' decision making, skill execution and overall game performance

The impact of a hybrid sport education-invasion games competence model soccer unit on students' decision making, skill execution and overall game performance

ABSTRACT

The purpose of this study was to examine the impact of a hybrid SE-IGCM unit application on students' improvements in decision making, skill execution and overall game performance, during a soccer season.

An entire fifth-grade class (17 girls and 9 boys) from a Portuguese public elementary school participated in a 22-lesson season of soccer, following a hybrid SE-IGCM teaching unit. Pre-test, post-test and retention test measures of decision making, skill execution and overall game performance were analyzed through the instrument developed by Blomqvist, Vántinen & Luhtanen (2005).

The results of post-tests (1 and 2) showed that girls improved firmly in all categories, with the exception of offensive off-the-ball decisions. Boys had improvements only in the post-test 2, in total off-the-ball decisions, in defensive off-the-ball decisions and in defensive skill execution. The pre-test's advantages of boys faded away at the end of the unit in all categories except for overall skill execution, due to more extensive improvements of girls.

The students with lower skill level improved significantly in the three main categories (skill execution, decision making, and overall game performance). At the post-test 2 they have also improved in all offensive categories (offensive on- and off-the-ball decision making, and offensive skill execution) and in all defensive categories (defensive decision making and defensive skill execution). Students of medium skill level and students of high skill level increased scores in global decision making, in total and in defensive off-the-ball decisions, and in defensive skill execution. Further, medium skill level students increased their overall game performance at post-test 2. The pre-test differences between students of higher skill level (medium and high level) and students of lower skill level were extinct at both pos-tests by the more pronounced progress of students from low skill level.

The post-test 2 (retention test) was crucial to assess the learning gains of students, since 45% of the total increments occurred from pretest to post-test 2.

Key-words: Soccer teaching; Sport Education Model; Invasion Games Competence Model; Hybrid unit; Decision making; Skill execution; Game performance.

INTRODUCTION

It's broadly recognized that both *Sport Education* model (SE) and *Teaching Games for Understanding* (TGfU) are crucial in conceptual and methodological support to more effective and appealing learning environments in physical education classes (Kirk, 2005; Kirk & Kinchin, 2003; Metzler, 2000; Metzler, 2005).

SE is a model aimed at producing “competent” sportspeople with sufficient skill and tactical knowledge to participate successfully in games, “literate” sportspeople distinguishing the best sporting practices from the poor, and “enthusiastic” sportspeople able to protect and preserve a healthy sporting culture (Siedentop, 1994, p. 4).

A primary concern of the SE is to promote pedagogy more democratic and inclusive in order to provide richer and authentic sports experiences for boys and girls in the context of physical education (Siedentop, 1994). Thus within the SE classes children have opportunities to socialize, to make decisions and enjoy themselves in competitive situations where the levels of effort are strongly valued (Carlson & Hastie, 1997; Hastie, 1996). The issues related to the social and affective outcomes have been focused by research on SE, in order to promote students' personal/social development (Kinchin, Wardle, Roderick & Sprosen, 2004; Phil, 2008; Tjeerdsma, Rink & Graham, 1996; Wallhead & Ntoumanis, 2004); the students' attitudes (Carlson & Hastie, 1997; Hastie, 2000; Hastie & Sinelkinov, 2006; Ka & Cruz, 2006; MacPhail, Gorely, Kirk & Kinchin, 2008); the students' values (Alexander & Luckman, 2001; Brock & Hastie, 2007; Curnow & MacDonald, 1995); and the students' motivational responses (Sinelkinov, Hastie & Prusak, 2007; Sinelkinov & Hastie, 2010). Less expressive research has been done about the impact of the model on students' motor performance, still positive results have been found. Hastie & Trost (2002) found the model to be effective in improving both high-skill and low-skill students' levels of skill performance. Skills' improvements were also found by Brown, Carlson & Hastie (2004) and by Pritchard, Hawkins, Wiegand & Metzler (2008) that also showed positive effects of the SE on students' overall game performance and decision making ability. Hastie, Sinelkinov & Guarino (2009) reported students' increments in the ability to select more appropriate tactical solutions.

Although the SE and the TGfU approaches share quite a few concepts in terms of objectives and pedagogy (Hastie & Curtner-Smith, 2006), the TGfU has been paying more attention on developing learners' abilities to play games (Metzler, 2000)

emphasizing the need to extend students' game appreciation and tactical awareness in order to play the games successfully. Therefore, research on TGfU has centered almost exclusively on psychomotor and cognitive learning (Dyson, Griffin & Hastie, 2004; Holt, Streat & Bengoechea, 2002). Indeed the research showed that the TGfU can improve both students' decision making (Allison & Thorpe, 1997; Griffin, Oslin & Mitchell, 1995; Harrison, Blakemore, Richards, Oliver & Fellingham, 2004; Mitchell, Griffin & Oslin, 1995; Turner, 1996, 2003; Turner & Martinek, 1999) and skill execution (Allison & Thorpe, 1997; Blomqvist, Luhtanen & Laasko, 2001; French, Werner, Taylor & Hussey, 1996; Harrison, 2004; Lawton, 1989; Turner, 2003; Turner & Martinek, 1999).

Regardless of SE and TGfU are drawn under similar cognitive and constructivist concepts (Dodds, Griffin & Placek, 2001; Rovegno, Nevett & Barbiarz, 2001) there are differences between the two models and it has been advocated that each model has its own limitations if applied exclusively and in isolation way (Curtner-Smith, 2004; Hastie & Curtner-Smith, 2006). First, despite the games in SE are played in small-sided and within conditioned form, according to the team sports learning demands (Curtner-Smith & Sofo, 2004), SE has an "outward-focus on contextualizing the activities in the sport social processes" that influence the students, not really focusing on the tactics' understanding and skills execution (Hastie & Curtner-Smith, 2006, p. 3); quite the opposite, the TGfU has an "inward focus on players' game competence", however under the assumption that students develop intrinsically a sporting culture (Hastie & Curtner-Smith, 2006, p. 3), therefore neglecting the promotion of specific procedures to assure a more worthy and sports culture within the games teaching.

Consequently, research has been putting forward the interest for hybrid models that could benefit from the coalition of those models calling for the teacher to serve as a facilitator of the learning within a student-centered environment (Dyson et al., 2004). As pointed out by Curtner-Smith (2004) and Hastie & Curtner-Smith (2006) hybrid teaching models combining SE and TGfU have the potential to promote in students the ability to understand holistically the games and still accomplishing the affective goals. Research has stated that this hybrid teaching approach doesn't undermine any of the advantages of each model; in addition, the particular strengths of each of the models seem to fulfill the gaps specific to each of them. Moreover, the main goal of research on hybrid teaching units (SE and TGfU) has been providing a description of the teacher's

experiences and the students' reactions towards the structure and organization of that unit as to the teaching behaviors and styles (Hastie & Curtner-Smith, 2006).

However the specificity of the team sports, namely the differentiation between invasion and non invasion games, claims the necessity to build models that could attend to this specificity that is not taken into consideration both in SE or in TGfU.

The *Invasion Games Competence Model* (IGCM) (ESEP, 2005) is conceptually structured close to the TGfU, but also receives a bit of influence of the SE, namely on the aspects for creating authentic sport contexts (Musch, Mertens, Timmers, Mertens, Grace, Taborsky, Remy, De Clercq, Multaël & Vonderlynck, 2002). The IGCM has an innovative approach since the specific nature of invasion games and the importance of specialized teaching is considered (Belka, 2004). At the same time, the IGCM fills the gaps of the TGfU's standard procedures that do not differ according to the individual strategic features of each game, whether they are invasion games, net/wall games, target games, or field/run-scoring games. Therefore, the IGCM takes into consideration the fact that learning tasks should be aligned with the situational demands related to the play of basic forms of invasion games. Moreover, the developmental competence of the players is structured on a chained Basic Game Forms (BGF), supported by Partial Game Forms (PGF) and Game Like Tasks (GLT) (Graça, Musch, Mertens, Timmers, Mertens, Taborsky, Remy, De Clercq, Multaël & Vonderlynck, 2003) according to the didactic principles of continuity, progression and increasing complexity claimed by Rink (1993).

Some studies have proven the IGCM to be effective in improving students' game performance (skill execution efficiency and efficacy and decision making) in invasion games (Tallir, Musch, Valcke & Lenoir, 2007), in particular for girls and low-skill level students (Ricardo, 2005).

For that reason a hybrid SE-IGCM unit can have the potential to target affective and social teaching goals advantage of SE broad structural and cultural appeal, taking simultaneously into account the invasion games situational demands, specifically in what concerns its particular tactical and technical nature and didactical framework within a more student-centered scenario. Moreover, the constructivist nature of both SE and IGCM claims for game forms adjusted and modified according to students' age and experience levels being the teaching tasks defined specifically to attend to the students' skill level.

The key role of soccer as a nuclear social, cultural and sporting content of Physical Education, particularly in Portugal, justifies the study of the impact of a hybrid SE-IGCM unit on students' soccer performance taking into account their gender and skill level.

Therefore, the purpose of this study was to examine the impact of the application of a hybrid SE-IGCM on students' improvements in decision making, skill execution and overall game performance during a soccer unit.

METHOD

Teaching experiment

A teaching experiment is defined by Rovegno et al. (2001) as a curriculum or educational environment particularly conceived by the researchers in order to examine content, curriculum, teaching and learning, simultaneously and naturalistically in a school context. The design of this study followed a teaching experiment which was projected to examine the implementation of a hybrid Sport Education-Invasion Games Competence model unit of soccer. Work was combined with a teacher on curricular development and the student's and teacher's responses to the experiment were analyzed.

Participants and setting

The participants in this study were an entire 5th grade class composed of 26 students (seventeen girls and nine boys) aged between 10 and 12 years. Only two students were involved in extra-school sports. Most of the boys selected soccer as the favorite sport (78%) as opposed to the choices of girls (25%). None of the students were familiar with SE or IGCM. Still, at odds with girls, boys had previous soccer experience. Parents and school board provided consent for students' participation.

The SE-IGCM soccer unit

A 22-lesson soccer unit was designed (see appendix 1). The unit's structure followed the previous work of Courtner-Smith (2004) and Hastie & Courtner-Smith (2006) and considered also the SE managerial and organizational frameworks (Dyson, 2005). The students were placed on three teams and participated in a five journey

championship leading to a culminating event. Students took at least one other role than player, such as captain-coach, equipment manager, statistician, referee, time controller or desk officer (scorekeeper) (Siedentop, 1994).

In addition to regular physical education classes, students participated occasionally in extra academic activities to prepare their managerial role performance, as well as for understanding the unit structure. Informal meetings within teams, outside the context of classes were conducted whenever captain-coaches found it necessary, in order to assist them to play their roles. Students' preparation was done through the material provided by the teacher related to player's handbook and captain-coach's handbook. Thus, students took it as a homework assignment.

The tasks designed followed the didactical framework of the IGCM.

Unit tasks

The tasks designed were inspired on the tasks framework proposed by Musch et al. (2002) and Pacheco, Real and Lopes (2009) and are from three types: Basic Game Forms (BGF), Partial Games Forms (PGF) and Game Like Tasks (GLT).

The BGFs are modified versions of the formal game and their aim is to facilitate players' responses to the particular problems related to the structure of the invasion games: Shooting – prevent shooting; create shooting opportunities – prevent to create shooting opportunities; set up an attack – prevent to set up an attack. Each basic form of the game provides the context to determine the learning needs to consolidate, implement and evaluate learning, offering the possibility to move to a new and more complex game form (Graça & Pinto, 2005).

Two types of BGF were considered. The BGF 1 consisted on a setup 3 x 2 + goal-keeper. Once a team conquered the ball, the goalkeeper became an attacker outnumbering the opponent team. Defensive actions of all players were restricted to each team's defensive zones. The BGF 2 also consisted on a setup 3 x 2 + goal-keeper and was introduced when students already mastered some specific tactical procedures. The BGF 2 differed from the BGF 1 because it provided to one of the defenders the possibility to conquer the ball on the opponents' safety zone.

Before the unit, students were engaged in pre-season scrimmages to test the applicability of the BGF 1 and BGF 2 designed for this study. The soccer drills were videotaped and after analysis by the teacher and the main researcher it was decided that students didn't have enough initial skills to enable them to perform fluently in BGF2. Therefore, practice was initially centered on the BGF 1.

The PGFs were designed to solve specific strategic problems by imposing conditions, rule changes and equipment modifications on the game. They included games' scenarios to address different tactical content in order to solve the tactical problems related to scoring (good scoring attempt), to create shooting opportunities (penetration, overlap), or to set up an attack (pass to open teammate, offensive cover), as well as the inherent defensive tactical content.

When at the most simple PGFs students were not able to solve the identified game problems, GLTs were introduced to improve certain specific skill aspects preserving the PGFs' situational demands. In this way, the performance of game skills were improved, but integrated with other components of the game.

Data collection

Blomqvist et al. (2005) developed a coding instrument that aimed to evaluate students' game performance (decision making, on- and off-the-ball, and skill execution) in soccer (see appendix 2). Each playing move was divided into decision-making units (DMU). The moment when the player gained control of the ball started the DMU, ending when the player passed the ball (the ball went out of bounds or an opponent stole the ball) (Blomqvist et al., 2005). Each student's off-the-ball tactical decisions (offensive or defensive) were judged as good (1) or poor (0) during the DMU. Likewise, in each DMU the skill execution of the player on-the-ball was considered successful (1) or unsuccessful (0).

The students' overall game performance was assessed following the GPAI (Oslin, Mitchell & Griffin, 1998). The decision making index (appropriate decisions/inappropriate decisions) was summed to the skill execution index (successful skill executions/unsuccessful skill executions) and divided by two.

Data of the play performance were gathered from systematic observation of video records of students' behaviors while playing the BGF 1 at the entry (pre-test) and exit of

the program (post-test 1 and post-test 2). The exit assessment was made considering two moments, spaced by 8 days (post-test 1 and post-test 2) in order to ascertain the level of learning retention. Each student was individually assessed for their play participation. Additionally, based on the pre-test's scores in overall play performance, students were divided into three skill level groups.

Reliability

The objectivity of the observations was assured by means of inter-observers agreement over 660 decisions and skill executions (16%) applying to 35% of the students, values higher than the minimal value (10%) recommended by Tabachnick and Fidell (2000). Values of Cohen Kappa for agreement of two independent observers ranged from 0.82 to 0.90 and intra-observer consistency ranged from 0.84 to 0.91. Fleiss (1981) asserts that scores greater than 0.75 indicate strong agreement.

Data analysis

Descriptive analysis (means and standard deviations) were performed.

Exploratory data analysis revealed non-normality in the distribution of the data. Therefore, nonparametric statistics (Mann-Whitney test) for two independent samples (Gender and Skill level) was used in order to test the differences between groups in the three different assessment moments. These differences were measured between girls and boys and between the skill level groups of students (low skill level vs. high skill level; low skill level vs. medium skill level; and medium skill level vs. high skill level).

To test intra-group differences from the entry moment to the two final assessment stages were also applied non-parametric statistics for two related samples (Wilcoxon test). Gain scores were assessed from pre-test to pos-test 1, from pre-test to pos-test 2 and from pos-test 1 to pos-test 2. This test was applied to each gender and skill level. Data analysis was achieved with the use of the SPSS for Windows 17.0. with the alpha level set at 0.05 for all analyzes.

RESULTS

1. ANALYSIS BY GENDER

In table 1 is displayed the descriptive statistics of the three assessment moments, pre-test (PT), post-test 1 (PTT¹) and post-test 2 (PTT²) for girls and boys in the main categories of game play performance and in the defensive and offensive categories of decision making and skill execution. Figure 1 provides a graphical representation of the performance development in the main categories (decision making, skill execution and game performance) of both girls and boys, along all assessment points.

1.1. Main categories of game play performance

In PT, boys were significantly better than girls in all main categories, such as *decision making* (Mann-Whitney U = 28.500; $p = 0.028$), *skill execution* (Mann-Whitney U = 17.000; $p = 0.004$), and overall *game performance* (Mann-Whitney U = 24.500; $p = 0.015$). Significant differences faded away in both post-tests for *decision making* and overall *game performance*. Still, boys' higher scores persisted in *skill execution* at PTT¹ (Mann-Whitney U = 11.500; $p = 0.001$) and PTT² (Mann-Whitney U = 23.500; $p = 0.013$).

Girls took more benefit of the SE-IGCM soccer's unit, as they improved in all main categories of game play. From PT to PTT¹ significant scores' increases were found for *decision making* (Wilcoxon $z = -2.288$; $p = 0.022$), for *skill execution* (Wilcoxon $z = -2.216$; $p = 0.027$), and for overall *game performance* (Wilcoxon $z = -2.419$; $p = 0.016$). From PT to PTT² girls continued to increase scores in *decision making* (Wilcoxon $z = -3.703$; $p \leq 0.001$), in *skill execution* (Wilcoxon $z = -3.034$; $p = 0.002$) and in overall *game performance* (Wilcoxon $z = -2.578$; $p = 0.010$). The girls' scores on decision making have also increased from PTT¹ to PTT² (Wilcoxon $z = -2.861$; $p = 0.004$).

Boys showed no improvements in the main categories ($p > 0.05$) at PTT¹ or at PTT².

Table 1 - Descriptive statistics of pre-posttests performances of girls and boys, in the main categories of game play performance and in offensive and defensive categories of decision making and skill execution

Main categories and offensive and defensive categories of Decision making and Skill execution	Girls						Boys					
	Pre-test		Post-test 1		Post-test 2		Pre-test		Post-test 1		Post-test 2	
	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd
Decision making	33,11	10,46	40,32	5,43	47,21	7,01	42,43	7,53	42,57	5,5	46,14	3,47
Offensive on-the-ball	4,5	1,8	5,7	3,0	7,0	1,8	10,43	3,69	10,71	4,38	9,86	4,25
Offensive off-the-ball	11,6	5,2	11,6	4,6	13	5,2	13	2,76	10,57	3,45	10,43	2,07
Defensive off-the-ball	16,3	6,5	22,8	4,6	53	6,5	19	7,11	21,29	6,31	49,71	6,47
Total off-the-ball	28,0	9,4	34,5	4,4	77,6	9,4	32	8,75	31,86	5,04	72,71	5,25
Skill execution	6,63	3,21	8,79	4,00	10,89	3,21	14,43	6,07	16,43	4,68	17,43	6,18
Offensive skill execution	5,53	2,75	6,63	3,67	8,95	2,75	11,43	4,89	13,43	4,31	13,29	6,23
Defensive skill execution	1,11	1,19	2,16	1,11	1,95	1,19	3	1,52	3	1,52	4,14	1,46
Game performance	7,37	3,05	10,84	5,92	12,42	3,05	14,71	9,55	13,14	3,71	15,00	5,44

Figure 1 - Performance patterns along the assessment points of girls and boys in the three main categories (decision making, skill execution and game performance)

1.2. Offensive and Defensive categories of Decision making and Skill execution

At PT, boys have significantly outperformed girls in *offensive on-the-ball* decisions (Mann-Whitney $U = 8.000$; $p = 0,001$) and in both *offensive* and *defensive skill execution* (Mann-Whitney $U = 22.000$; $p = 0.010$ and Mann-Whitney $U = 20.000$; $p = 0.005$, respectively).

At PTT¹, boys continued to perform significantly higher than girls just in *offensive skill execution* (Mann-Whitney $U = 14.500$; $p = 0.003$). At the PTT² boys restored their entry higher scores in *defensive skill execution* (Mann-Whitney $U = 18.000$; $p = 0.004$) but the differences ceased in the *offensive skill execution* ($p > 0.05$).

Girls have only failed to improve in one of the six categories, in *offensive off-the-ball* decisions. Girls' scores increased significantly from PT to PTT¹ in *defensive off-the-ball* decisions (Wilcoxon $z = -2.987$; $p = 0.003$), in *total off-the-ball* decisions (Wilcoxon $z = -2.257$; $p = 0.024$), in *offensive skill execution* (Wilcoxon $z = -2.919$; $p = 0.004$), and in *defensive skill execution* (Wilcoxon $z = -2.507$; $p = 0.012$). Similarly, from PT to PTT², girls improved in *defensive off-the-ball* decisions (Wilcoxon $z = -3.826$; $p < 0.001$), in *total off-the-ball* decisions (Wilcoxon $z = -3.825$; $p < 0.001$), in *offensive skill execution* (Wilcoxon $z = -2.919$; $p = 0.004$), and in *defensive skill execution* (Wilcoxon $z = -2.066$; $p = 0.039$). Increments in *offensive on-the-ball* decisions were only found from PT to PTT² (Wilcoxon $z = -2.874$; $p = 0.004$). Girls have also increased scores from PTT¹ to PTT² in *total off-the-ball* decisions (Wilcoxon $z = -3.716$; $p < 0.001$) and in *defensive off-the-ball* decisions (Wilcoxon $z = -3.625$; $p < 0.001$).

Boys showed less progress, yet they improved significantly from PT to PTT² in *defensive off-the-ball* decisions (Wilcoxon $z = -2.366$; $p = 0.018$), in *total off-the-ball* decisions (Wilcoxon $z = -2.366$; $p = 0.018$), and in *defensive skill execution* (Wilcoxon $z = -2.271$; $p = 0.023$). Boys' scores in *total off-the-ball* decisions (Wilcoxon $z = -2.665$; $p = 0.018$) and in *defensive off-the-ball* decisions (Wilcoxon $z = -2.389$; $p = 0.018$) continued to increase from PTT¹ to PTT².

2. SKILL LEVEL ANALYSIS

Table 2 presents the descriptive statistics of the three assessment moments, pre-test (PT), post-test 1 (PTT¹) and post-test 2 (PTT²) for students of different skill levels, in the main categories of game play performance and in the defensive and offensive categories of decision making and skill execution. Figure 2 provides a graphical representation of the performance development in the main categories (decision making, skill execution and game performance) of students' of all skill levels, along all assessment moments.

2.1. Main categories of game play performance

At PT, the scores of the medium skill level students were significantly higher than the scores of the low skill level students in *skill execution* (Mann-Whitney U = 15.500; $p = 0.036$) and in *game performance* (Mann-Whitney U = .000; $p < 0.001$), whilst no differences were found in *decision making*. These differences didn't remain at the exit of the unit (PTT¹ or PTT²).

At PT, the high skill level students performed significantly higher than the low skilled students in all the main categories. That is, in *decision making* (Mann-Whitney U = 9.000; $p = 0.028$), in *skill execution* (Mann-Whitney U = 6.000; $p = 0.010$), and in *game performance* (Mann-Whitney U = .001; $p < 0.001$). These performance differences ceased completely at PTT¹ and at PTT².

PT's scores of high skill level students were significantly higher than the scores of medium skill level students in *game performance* (Mann-Whitney U = 19.500; $p = 0.041$). At both post-tests (PTT¹ and PTT²) the scores were leveled and no other significant differences were found.

From PT to PTT¹, the low skill level students improved significantly in *decision making* (Wilcoxon $z = -2.028$; $p = 0.043$) and in *skill execution* (Wilcoxon $z = -1.992$; $p = 0.046$). From PT to PTT², these students continued to increase scores in *decision making* (Wilcoxon $z = -2.197$; $p = 0.028$), in *skill execution* (Wilcoxon $z = -2.375$; $p = 0.018$), and in overall *game performance* (Wilcoxon $z = -2.366$; $p = 0.018$).

The scores of both medium skill level and high skill level students increased significantly in *decision making* from PT to PTT² (Wilcoxon $z = -2.663$; $p = 0.018$; Wilcoxon $z = -2.103$; $p = 0.035$, respectively). The High skilled students have also

improved in this main category from PTT¹ to PTT² (Wilcoxon $z = -2.383$; $p = 0.017$). From PT to PTT² medium skill level students improved their *game performance* (Wilcoxon $Z = -1.940$; $p = 0.05$).

Table 2 - Descriptive statistics of pre-posttests performances of students of low, medium and high skill level, in the main categories of game play performance and in the defensive and offensive categories of decision making and skill execution

Main categories and offensive and defensive categories of Decision making and Skill execution	Low level						Medium level						High level					
	Pre-test		Post-test 1		Post-test 2		Pre-test		Post-test 1		Post-test 2		Pre-test		Post-test 1		Post-test 2	
	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd
Decision making	26,71	10,11	38,57	7,3	46,57	5,74	38,18	8,98	41,36	5,46	44,9	6,88	39,9	8,95	42,38	2,97	50	4,93
Offensive on-the-ball	3,29	1,38	5,29	3,59	6	2,88	6,73	2,57	7	3,37	7,45	2,94	7,87	4,7	8,88	4,88	9,87	5,43
Offensive off-the-ball	9,14	1,86	10,1	3,48	14,6	4,99	11,6	3,8	12,7	4,47	10,2	4,07	15,1	5,93	10,5	4,75	13,4	2,92
Defensive off-the-ball	14,3	8,11	23,1	6,36	49,6	11,6	18,9	5,89	21,6	4,27	53,6	6,45	16,9	6,4	23	5,31	52,3	5,36
Total off-the-ball	23,4	9,27	33,3	7,29	72,7	15,1	30,6	8,61	34,4	3,66	76,8	7,36	32	9,13	33,5	3,38	78,9	8,74
Skill execution	4,71	3,09	7,14	3,43	10,1	3,76	9,27	4,67	11,8	5,17	11,6	5,25	11,5	6,16	12,8	5,92	16,3	7,06
Offensive skill execution	4	2,44	5,57	3,82	7,86	2,96	7,64	3,93	9,18	4,57	9,45	4,15	9,12	4,85	10	5,47	13	7,29
Defensive skill execution	0,71	0,95	1,57	1,61	2,29	1,3	1,64	1,28	2,64	1,2	2,18	1,83	2,58	1,92	2,75	0,7	3,75	1,66
Game performance	3,43	0,97	9,86	7,47	11	6,27	9,82	3,12	11,6	5,5	13,6	7,28	13,9	8,25	12,6	3,29	14,4	7,78

Figure 2 - Performance patterns along the assessment points of low, medium and high skill level students in the three main categories (decision making, skill execution and game performance)

2.2. **Offensive and Defensive categories of Decision making and Skill execution**

At PT the medium skill level students showed significantly higher scores than low skill level students in *offensive on-the-ball* decisions (Mann-Whitney $U = 8.500$; $p = 0.006$). These differences declined at PTT¹ and PTT². Conversely, at PTT² the scores of the low skill level students were higher than the scores of the medium skill level students in *offensive off-the-ball* decisions (Mann-Whitney $U = 16.000$; $p = 0.041$).

At PT, the high skill level students performed significantly higher than the low skill level students in *offensive on-the-ball* decisions (Mann-Whitney $U = 6.000$; $p = 0.010$), in *offensive off-the-ball* decisions (Mann-Whitney $U = 10.000$; $p = 0.035$), in *offensive skill execution* (Mann-Whitney $U = 10.000$; $p = 0.036$), and in *defensive skill execution* (Mann-Whitney $U = 6.500$; $p = 0.05$). These differences were entirely canceled in both post-tests (PTT¹ and PTT²).

Along all the assessment moments no differences were found between students of medium skill level and high skill level for any of the offensive and defensive categories.

The low skill level students improved significantly in all attacking and defensive categories from PT to PTT². Therefore, significant increases were shown in *offensive on-the-ball* decisions (Wilcoxon $z = -1.992$; $p = 0.046$), in *offensive off-the-ball* decisions (Wilcoxon $z = -1.997$; $p = 0.046$), in *defensive off-the-ball* decisions (Wilcoxon $z = -2.366$; $p = 0.018$), in *total off-the-ball* decisions (Wilcoxon $z = -2.366$; $p = 0.018$), in *offensive skill execution* (Wilcoxon $z = -2.201$; $p = 0.028$), and in *defensive skill execution* (Wilcoxon $z = -2.214$; $p = 0.016$). From PTT¹ to PTT², the low skilled students have also improved in three categories: In *total off-the-ball* decisions (Wilcoxon $z = -2.218$; $p = 0.018$); in *offensive off-the-ball* decisions (Wilcoxon $z = -2.122$; $p = 0.045$); and in *defensive off-the-ball* decisions (Wilcoxon $z = -2.773$; $p = 0.018$).

From PT to PTT¹ the medium skill level students have only improved significantly in *defensive skill execution* (Wilcoxon $z = -2.209$; $p = 0.027$). From PTT¹ to PTT² they increased their scores significantly in *defensive off-the-ball* decisions (Wilcoxon $z = -2.938$; $p = 0.003$), and in *total off-the-ball* decisions (Wilcoxon $z = -2.934$; $p = 0.003$). From PTT¹ to PTT², these improvements continued both for *defensive off-the-ball* decisions (Wilcoxon $z = -2.876$; $p = 0.003$), and for *total off-the-ball* decisions (Wilcoxon $z = -2.178$; $p = 0.003$).

The high skill level students improved significantly in *defensive off-the-ball* decisions from PT to PTT¹ (Wilcoxon $z = -2.533$; $p = 0.011$) and from PT to PTT² (Wilcoxon $z = -2.524$; $p = 0.012$), improving as well from PT to PTT² in *total off-the-ball* decisions (Wilcoxon $z = -2.524$; $p = 0.012$), and in *defensive skill execution* (Wilcoxon $z = -2.314$; $p = 0.05$). From PTT¹ to PTT² they continued to improve their scores in *total off-the-ball* decisions (Wilcoxon $z = -2.524$; $p = 0.012$) and in *defensive off-the-ball* decisions (Wilcoxon $z = -2.533$; $p = 0.011$).

DISCUSSION

This study examined the effect of a hybrid SE-IGCM unit of soccer on students play performance, measured by the tactical decision performance (decision making), the efficacy of skills execution and the accuracy of game involvement (game performance).

Overall outcomes

Comparing the developmental profile of students' scores in the three assessment moments it can be highlighted that the hybrid (SE-IGCM) unit had a strong impact on students learning, especially in the girls and the low skilled students. Thus, nearly all students improved their scores in decision making, skill performance and overall game performance.

Research conducted under the SE model, despite not always distinguishing students' gender or skill level, have shown significant performance enhancements of students in decision making (Hastie et al. 2009; Pritchard et al., 2008), in skill execution (Brown et al., 2004; Hastie & Trost, 2002; Hastie et al., 2009; Pritchard et al., 2008) and in game performance (Hastie et al., 2009; Pritchard et al., 2008). In the same way, the IGCM was also shown to be effective in promoting students' gains in all game components (Tallir et al., 2007). However until now no research was carried out considering the simultaneous application of both models.

In this study the specific structure of the hybrid unit may explain in some ways the great improvements in the components related in general with tactical decision and skill execution, specifically the total off-the-ball and defensive off-the-ball decisions, and the defensive skill execution. Indeed, from the beginning of the hybrid unit application the students were faced with strategic problems to solve; the skills were practiced within

game-like situations; the unit had an extensive length; students had always performed alongside with teammates; and the unit tasks gave students, time and space to think the game over, on- and off-the-ball, encouraging at the same time the systemization of defensive positioning.

Those procedures applied in the hybrid SE-IGCM unit were according to the recommendations of the SE model approach as: the seasons allowed time for students to play (Hastie et al., 2009); the units' length were enough extended to provide students opportunities for participation (Hastie, 1998; Hastie & Trost, 2002; Hastie et al., 2009); the game-like forms offered early in the unit fostered tactical improvements (Pritchard et al., 2008); students played as a team for the entire units (affiliation) (Brown et al., 2004; Hastie et al. 2009; Pritchard et al., 2008); and the small-sided teams resulted in more intensive playing conditions with a more active involvement for all players (Hastie & Trost, 2002). Additionally, the tasks' structure applied, as was based on the IGCM model, encouraged the transferability of the skills to the game, allowing skill improvements without losing the focus on game-problems solving (Tallir et al., 2007).

Nevertheless, the students' improvements in offensive off-the-ball decisions were sparse which further supports that offensive off-the-ball decisions in young players are difficult to develop (Blomqvist et al., 2005). Moreover, the offensive decisions (i.e. deceiving an opponent or moving for an open space to receive a pass), were more difficult to learn by students and apply in game play than the defensive actions (i.e. closing the goal or trying to win the ball). Therefore, the outcomes provided for this study sustains that teachers should ascribe particular importance to the off-the-ball game in the moment of planning the teaching units (Blomqvist et al., 2005; Light, 2004; McPherson & Kernodle, 2003; Mitchell, Oslin & Griffin, 2006). Indeed, it's also reinforced the notion that decision making is as important as skills execution and can determine the performance improvements in sport (Blomqvist et al., 2005; Thomas & Thomas, 1994).

Furthermore, in this study the use of two post test evaluations showed to be determinant to effectively reach the impact of the hybrid SE-IGCM unit applied. Actually, the retention test (post-test 2) was crucial for a more accurate assessment of all students' performance improvements. The highest students' improvements were found in the post-test 2 (55 percent of all improvements while only 22 percent took place at the post-test 1), additionally, students kept improving from post-test 1 to post-test 2 (26 percent of all improvements occurred at this point). These findings are not in agreement

with previous research as Tallir et al. (2007) found that students didn't improve from post-test to the retention test. That may have happened because the retention test was spaced from the post-test in five weeks, whereas in the current study, only one week was the time difference. Further research is needed using different spacing between post-test and retention test in order to obtain a better understanding.

Improvements related to students' Gender

In pre-test boys performed significantly better than girls, particularly in overall decision making, in on-the-ball decisions and in skill execution. Only in the off-the-ball decisions the two groups didn't distinguish at the entry of the unit. The retention test was capital to mitigate gender differences, particularly in on-the-ball decisions and in offensive skill execution, where the boys' pre-test performance was particularly higher. After the SE-IGCM unit application the differences only persisted in overall skill execution as girls increased their scores more than boys in the other categories.

Therefore, the results of this study pointed that girls took more advantage from the unit than boys. Girls improved scores in all composite measures of decision making and skill execution, and also in their overall game performance, which is aligned with the study of Mesquita, Graça, Gomes & Cruz (2005) in Volleyball through the application of a hybrid model composed by the foundations of SE, TGfU and Developmental model (DM) (Rink, 1993).

In fact, both studies allowed rich learning opportunities, by the combination of the authentic learning environments promoted by the SE and the learning tasks structure defined by the didactical models as IGCM and DM. In reality, in this study, from the beginning of the lessons students started to resolve the strategic problems of the game within game-like forms. Furthermore, students worked on skills within game-like situations encouraging its transferability to the game play (Musch et al., 2002). So, the specific features of the game forms may have been particularly responsible for the girls' offensive improvements on-the-ball and in skill execution as the game forms often encouraged the ball possession. Additionally, girls benefited from a closer monitoring and scaffolding from the teacher who insistently tried to ensure a more balanced and equitable share of task involvement and improved in all offensive and defensive categories of decision making and skill execution with exception of offensive off-the-ball decisions. Like advocated by Hastie (1998) and Hastie et al. (2009) the use of the game

forms encourage equitable participation and, thereby, girls are not confined to secondary roles as they have opportunities to increase their game involvement.

Though, another variable could have affected the major improvements of girls, as the higher entry performances of boys may have influenced their weak learning gains (Mesquita et al., 2005). Thus, the learning curve of boys could have been bounded by a ceiling effect due to their high performance at the entrance of the unit, especially in on-the-ball decisions, in overall skill execution and in overall game performance. Actually, when boys and girls lacked previous experience (for instance in badminton, Hastie et al., 2009) they improved extensively their performance (i.e. in skill execution, in decision making and in overall game performance), and boys surpassed the girls. As a result, in contrast to our study, the boys in badminton had a larger scope to improve and overcome the girls, which may explain the different outcomes of the two studies. On the other hand as the current study applied a hybrid model which one considered the didactical content treatment through the application of the IGCM's principles, this could have made the difference creating better conditions to the learning improvements.

Nevertheless, in this study boys did raise their scores in global decision making and in overall skill execution and improved significantly in defensive skill execution, in total off-the-ball decisions, and in defensive off-the-ball decisions. Moreover, particularly to what concerns the off-the-ball increases, the lower initial scores of boys in this tactical domain, may have given them more scope to progress.

Improvements related to students' Skill Level

At the entry of the unit it was showed that higher skill level students (medium and high level) outperformed the low skilled students in overall game performance, in on-the-ball decisions and in global skill execution. Only in overall game performance the high skill students differentiated of the medium skilled, as they showed more accuracy in game play (ratio appropriate/inappropriate decisions and successful/unsuccessful executions), and less on their amount of decisions and skill executions.

Upon the retention test all differences between groups were extinct suggesting the program had a larger impact on low skill level students, as well on the overall game performance of medium skill level students.

Indeed, the low skill level students improved in all categories of game play performance. The tasks structure applied, mainly using game forms, were determinant

to these outcomes. So, a main explanation may be the fact that in the game forms, students partially played in safety zones that facilitated a more secure ball exchange and gave them, particularly to the less able ones, more time and space for deciding and executing on- and off-the-ball. This outcomes profile is consistent to that found in the volleyball study of Mesquita et al. (2005). The authors examined the impact of a hybrid model called “step game approach to teaching volleyball” on low skilled and high skilled students’ tactical decision making, skill execution and game performance. At the pre-test the different skill levels groups distinguished significantly in all components. However at the end of the volleyball’s unit the contrasts between students in decision making and skill execution faded away. Conversely, differences in overall game performance persisted possibly, as authors claimed, due to the short length of the unit (12 lessons). So, the widespread improvements of the low skilled students through the application of the hybrid SE-IGCM soccer unit can also be explained by the larger extension of this unit (18 lessons) since the unit in the Mesquita’s et al. (2005) study was less extensive.

Notwithstanding, the hybrid SE-IGCM soccer unit provided to all students sufficient opportunities to play and to improve their tactical ability to play the game. Consequently, all students increased their scores in skill execution, and significant improvements were found for all in defensive skill execution reinforcing the belief that the technical ability can be improved while playing game-like forms. However, only the low skill level students improved significantly in overall and offensive skill execution.

The smaller improvements of medium and high skilled students, namely on-the-ball decisions and in offensive and overall skill execution could be explained by the fact that at the entry of the unit these students already revealed high performance on those behaviours which could have bounded their improvements (Harvey et al., 2010; Mesquita et al., 2005). Nevertheless they have improved the overall decision making ability and in total off-the-ball decisions. One possible explanation is that they probably were already in transition to a more competitive and strategically more complex form of playing. Therefore, is further sustained that the off-the-ball decisions are an important aspect of team sports, especially soccer, determining successful performance when time “on-the-ball” is limited (Light, 2005). For that reason, the tasks designed for the teaching units should promote a broader participation of students taking into account the learning needs of all players, regardless of their skill level and therefore being truly inclusive.

Another important finding of this study should be noted: the retention test was particularly important to assess gains of students of all skill levels, particularly the low skilled students, as 64 percent of their improvements occurred at that point at odds with the lower improvements found in the post-test 1 (14 percent); likewise, 50 percent of the high skilled students' improvements occurred from pre-test to post-test 2 and 43 percent from post-test 1 to post-test 2 suggesting that the retention test was also important to the more able students; considering the medium skill level students, 50 percent of their improvements took place from pre-test to post-test 2 and 33 percent from post-test 1 to post-test 2, thus the post-test 2 was also crucial for assessing these students improvements.

CONCLUSIONS

Teaching a soccer unit in a SE environment sustained by the learning tasks structure provided by the IGCM, showed to offer students a chance to improve skill execution, tactical decision making, and overall game performance. Moreover, the belief that research should focus more often on the learning tasks structure of the SE units, is firmly sustained by this study.

The application of a hybrid model (SE model and IGCM model) provided significant improvements on the students' learning outcomes as equitable participation was fostered. However, the overall results showed that gender and skill levels interfered in the learning outcomes. For instance, only girls and low skill level students improved at the overall skill execution showing that their low entry performance have given them more scope for progress in that field. When students already have a high technical background, the skills improvement seems to be bounded by a ceiling effect. Moreover, the tasks structure may have constrained the most proficient students to additional improvements, as they probably provided to the less able students better conditions to improve learning.

This study strongly reinforces the idea that in physical education classes, the previous experiences of students in a particular sport can positively or negatively influence the learning process (Blomqvist, et al., 2005; Hastie et al., 2009). It's also supported that, in order to promote a truly inclusive pedagogy, teachers should take into account the previous sporting experiences of all students both more and less skilled

students, when they plan the learning tasks (Blomqvist, et al., 2005; Placek and Griffin, 2001). Further research must consider the entry level of the students adjusting tasks structure to all students' skill levels, providing all potential conditions to improve their performance.

Moreover, the retention test was found crucial to assess the students' outcomes as they improved mostly at this assessment point. In fact, the performance improvements from post-test 1 to post-test 2 found for the overall decision making, particularly in total and in defensive off-the ball decisions, enable us to suggest that these specific tactical domains have larger scope for progress. Future research should consider the time effects in learning providing useful information for practices.

In short, the hybrid SE-IGCM has proven to be efficient in promoting the students game play competence, suggesting that students acquire sufficient skills to participate enthusiastically in games understanding and applying appropriate strategies to the complexity of the game. In order to establish the impact of the hybrid SE-IGCM unit a more holistic approach is needed, examining its impact on students' social, cultural and affective outcomes.

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3. CONSIDERAÇÕES FINAIS

Considerações finais

O nosso propósito foi o de aplicar uma unidade híbrida, coligando os modelos educativos SE (Sport Education) e IGCM (Invasion Games Competence Model) no ensino do futebol, numa turma de 26 alunos do quinto ano de escolaridade. Foi também nossa intenção aferir o impacto da unidade nas aprendizagens dos alunos, especificamente nos domínios nucleares da tomada de decisão, da execução motora e da performance geral de jogo.

Uma unidade de ensino de futebol inserida numa cultura desportiva SE, sustentada pela estrutura de tarefas de aprendizagem provida pelo IGCM, mostrou oferecer aos estudantes a oportunidade para melhorarem na execução das habilidades motoras, na tomada de decisões tácticas e no desempenho geral do jogo.

A estrutura das tarefas da unidade influiu particularmente na performance dos alunos ao nível da tomada de decisão, porquanto na sua maioria os grupos em estudo melhoraram significativamente. Especificamente no que concerne às categorias relacionadas com a tomada de decisão, todos os alunos, independentemente do grupo em que se inseriram, melhoraram significativamente as pontuações no somatório das decisões sem bola e nas decisões defensivas sem bola.

Não obstante, os resultados dos pós-testes (1 e 2) mostraram que as variáveis género e nível de habilidade influenciaram os resultados das aprendizagens, uma vez que o impacto do programa foi particularmente determinante nas aprendizagens das raparigas e dos alunos com níveis menores de habilidade. Os alunos com menor nível de habilidade melhoraram significativamente nas três categorias globais (execução motora, tomada de decisão, performance global de jogo) bem como em todas as categorias ofensivas (com e sem bola) e defensivas da tomada de decisão e da execução motora. As raparigas melhoraram em todas as categorias, com a excepção das tomadas de decisão ofensiva sem bola. Na execução motora global apenas as raparigas e os estudantes de baixa qualificação conseguiram melhorar o nível na execução das habilidades.

As diferenças verificadas na avaliação inicial, quer em função do género quer em função do nível de habilidade, desapareceram quase na totalidade com os progressos mais acentuados das aprendizagens das raparigas e dos alunos de baixo nível de habilidade.

Não obstante, os rapazes melhoraram na tomada de decisão sem bola e nas decisões defensivas sem bola. Os alunos de nível de habilidade médio e de os alunos de nível de habilidade elevado melhoraram na tomada de decisão global e nas tomadas de decisão sem bola, em particular nas decisões defensivas e também na execução motora defensiva. Os alunos de nível médio de habilidade melhoraram ainda a sua performance global de jogo. Os rapazes e os alunos de níveis de habilidade média e de nível de habilidade elevada não mantiveram uma consistência nas melhorias na execução motora global e ofensiva, nem nas decisões com bola, mantendo contudo as elevadas performances verificadas à entrada da unidade.

No que se refere aos efeitos práticos para o processo de ensino-aprendizagem dos jogos de invasão, bem como aos anseios a que futuras pesquisas neste campo devem acudir, procedem do nosso estudo as seguintes reflexões:

A tomada de decisão sem bola deteve um papel fundamental na evolução dos níveis de performance dos alunos. Na verdade, os registos nesta categoria foram sempre muito superiores aos verificados para as execuções motoras. Os resultados deste estudo sustentam que os professores devem atribuir especial importância ao jogo sem bola, no momento de organização das unidades de ensino.

Neste estudo, a estrutura das tarefas pode ter limitado melhorias adicionais nos alunos mais proficientes, uma vez que proporcionam aos alunos menos capazes melhores condições para progredirem nas aprendizagens. Adicionalmente, os diferentes níveis de habilidade dos alunos à entrada da unidade poderão ter delimitado as suas aprendizagens. As aprendizagens dos estudantes com um elevado nível técnico inicial poderão ter sido circunscritas por um efeito tecto. Em oposição é possível que os baixos níveis na performance motora à entrada da unidade tenham aberto um caminho mais alargado para melhorias aos alunos menos hábeis.

Em conformidade, este estudo reforça a ideia de que para se promover uma pedagogia verdadeiramente inclusiva, os professores ao planificarem as tarefas de aprendizagem, devem ter em conta as experiências desportivas anteriores de todos os alunos, os mais e os menos qualificados. As tarefas devem possibilitar igualmente aos alunos que se encontram em transição para uma mais evoluída actuação estratégica no jogo, oportunidades para melhorarem a sua performance.

Futuras pesquisas devem tomar em conta o nível de entrada dos alunos, adaptando a estrutura das tarefas para os alunos de todos os níveis de habilidade, proporcionando condições equitativas no melhoramento do desempenho de jogo.

É igualmente notável o facto do pré-teste 2 (teste de retenção) se ter revelado crucial para se aferirem os ganhos dos alunos, sendo que 45% destes ocorreram do pré-teste para o pós-teste 2. Estudos futuros devem considerar os efeitos do tempo nas aprendizagens fornecendo informações úteis para a prática.

De uma forma global, a crença de que a investigação deve centrar-se mais frequentemente sobre a estrutura das tarefas de aprendizagem das unidades SE, sustentou-se firmemente neste estudo. Acresce-se que futuros estudos deverão centrar-se na determinação do impacto das unidades híbridas SE-IGCM nos comportamentos afectivos dos alunos, só assim poderá ser confirmado na sua inteireza a pertinência da utilização de unidades de ensino sustentadas nesta estrutura. Não obstante, anuímos que combinar o SE com o IGCM reflecte uma mudança da perspectiva de ensino dos jogos de invasão, no sentido em que optimiza a formação social, cultural e afectiva dos alunos. A conjugação das particularidades de cada um dos modelos (SE e IGCM) poderá revelar-se significativa no sentido de promover nos alunos a competência desportiva (*competent sportspeople*), a literacia desportiva (*literate sportpeople*) e o entusiasmo pelo desporto (*enthusiastic sportspeople*).

ANEXOS

Appendix 1- Season plan

Lesson	IGCM Structural parts	IGCM Tasks	SE processes
1	Fill the test (declarative knowledge); Filling out the questionnaire (social-emotional).		First approach to the concept of persisting team roles and competition format
2 - 3	Introduction to team roles and responsibilities; rules ; beginning competition and practice. Diagnostic assessment (pre-test) Shooting (i ¹) – prevent shooting (i ²); create shooting opportunities (ii ¹) – prevent to create shooting opportunities (ii ²); set up an attack (iii ¹) – prevent to set up an attack (iii ²).	Introduction to team roles and responsibilities Present the <i>Basic Game Form 1 (BGF1)</i> 3 vs. 2 + <i>Goalkeeper (GK)</i> Rules , beginning competition and practice Diagnostic evaluation (pre-test)	Announcement of teams- development of team identity (name, color, etc) Whole class instruction First championship journey for season points Duty team responsibilities
4	(i ¹) – (i ²); (ii ¹) – (ii ²); (iii ¹) – (iii ²).	<i>Game like tasks (GLT)</i> <i>Basic Game Form 1 (BGF1)</i> - Practice matches <i>Partial Game forms (PGF)</i> - 1 vs. 1	Internal scrimmages within team; Duty team responsibilities (captain-coach, equipment manager) Whole class instruction Scrimmages with the opposing teams
5 - 6	(i ¹) – (i ²); (ii ¹) – (ii ²).	<i>Game like tasks (GLT)</i> <i>Basic Game Form 1 (BGF1)</i> - Practice matches <i>Partial Game forms (PGF)</i> – 3 vs. 1 + GK 2 vs. 0; 2 vs. GK	Internal scrimmages within team; Duty team responsibilities (captain-coach, equipment manager, referee) Whole class instruction Scrimmages with the opposing teams
7	(i ¹) – (i ²); (ii ¹) – (ii ²).	<i>Game like tasks (GLT)</i> <i>Basic Game Form 1 (BGF1)</i> - Practice matches <i>Partial Game forms (PGF)</i> – 1 vs. 1 + GK	Internal scrimmages within teams Duty team responsibilities (captain-coach, equipment manager, referee, statistician) Whole class instruction Scrimmages with the opposing teams
8 - 9	(i ¹) – (i ²); (ii ¹) – (ii ²); (iii ¹) – (iii ²)	<i>Game like tasks (GLT)</i> <i>Basic Game Form 1 (BGF1)</i> - Practice matches <i>Partial Game forms (PGF)</i> – 1 vs. 1; 2 vs. 1	Internal scrimmages within team; Duty team responsibilities (captain-coach, equipment manager, referee, statistician) Whole class instruction Scrimmages with the opposing teams
10	(i ¹) – (i ²); (ii ¹) – (ii ²); (iii ¹) – (iii ²)	<i>Game like tasks (GLT)</i> <i>Basic Game Form 1 (BGF1)</i> - Practice matches <i>Partial Game forms (PGF)</i> – 2 vs. 1 + 1; 3 vs. 2	Internal scrimmages within teams; Duty team responsibilities (captain-coach, equipment manager, referee, statistician) Whole class instruction; Scrimmages with the opposing teams
11-12	(i ¹) – (i ²); (ii ¹) – (ii ²); (iii ¹) – (iii ²).	<i>Game like tasks (GLT)</i> <i>Basic Game Form 1 (BGF1)</i> - competition matches	Whole class instruction; all duty team responsibilities Second championship journey for season point
13	(i ¹) – (i ²); (ii ¹) – (ii ²); (iii ¹) – (iii ²).	<i>Game like tasks (GLT)</i> <i>Basic Game Form 1 (BGF1)</i> - competition matches	Whole class instruction; all duty team responsibilities Third championship journey for season points
14	(i ¹) – (i ²); (ii ¹) – (ii ²); (iii ¹) – (iii ²).	<i>Game like tasks (GLT)</i> <i>Basic Game Form 1 (BGF1)</i> - Practice matches <i>Partial Game forms (PGF)</i> – 3 vs. 1 + GK	Internal scrimmages within teams; Duty team responsibilities (captain-coach, equipment manager, referee, statistician) Whole class instruction; Scrimmages with the opposing teams
15-16	(i ¹) – (i ²); (ii ¹) – (ii ²); (iii ¹) – (iii ²).	<i>Game like tasks (GLT)</i> <i>Basic Game Form 1 (BGF1)</i> - Practice matches; present <i>Basic Game Form 2 (BGF2)</i> ; <i>Partial Game forms (PGF)</i> – 3 vs. 2; 3 vs. 2 + GK	Internal scrimmages within teams; Duty team responsibilities (captain-coach, equipment manager, referee, statistician) Whole class instruction; Scrimmages with the opposing teams
17-18	(i ¹) – (i ²); (ii ¹) – (ii ²); (iii ¹) – (iii ²).	<i>Game like tasks (GLT)</i> <i>Basic Game Form 1 (BGF1)</i> - Basic Game Form 2 (BGF2) - practice matches <i>Partial Game forms (PGF)</i> – 1 + 1 vs. 1	Internal scrimmages within teams; Duty team responsibilities (captain-coach, equipment manager, referee, statistician) Whole class instruction; Scrimmages with the opposing teams
19	(i ¹) – (i ²); (ii ¹) – (ii ²); (iii ¹) – (iii ²).	<i>Game like tasks (GLT)</i> <i>Basic Game Form 1 (BGF1)</i> - competition matches (post-test 1)	Whole class instruction; all duty team responsibilities Fourth championship journey for season points
20-21	(i ¹) – (i ²); (ii ¹) – (ii ²); (iii ¹) – (iii ²).	<i>Game like tasks (GLT)</i> <i>Basic Game Form 1 (BGF1)</i> - competition matches (post-test 2)	Whole class instruction; all duty team responsibilities Fifth championship journey for season points
22	(i ¹) – (i ²); (ii ¹) – (ii ²); (iii ¹) – (iii ²);	<i>Basic Game Form 1 (BGF1)</i> – Rewarding games; Awards day	Culminating event Free trial of new roles

Appendix 2 – Description of the coding categories for decision making and skill execution (Blomqvist, et al., 2005)**DECISION-MAKING**

Offensive on-the-ball movement				
Decision	1= Successful	Code	0= Unsuccessful	Code
Offensive	Pass to a teammate who is open	POT	Pass to a covered teammate	PCT
			Pass to a teammate to close or far	PTCF
	Holding the ball (no teammates open)	HB	Holding the ball (passing or shooting more appropriate)	HBI
	Good scoring attempt	GSA	Blocked shot or inappropriate distance	BSID
Off-the-ball movement				
Decision	1= Appropriate	Code	0= Not appropriate	Code
Offence	Movement as required by the of the game	MRFGO	Inappropriate movement as required by the flow of the game	IMRFGO
	No movement needed (already in open space)	NMN	No movement when needed (standing covered, no purpose)	NMWN
	Movement to a position to receive a pass (appropriate distance)	MRP	Poor movement (too close, far or crowded, next to another teammate)	PM
Defence	Movement as required by the flow of the game	MRFGD	Inappropriate movement as required by the flow of the game	IMRFGD
	Defending against an opponent (guard or mark)	DAO	Not defending or providing defensive help (covering, guarding or marking)	NDPDH
	Providing defensive help (cover)	PDH		
	Trying to win the ball (dual or intercept) when appropriate	TWB	Trying to win the ball when not appropriate	TWBNA
	Defending the goal	DG	Not defending the goal	NDG
No decision	Situation happens too fast for the player to react Player cannot influence the end result of the situation anymore			NDOFB

SKILL EXECUTION

Execution	1= successfully	Code	0= unsuccessfully	Code
Offence	Receiving Controled over the ball	SER	No control over the ball	EMNCB
	Passing Own team maintains possession of the ball	SEP	Opponents gain possession of the ball or goes out of bounds	EMOGP
	Dribbling At least 2 contacts, 4 meters, or player feints the opponent	SED	Player loses the ball when dribbling or ball or goes out of bounds	EMPLB
	Shot Goal	SES	No goal	EMNG
Defence	Duel Conquers the ball for own team or out of bounds on purpose	EMD	Opponent maintains possession of the ball	EMOMP
	Interception Intercepts opponents' pass, gains advantage for own team	EMI	Intercepts opponents' pass, gives advantage for the opponent	EMIGAO