# Examining Iranian physical education teachers' perceptions of their use of Game-Based Approaches
# Análisis de las percepciones de los profesores iraníes de educación física sobre su uso de la Enseñanza Comprensiva del Deporte

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**Abstract.** This study was conducted to examine the extent to which the key features of Game-Based Approaches (GBAs) are used by Iranian Physical Education (PE) teachers with different genders and educational stages, and to identify the strongest predictors of whether they perceive they are teaching games using GBAs. Through an online survey, 256 PE teachers (123 women, 40.6% primary school) completed the questionnaire designed by García-López et al. (2019), which included questions on games content, planning, teaching strategies and assessment. The results showed that Iranian PE secondary school (SS) and primary school (PS) teachers, in addition to focusing on students' technical development, consider games rules as a key element. They were interested in using thematic approaches and modified games. However, the older the students, especially after the 9th grade, the lower was teachers' engagement with teaching through GBAs. SS teachers introduced more theoretical content and structural, technical and tactical elements than PS teachers. The women used GBAs in their teaching more than the men. The use of tactical problems and tactical complexity in the Iranian teachers' lesson planning were the strongest predictors of their perception of whether they use GBAs in their teaching. The results highlight that Iranian PE teachers' teaching style, especially in grades above 9th and in boys, must be taken into account to promote students' technical and tactical capabilities.
**Key Words:** Games, Games Based Approaches, Teachers, Physical Education.

**Resumen.** Este estudio se llevó a cabo para examinar hasta qué punto las características clave de los enfoques basados en juegos (GBA) son utilizadas por profesores de educación física (EF) iraníes con diferentes géneros y etapas educativas, e identificar los predictores más fuertes de si perciben que están enseñando juegos. a través de GBA. Mediante una encuesta online, 256 profesores de EF (123 mujeres, 40,6% de primaria) cumplimentaron el cuestionario de García-López et al. (2019) que incluía preguntas sobre el contenido de los juegos, la planificación, las estrategias didácticas y la evaluación. Los resultados mostraron que los profesores de educación física iraníes de la escuela secundaria (SS) y la escuela primaria (PS), además del desarrollo técnico de los estudiantes, consideran las reglas de los juegos como un elemento clave. Estaban interesados en utilizar enfoques temáticos y juegos modificados. Sin embargo, al aumentar las calificaciones de los estudiantes, especialmente después del noveno grado, se redujo la pasión de los maestros por enseñar usando GBA. Los profesores de SS introdujeron más contenido teórico, elementos estructurales, técnicos y tácticos que los profesores de PS. Las mujeres, más que los hombres, usaban GBA en su enseñanza. El uso de problemas tácticos y la complejidad táctica para planificar lecciones por parte de los maestros iraníes fueron los predictores más fuertes de su percepción de si usan GBA en su enseñanza. Los resultados destacan que el estilo de enseñanza de los profesores de educación física iraníes, especialmente después del 9º y en los niños, debe tenerse en cuenta para promover las capacidades técnicas y tácticas de los estudiantes.
**Palabras Clave:** Juegos Deportivos, Enseñanza Comprensiva del Deporte, Docentes, Educación Física.

## Introduction

The focus of current pedagogical approaches to teaching Physical Education (PE) in most Iranian schools tends to be on students' technical skills and attitudes, neglecting important outcomes, such as the development of tactical awareness. Given that the PE curriculum in Iranian schools seeks to strengthen the components of knowledge, skills and attitudes of students, Iranian PE teachers have shown interest in Game-Based Approaches (GBAs). Contrary to traditional teaching approaches in which learners first learn techniques in isolation and then generalize them to the context of the game (Kirk, 2010), in GBAs, tactical awareness should be learnt before technical skills through the use of game-like situations. Although increased motivation in learning and achievement has been reported in Iran as a result of applying this pedagogical approach (Alimohammadi et al., 2017; Mohammadi et al., 2019), it seems that students learn more skills than tactics (Salehi Omran et al., 2015) because PE teachers often struggle with GBAs in teaching PE (Katoozian et al., 2015). Ac-

cording to Iran's National Curriculum Document (2011) (NCD), GBAs have been extensively taught in PE teacher education (PETE) courses, and, thus, it would be of great interest to examine the extent to which features of GBAs are used by Iranian PE teachers. This would provide new insights into the teaching of GBAs in Iranian PETE and could improve school PE in Iran.

GBAs comprise approaches to teaching and coaching games, such as Teaching Games for Understanding (TGfU), Game Sense, Play Practice, Tactical Games Model, Ballschool or Tactical Game model, which meet the definition of a "learner-centered teaching and coaching practice in which the modified games set the base and framework for developing thoughtful, creative, intelligent, and skillful players" (Teaching Games for Understanding Special Interest Group, 2021). TGfU was the precursor of current GBAs (Gutiérrez & García-López, 2015), and its main contributions to these approaches lay in underpinning the pedagogical principles of sampling, representation, exaggeration and tactical complexity (Thorpe et al., 1984), a circular model of learning

(Bunker & Thorpe, 1982) and the grouping of games into categories (Almond, 1986). The updated key features of GBAs to teaching games (García-López & Gutiérrez, 2016) include: 1) a pedagogical approach that promotes interaction between the teaching of tactical awareness and technical skills, 2) game modification to focus on students' capacities, 3) using questioning or inquiry-based strategies to develop students' tactical awareness, 4) a lesson structure that includes games at the beginning and at the end of a lesson, 5) tactical complexity as the main principle for the learning progressions, and 6) a thematic approach in the first stages of learning to promote inter-task transfer. Accordingly, teachers have considered GBAs as a methodology that promotes student's decision-making capacity (Griffin et al., 2005). A strong feature of this approach is that learners need not necessarily have pre-learned techniques to be able to learn and understand the game (Stolz & Pill, 2014), but rather, by being in the real game situation (often simplified), the perception-action pairing associated with the game in question is formed through responding to contextual constraints (Gibson, 1979).

Despite the potential of GBAs to meet the objectives of PE, there are still problems with their proper implementation by PE teachers. Teachers typically consider themselves the central lynchpin of education and PE and in learning sport skills (Kirk, 2010), and, consequently, they prefer not to change their teaching method. The GBA is based on the constructivist learning theory, which aims to involve students in the teaching process more and so increase learning (Harvey, 2016). Implementing GBAs requires teachers to have great knowledge of pedagogical content and the ability to transfer the concepts to students (Ball et al., 2008), and recognize when and how to manipulate the game-skill tasks during teaching (Wang & Ha, 2009).

The last few years have seen a growing interest in examining the extent of the use of GBAs in PE teaching at schools. In this regard, in a study on Secondary School (SS) PE teachers, Díaz-Cueto et al. (2010) reported that teachers experienced certain negative mood states, such as anxiety and fatigue, when starting to use GBAs, although observing the progress of less skilled students gave them satisfaction and confidence. Pill (2011) asked Australian teachers to participate in a web survey to investigate the extent of the impact of Teaching Games for Understanding-Game Sense (TGfU-GS) on the schools' curriculum. He demonstrated that although teachers had a good understanding of TGfU-GS and used small-sided games (SSGs) and questioning to strengthen the tactical elements of the game, they did not regularly use it in the teaching preparation process and curriculum, which may be due to their insufficient experience in using student-based methods. The complexities and demands related to curriculum design when PE teachers combine GBAs (Harvey, 2016) have also addressed. Otero-Saborido et al. (2014), using a questionnaire tool, found that the problems related to

pedagogical content knowledge and evaluation leads teachers to experience certain difficulties when using questioning in the early stage of GBA. In another study analyzing teaching methodology in invasion games, Otero-Saborido et al. (2014) highlighted that Primary School (PS) teachers implement a great proportion of their invasion games program following GBAs, as well as active learning and the use of SSGs. García-López et al. (2019), using an online survey research design, found that PE primary and secondary school teachers in central Spain incorporated five out of six GBA key features to achieve students' learning goals. These teachers considered the use of games, game modification, questioning, tactical complexity and applying thematic approach as the most appropriate features for teaching physical education. They also acknowledged that the use of tactical complexity to advance curriculum content, as well as the use of questioning, were the key features of teaching games through GBAs. These features were more widely applied by secondary school teachers than primary ones. Recently, the importance of learner-centered methods was considered by Fernandez-Rivas and Espada (2020). In examining the effectiveness of the teaching styles of 455 PE teachers, they reported that command, free exploration, and guided discovery styles had the greatest effect on cognitive and physical development in physical education classes. Given that using GBAs in school PE teaching has gained importance in recent years, studying the perceptions of the use of GBA among Iranian PE teachers' in primary and secondary schools offers a necessary contribution to the research literature.

In Iranian schools, teachers' methodology and the content of the PE curriculum are the most important factors in the effectiveness of the PE curriculum (Zolghadri et al., 2019). In this line, according to the curriculum provided by the Ministry of Education, students should be taught gymnastics, swimming and track and field in elementary, and group and net/wall sports/games in secondary school. While teaching these skills, teachers should also attempt to increase students' knowledge in the fields of health, nutrition, physical fitness, safety, pathology, and posture. The curriculum also takes into consideration the student-based teaching of PE (Physical Education and Health Curriculum Guide for the First Level Secondary School, 2016). Furthermore, there are two paths to becoming a PE teacher in Iran. If Iranian PE teachers graduate from the PETE course, they pass ten modules on teaching methodology, including curriculum, planning and PE teaching strategies, as well as 512 teaching practice hours over a 4-year course. However, if they graduate from a 4-year course in sport sciences, they are trained in the aforementioned modules on a one-year course and are then ready for a position as a PE teacher. During these courses, then, GBAs serve as acceptable models to strengthen students in the psychomotor, cognitive, and affective domains through the use of a motivational and learner-centered approach and balancing teaching technical skills and tactical awareness

(Alimohammadi et al., 2017).

Given the importance of games in bolstering the physical and cognitive capabilities of students, the Ministry of Education of Iran has sought to increase students' participation in PE and enhance school sports programs by presenting a NCD (2011). However, PE teaching methods in Iranian schools often focus on teaching the technical aspects of sports/games, not their tactical and decision-making ones (Salehi Omran et al., 2015). To the best of the authors' knowledge, no study in Iran has examined primary and secondary school teachers' use of GBAs by. Therefore, the present study seeks to determine whether Iranian PE teachers have chosen GBAs as their teaching strategy and whether they use their six features. Additionally, we aim to establish whether differences exist between Iranian primary and secondary PE teachers in using GBAs. Thus, the significance of the present study lies in ascertaining to what extent Iranian PE teachers' performance is consistent with the policies of the Ministry. The present study seeks also to delve into whether the application of GBAs has led to an increased participation of female teachers in PE classes.

## Materials and Methods

A quantitative and comparative research design was conducted on PE teachers over 3 months (Figure 1). with the aim of examining the extent to which the key features of Game Based Approaches (GBA) are used by Iranian Physical Education (PE) teachers with different genders and educational stages, and to identify the strongest predictors of whether they perceive they are teaching games through GBAs,

### Participants and settings

A total of 259 PE teachers (126 women and 133 men) from 16 regions of Kurdistan province participated in this study. The mean age of participants was 36.4 years ($\pm$ 6.3) and the mean years of service was 12.4 years ($\pm$ 7.0). Of the participants, 40.6% of teachers worked in PS (men: 58, women: 46; mean years of service: 9.6) and 59.4% in SS (men: 77, women: 78; mean years of service: 14.55).

### Instrument

Data were collected by administering the questionnaire from the study by García-López et al. (2019), using an online survey. Following Bryman (2016), this commonly applied method in social sciences has two main advantages: (a) it is easily accessible to participants, regardless of where they are; and (b) allows for a rapid analysis of the information because the results are entered directly into a database generated by the application. The application used was Google Forms. The online survey was divided into three parts. The first provided an explanation of the topic of the survey (games teaching), how to complete it, and a glossary of terms. The second part collected demo-graphic and descriptive information on the teachers (e.g., gender, experience, type/level of school, etc.). The third part included 18 questions to allow teachers to report their perception of their current games teaching practices, comprising four dimensions that included different key aspects of the GBA (García-López et al., 2019):

- Games content, which included teaching of theoretical knowledge (declarative and procedural), skills and tactical awareness (identifying tactical problems and decision making).
- Games planning, which included thematic and specific approaches; sampling; relation between skills and tactical awareness.
- Games teaching strategies, which included types of tasks (modified games, practice tasks, drills…); questioning; lesson structure.
- Games assessment, which included the content being assessed and how (instruments).

The final 18th item was included at the end of the survey to differentiate between the teachers who knew about the GBA model and consciously taught through these approaches, and those that did not.

To allow teachers to provide an accurate representation of their perceptions of their current games teaching practice in PE, this survey included different types of questions: two dichotomous questions, four nominal questions, one ordinal question and 11 interval (Likert-response scale) questions, rated on the following four-point scale: never, occasionally, often, always. Six of the response scale questions were divided into different sub-questions, and so teachers had to respond to each sub-question. An example is shown below:

Q6: How often do you use the following types of tasks in the main part of your lessons?
(a) skill drills.
(b) practice tasks.
(c) modified games focused on skills learning.
(d) modified games focused on tactical awareness.
(e) adult (full-sided) version of the game.

### Procedures

First, the survey was translated from Spanish into English following these steps: (1) the original authors translated it into English; (2) a professional English native translator reviewed the translation; (3) two academics with more than twenty years of experience teaching GBAs checked the translation into English; (4) the first author translated the English version of the survey into Persian, after two meetings with the rest of the authors to check the meaning of the items.

To evaluate whether the questions effectively capture the topic under investigation, the face validity of the Persian version of the questionnaire was first confirmed by 4 Iranian physical education experts (2 women). The final version was then given to 12 experienced Iranians (4 primary teachers (2 women), 4 secondary teachers (2 women), 2 researchers, 2 coaches (1 woman), all with 7 to 10

years of experience) to determine the content validity. They were asked to give their opinion about the descriptive quality of each item in the three-point rating scale with 'appropriate', 'somewhat appropriate', and 'inappropriate'. Finally, the means of the content validity index (CVI) of the questionnaire for the four key dimensions of GBAs, including games content, games planning, games teaching strategies and games assessment for primary school, were 0.7, 0.82, 0.78 and 0.78, respectively, and for secondary school were 0.79, 0.78, 0.72 and 0.77, respectively, at 0.05 significance level. The final 18th item, also CVI, was 0.82.

After consultation with school managers as well as executive managers of Organization of Education of Kurdistan (OEK), questionnaires were sent by two means: 1) obtaining teachers' emails from school principals, and 2) sharing the questionnaire link on specific social media for PS and SS physical education teachers. To encourage the teachers to respond, organizational credits were rewarded to respondents by the managers of OEK. With 398 PE teachers in the Kurdistan province, as an available population, with a confidence level of 95% and a margin of error of 4%, the sample size was estimated to be some 240 persons. All of the aforementioned population received the questionnaire. Data collection lasted 3 months and, in this period, reminders were sent four times. Finally, 64%

of the population randomly responded. Once the survey was completed and submitted, the data were downloaded to an Excel database for subsequent analysis.

### Data analysis

The results were imported from Excel and analyzed using IBM SPSS Statistics 24.0. Descriptive analyses (frequency, mean and standard deviation) of the survey data were conducted. Forward binary logistic regression analysis was performed to identify the strongest predictors of whether Iranian PE teachers were likely to be teaching games in PE through GBA. This method, as a stepwise regression approach when the dependent variable is binomial, starts from the null model and adds a variable that improves the model the most, one at a time, until the stopping criterion is met. Question 18 (Do you use the GBA pedagogical model to teach games?) was entered as the dependent variable in the regression. Key variables related to the core features of GBAs in the Likert scale questions (Q4, Q5, Q6, Q10, Q11, Q12, Q13, Q15), based on descriptions outlined by García López and Gutiérrez (2016) and Metzler (2011), were inputted as independent variables. In the using a Likert scale (Q2, Q3, Q4, Q5, Q6, Q7, Q10, Q11, Q12, Q13, Q15, Q17), differences between gender and educational stage (PS or SS) were analyzed through $t$ tests in order to compare the means.
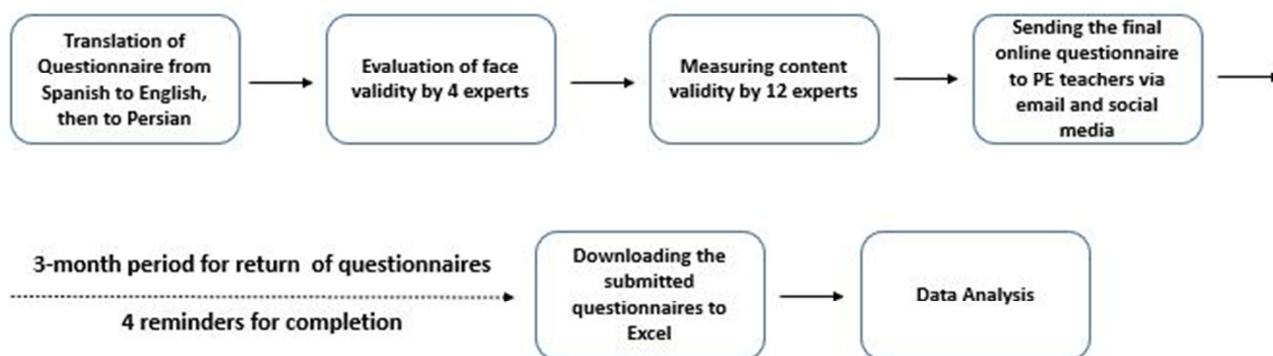


Figure 1. Research design

### Results

This section is divided into three parts. In the first section, we present a descriptive analysis of the results for each of the four dimensions of the survey, namely, games content, games planning, game teaching strategies and games assessment. In part two, we describe the results of the logistic regression, where we identify the key features of GBAs that are the strongest predictors of whether Iranian PE teachers perceive they are teaching games through such approaches. In part three, we examine differences by gender and educational stage with respect to how teachers perceive they use the key features of GBAs.

***Iranian teachers' perceptions of the key features of GBAs they have incorporated into their games teaching***

### Games content

In this category, teachers were asked to indicate the number of games units they typically teach in an academic year (Q1). The current cross-section of Iranian teachers reported, within each educational stage, a high number of game units in each of the courses (four or more) in PSs, and between two and four in most SSs, per year.

For the type of theoretical knowledge taught (Q2), 93.8% of teachers reported often or always providing theoretical knowledge related to rules, 84.5% related to technical skills, 72.9% related to tactics, and 45% related to sports history. Most of the teachers (91.9%) noted they often or always taught technical skills content (Q4), while 77.1% of them reported often or always teaching tactical content (Q5).

*Games planning*

Of the participating Iranian teachers, 73.3% reported using a thematic approach to games teaching (Q7, 71.2% of the PS, 74.7% of the SS). Most PS teachers (60.6%) reported using this thematic approach (Q8) until 6th grade, while SS teachers gradually abandon this approach, with 9th grade being the last level with which they use it. Only 14.9% of SS teachers reported using this approach in the last grade (12th).

Q9 asked teachers to report the types of games (target, fielding, wall/net and invasion games) they used in different school grades (Figure 2). In the first three grades of PS, target games were the content that most teachers reported teaching. From 4th grade to the end of SS, invasion games were identified as the main games content being taught by Iranian teachers, followed by net/wall games. Fielding/Striking was reported as the least frequently implemented category by Iranian teachers in all grades.
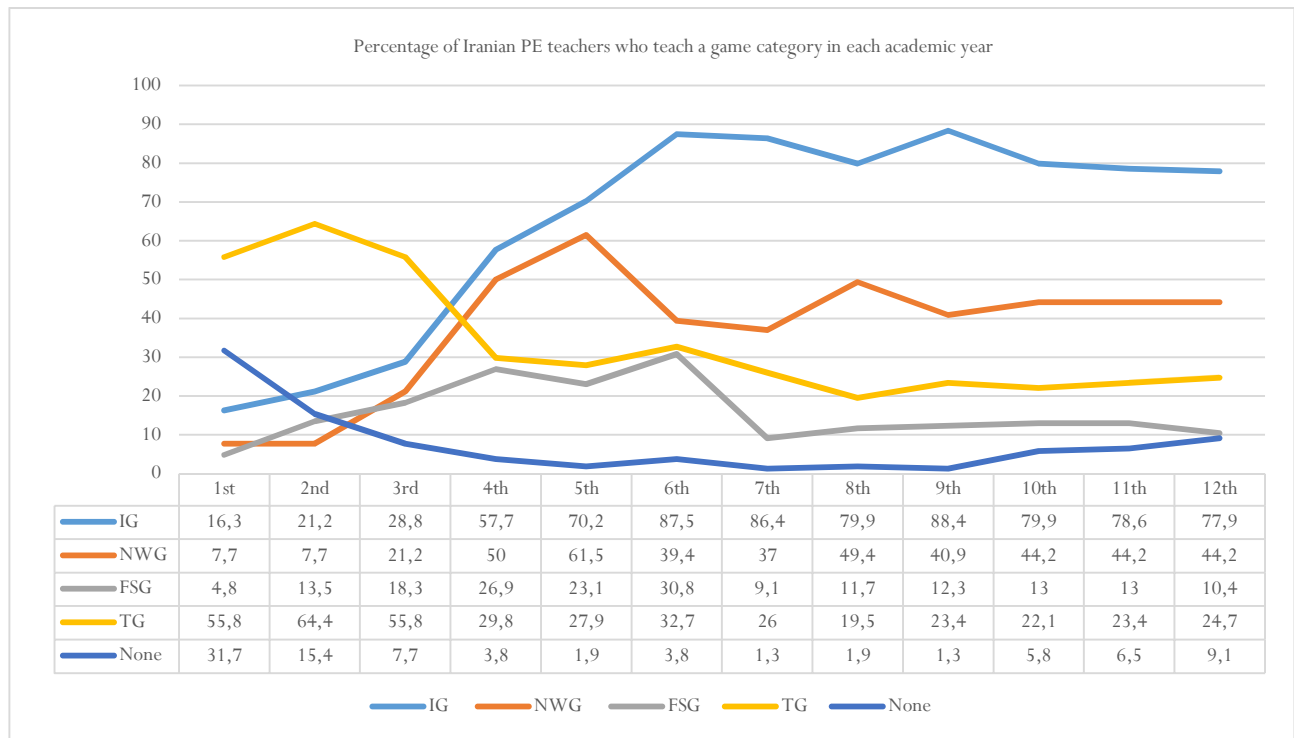


Percentage of Iranian PE teachers who teach a game category in each academic year

|  | 1st | 2nd | 3rd | 4th | 5th | 6th | 7th | 8th | 9th | 10th | 11th | 12th |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IG | 16,3 | 21,2 | 28,8 | 57,7 | 70,2 | 87,5 | 86,4 | 79,9 | 88,4 | 79,9 | 78,6 | 77,9 |
| NWG | 7,7 | 7,7 | 21,2 | 50 | 61,5 | 39,4 | 37 | 49,4 | 40,9 | 44,2 | 44,2 | 44,2 |
| FSG | 4,8 | 13,5 | 18,3 | 26,9 | 23,1 | 30,8 | 9,1 | 11,7 | 12,3 | 13 | 13 | 10,4 |
| TG | 55,8 | 64,4 | 55,8 | 29,8 | 27,9 | 32,7 | 26 | 19,5 | 23,4 | 22,1 | 23,4 | 24,7 |
| None | 31,7 | 15,4 | 7,7 | 3,8 | 1,9 | 3,8 | 1,3 | 1,9 | 1,3 | 5,8 | 6,5 | 9,1 |

Figure 2. Percentage of Iranian PE teachers that teach a specific game category in each academic year.
*Note: TG (Target Games), FSG (Fielding/Striking), NWG (Net/Wall games), IG (Invasion games)*

When asked about the relationship between practice tasks and modified games used during sessions (Q13), more than two thirds of the teachers (69.3%) often designed practice tasks related to the modified games of the lesson, with a quarter (26%) indicating this was not their normal practice.
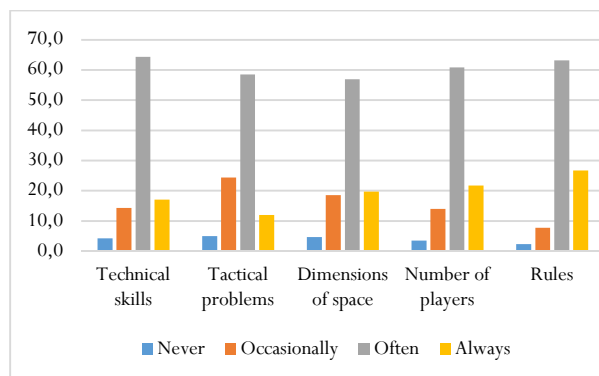


Figure 3. Learning progression criteria used in game lessons and units by Iranian PE teachers.

In terms of the considerations for learning progression used by teachers to plan lessons and units (Q15, Figure 3), the most cited consideration (teachers who often or always used it) was rules (89.9%), followed by number of players (82.6%), technical skills (81.4%) and dimension of space (76.7%). Tactical awareness (tactical problems and decision-making) were the least important considerations (70.5%).

*Games teaching strategies*

First, teachers were asked about the type of task(s) they used to teach theoretical (declarative and procedural, Q3) and practical (Q6, Figure 4) content associated with games. Regarding theoretical content, 76.9% of the teachers reported often or always reviewing previous learning at the beginning of the lesson, with 83.6% stating they often or always introduced new content. In contrast, only 30.9% teachers often or always provided notes on theoretical knowledge. They reported a higher percentage when asked how often they dictated these theoretical notes to their students (38%). Teachers were also asked about

questioning as a means of reflection on theoretical and practical knowledge, with 85.5% of the teachers reporting they often or always used it. Task cards and/or worksheets (curricular materials for students work) for the development of students' knowledge were reported as being often or always used by 70.3% of teachers.
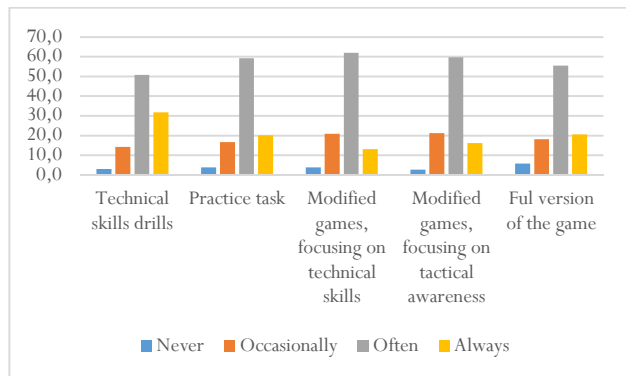


Figure 4. Frequency of use of each type of task in the main phase of games lessons by Iranian PE teachers.

For the improvement of both technical and tactical skills, teachers often or always used skill drills and practice tasks (82.6% and 79.6%, respectively), games as a tool to improve technical skills (75.2 %) and tactical awareness (76%), and the full version of the game (75.9%). Teachers also said they often or always used questions for improving technical skills (77.9%) and tactical awareness (75.9%) during games and practice tasks.

Finally, teachers stated they used two main lesson structures when teaching games (Q14). Only 28% reported using a GBA session schema (modified game to start the lesson, followed by a practice task, before returning to a modified game at the end of the lesson). In contrast, 50.6% of teachers reported using a structured practice task followed by a modified game (28.4%) or full version of the game (22.2%). The rest (21.4%) reported using a different lesson structure.

### Games assessment

In question Q16, teachers reported the aspect they gave the greatest weight to when evaluating students in game units (Figure 5). The aspect given the greatest weight in the grade by the highest percentage of teachers was application of the rules (39.8%), followed by technical execution, both in isolation (38.2%) and in the game situation (37.1%).
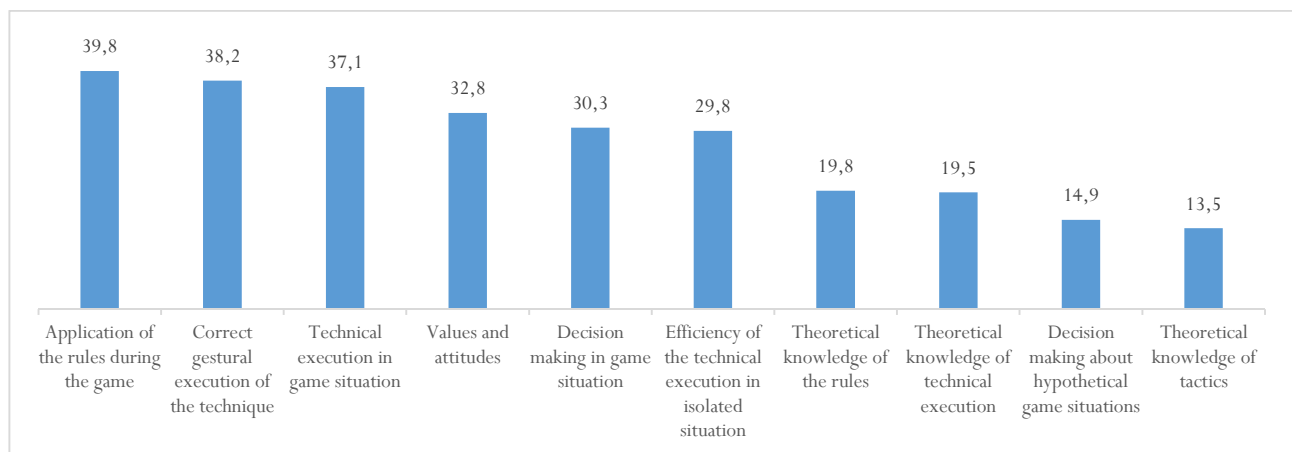


Figure 5. Aspect Iranian teachers give the greatest weight to when grading students in their game units.

Regarding the assessment instruments used (Q17), most of the teachers reported often or always using observational rating scales (90.3%), as well as rubrics (84.1%). Furthermore, more than half of the participants also reported using observational checklists (59.7%), control lists (59.7%) and informal observation without registering data (59.3%). The least frequently used instruments were game performance assessment instruments (38.8%), such as the GPAI (Oslin et al., 1998), and theory exams (30.6%).

### Key features of GBA which predict whether Iranian PE teachers perceive they are teaching games through GBA

The final question on the survey asked the teachers to indicate (Yes/No) whether they perceived themselves to be using GBAs when teaching games. 77.1 % said they felt they were. The answer to this dichotomous question was then used to investigate the strongest predictors of whether the teachers perceived they were teaching through GBAs. The strongest predictors were (in order): (a) use of modified games; and (b) use of tactical problem for criteria of planning units and lessons. Table 1 shows the forward binary logistic regression statistics. The model showed a good fit (the Hosmer and Lernershow value was non-significant). The final model identified only the pedagogical principles of game modification (OR = .54; 95% CI = 0.38-0.77) and the organization of lessons, units and the broader curriculum, using tactical complexity (OR = .56; 95% CI = 0.36-0.86) as significant predictors of whether Iranian PE teachers were likely to be using GBAs when teaching games in PE. Cox & Snell $R^2$ and Nagelkerke's $R^2$ values were .09 and .14, respectively.

Table 1.
Final model of forward binary logistic regression for the prediction of whether Iranian PE teachers were likely to be using GBA

| Dependent variable | Independ variables | B | SE | Wald | sig |
|---|---|---|---|---|---|
| Q18: Do you use the Teaching Games for Understanding (TGfU) pedagogical model to teach games? | Q.12: Do you use modified games as a teaching resource? | -.61 | .18 | 11.75 | .001 |
| | Q15.2: When I plan my units and lessons, my learning progression criteria are often related to tactical problems | -.59 | .22 | 7.59 | .008 |

### *Differences in Iranian PE teachers' perceptions of the incorporation of the key features of GBAs into their games teaching practice depending on gender and educational stage*

A significantly higher percentage of women reported using numerous elements associated with GBAs in their games units. Thus, the results showed differences in practically all aspects related to the teaching of theoretical content (Males: 2.78, Females: 2.93, p= 0.041) and the use of questioning (M: 2.7, F: 2.93, p= 0.023). Similarly, women reported using more corrective games and modified games (M: 2.63, F: 3.07, p= 0.007). They also base, in a higher percentage, the progression of their game units on tactical problems (M: 2.64, F: 2.92, p= 0.032), number of players (M: 2.96, F: 3.06, p= 0.013), rules (M: 3.01, F: 3.28, p= 0.017) and technical elements (M: 2.81, F: 3.08, p= 0.011).

When we compare the teachers according to educational stage, a similar pattern to that for the comparison by gender appears, although to a lesser extent. In this sense, SS teachers introduce more theoretical content (PS: 2.17, SS: 2.48, p= 0.007) than PS teachers, as well as considering more structural (PS: 2.87, SS: 2.95, p= 0.001), technical (PS: 2.85, SS: 3.01, p= 0.008) and tactical elements (PS: 2.63, SS: 2.87, p= 0.000) when designing tasks and progressions.

### Discussion

Since GBAs have been embraced by Iranian PE teachers and researchers, the aim of the present study was to investigate teachers' perception and use of such approaches at school. Although the results of our study were compared with the existing literature, due to the interesting results, comparisons were especially made with a study by Garcia-Lopez et al. (2019), which provided the methodological model for the present one. The results showed that Iranian PE teachers in SS and PS, in addition to students' technical development, took teaching game/sports rules into account. Additionally, they were willing to use thematic approaches and modified games, but the older the students were, the less willing were teachers to use GBAs. Adherence to the instructions of the Ministry of Education caused Iranian PE teachers to reduce the emphasis on rules and tactical awareness to investigate the progress of students' learning. Subsequently, a small percentage used GBA session schema as the main lesson structure. Iranian PE teachers emphasized application of the rules during the game according to rubrics to assess games, and instead used GPAI less for teaching. Furthermore, they confirmed the use of tactical problems and complexities to show they implemented GBAs and considered the use of modified games. Iranian female PE teachers engaged in all aspects of GBAs more than their male counterparts, and GBA principles were implemented more at SS than in PS.

To have effective PE in line with GBAs, students' level of declarative (knowing what to do), procedural (knowing how to do), game knowledge, and decision-making capacity improvement should be considered when planning and teaching game content (Smith, 2014). For this purpose, students' awareness of the games/sports rules should be increased because identifying tactical problems during the game and responding appropriately depends on the knowledge and games/sports rules (Mitchell et al., 2006). As the diversity of the game/sports taught in Spanish (García-López et al., 2019; Hortigüela-Alcalá et al., 2021; Otero-Saborido et al., 2014) and Iranian schools increased the older the children were, in both PS and SS, both groups of teachers preferred the teaching of technical skills content to tactical skills. Nevertheless, Iranian teachers provided students with theoretical knowledge of rules more than Spanish teachers (García-López et al., 2019). In fact, in Iranian schools, the priority was to deliver rules and technical and tactical skills with theoretical knowledge through game-play situation, whereas, in Spain, technical skills were found to be followed by tactical skills. Therefore, the teaching content of Iranian PE teachers can be said to be based on the principles of GBAs. Thorpe et al. (1986) stated that the effectiveness of PE required maintaining the hierarchy of students' motor and cognitive development. Thus, they should first learn the games rules, and then be ready to implement the skills in the context of the real game, through practicing a movement technique in a setting close to a real game. According to the guidelines of the NCD (2011), one of the objectives of PE classes is to increase the level of knowledge and awareness of students. For this reason, Iranian PE teachers placed more emphasis on rules to transfer theoretical knowledge. However, to make training situations more similar to match situations, SSGs can be a good way to connect technical and tactical rules in PE classes, meeting the expectations of Iranian teachers (Thorpe & Bunker, 1989).

Game planning as an important part of GBAs improves students' motivation, the motivational climate, and the transfer of tactical knowledge and decision-making skills, the success of which requires their effective participation and improvement of motor skills (Gómez et al., 2022; Harvey & Jarrett, 2014). For game planning, Iranian PS and SS teachers used a thematic approach and modified

games similar to the real game more than Spanish teachers. However, the older the students were, especially after the 9th grade, the more this tendency fell among the Iranian teachers. In the present study, the attitudes of school principals and parents may also be important reasons for the reduction in PE teachers' willingness to use GBAs for teaching, which is consistent with the results of Silva et al. (2021). In fact, in Iran, after the 12th grade, students are required to participate in a national competition and exam to enter the most popular fields of study at universities. After the 9th grade, this has led school principals and parents to focus on strengthening the knowledge of cognitive lessons, such as mathematics, literature, biology, etc.

Given the above challenges, Iranian teachers prioritized the rule considerations to improve students' learning when planning teaching sessions. This result runs counter to García-López et al. (2019), who found that rule considerations were the last priority for Spanish PE teachers. The role of rules considerations in the planning of games/sports teaching sessions for Iranian teachers demonstrates their commitment to complying with Iran's mandatory NCD guidelines established by the Ministry of Education. It seems that this document for Iranian PE teachers has a greater emphasis on general learning of basic, racket and invasion sports during K-12 and leaves the improvement of tactical and decision-making skills to sport clubs. Nonetheless, it would be better to develop technical and tactical skills in combination with each other. On the other hand, although the objective of GBAs is to enhance learners' ability to identify tactical problems and solve them appropriately using SSG and questioning (Hastie & Mesquita, 2016; Mitchell et al., 2006), in line with García-López et al. (2019), tactical awareness considerations were less important for Iranian PE teachers when looking at students' learning progress. This result is also consistent with Salehi Omran et al. (2015) and Katoozian et al. (2015). This may be due to the heterogeneity of age and experience of teachers in the present study. Since GBAs in PETE courses have recently become widespread in Iran (Alimohammadi et al., 2017; Mohammadi et al., 2019), young and newly graduated teachers are more willing to use GBAs than older teachers. As bolstering tactical awareness in learners requires teachers having prior knowledge and experience in planning progressively tactical-focused SSGs as well as questioning skills (Stran et al., 2012), older teachers may prefer to use traditional instructions, and so it is suggested that future studies address the homogeneity of teachers' age and experience in using GBAs.

Coinciding with García-López et al. (2019), Iranian teachers used target games mainly in PS for teaching, and the older the students (4th grade onwards), the higher was the volume of PE allocated to teaching invasion game/sports, followed by net/wall games, which is consistent with Otero-Saborido et al. (2014). This result was also consistent with Iran's NCD, in which group and net/wall games should be taught from high school on-

wards. It is suggested that, since the Ministry of Education requires PE teachers to adhere to NCD guidelines, the document should advise school principals and parents to provide prerequisites for implementing GBAs so that PE teachers will face fewer challenges in applying these approaches.

In order to investigate the types of theoretical and practical assignments that are most effective in improving students' learning, Iranian PE teachers, like Spanish ones, emphasized the need to review previous learning at the beginning of each session and to provide no class booklet. Additionally, coinciding with García-López et al. (2019), they considered questioning as effective in improving tactical awareness and thinking in improving theoretical and practical knowledge, and gave importance to developing both technical and tactical skills through skill drills, and modified and full versions of games. On the one hand, Iranian teachers used task/worksheets to develop students' knowledge/literacy more than Spanish teachers. This was likely due to the emphasis on the Physical Education and Health Curriculum Guide for the First Level Secondary School (2016). On the other hand, although playing "games" at the beginning and at the end of a lesson as one of the key features of GBA to teach games/sports (García-López & Gutiérrez, 2016) helps transfer learning from games to skill practice situations and vice versa (intra task transfer) (Butler & McCahan, 2005), a small percentage of Iranian teachers used GBA session schema as the main lesson structure, which is inconsistent with García-López et al. (2019). In fact, they preferred to carry out the main task first, and then assess the students' performance through the modified games. Although this finding coincides with Iranian studies (Salehi Omran et al., 2015) indicating the dominance of teacher-based teaching methodology, it is still suggested that Iranian teachers should gradually reduce their role as the main lynchpin of education while using NCD guidelines for teaching game/sports in different grades, and create more cognitive challenges for students by engaging them in exploration and problem solving from the beginning to the end of the session (Kirk, 2010).

One of the necessities of implementing GBAs is the use of game assessment tools to discriminate the levels of development of students' motor and decision-making skills in line with what they have been taught. Although Iranian PE teachers mainly acknowledged the use of observational instruments and tools to assess students' progress in technical skills in classes, unlike their Spanish counterparts, they placed greater emphasis on applying the rules during the game by following rubrics, which is consistent with the NCD. Interestingly, the results of the present study showed that Iranian PE teachers, coinciding with García-López et al. (2019), made the least use of game performance assessment instruments such as GPAI in their teaching. Although GPAI has found its place among teachers and coaches as an efficient observation tool for capturing student game-related problem-solving capabilities and

analyzing the tactical content taught, it is ineffective in capturing collective tactical dynamics affecting students' learning while playing (Silva et al., 2021). Because enhancing learners' tactical awareness depends on teachers' prior knowledge and experience in planning progressively tactical-focused SSGs and questioning skills, factors such as the heterogeneity of tactical knowledge among PE teachers and the diversity and complexity of the tactical assessment tools (Harvey et al., 2015; Stran et al., 2012) led many teachers to prefer traditional instruction and tools that are less complex and occupy less time in the classroom (Otero-Saborido et al., 2014). Altogether, Iranian PE teachers' adherence to the NCD guidelines suggests that if this document were to put more emphasis on content knowledge and pedagogical content knowledge related to effective teaching game/sports, teachers' performance would be more consistent with GBAs and they would experience fewer challenges while teaching.

In both Spanish (García-López et al., 2019) and Iranian teachers, the use of tactical problems and tactical complexity to plan lessons was one of the strongest predictors of whether they used GBAs in their teaching. However, the strongest feature for Iranian and Spanish teachers was the use of modified games and questioning, respectively, both of which are key features of GBAs. The results showed that Iranian PE teachers, like Spanish ones, use this principle for planning their teaching content. However, Iranian teachers may tend to involve students in motor activities with less questioning, because of the limitations of the NCD as regards teaching certain games/sports in different grades, as well as reliance on learning the rules and techniques (Salehi Omran et al., 2015). Although they see questioning as an effective way to improve tactical awareness, they do not prioritize it when using GBAs. This may be due to the tendency of older teachers to use traditional instructions as well as the inexperience and lower knowledge of young teachers in designing questions. In this way, they prefer to remain the lynchpin for class and students (Kirk, 2010), asking all the questions. Therefore, it is suggested that Iranian PE teachers increase the effectiveness of their teaching through the gradual introduction of questioning while implementing modified games.

Students' games behavior in PE classes is affected by stereotypical notions, especially in invasion sports (Gutierrez & García-López, 2012). For this reason, traditional instruction has been associated with gender inequality, providing boys with more opportunities for physical activity (Hall-López & Ochoa-Martínez, 2023; Mateo-Orcajada et al., 2021; Peral-Suárez et al., 2020). Thus, gender inequality has led to greater participation of boys in popular school sports, such as football, volleyball, basketball, etc. However, with the development of GBAs, the acceptance of these teaching models by teachers, and the emphasis of these approaches on student-centered PE teaching, girls' students interest in physical activities and sports has increased (Baños et al., 2018; Gil-Arias et al., 2021). This will also increase teachers' motivation if students welcome this method of teaching and notice their own progress (Díaz-Cueto et al., 2010). The results of the present study also showed that female teachers were more likely than male teachers to use all the features of GBAs, especially those related to teaching theoretical content, the use of questioning, modified games and tactical problems. Therefore, it is possible that greater participation of female students in student-centered activities has increased the motivation of female teachers and their use of GBAs in PE classes. This finding sends a promising message that female teachers who themselves, as adolescents, were subject to the cultural and traditional limitations of PE instruction at school, have now found a suitable model, recognizing the value of GBAs and so enabling more girls to participate in PE classes.

SS teachers were better than PS in all features of GBAs. In fact, SS teachers were more concerned with elements of theoretical, technical, and tactical content when using designing tasks and progressions. In addition to being consistent with García-López et al. (2019), and Otero-Saborido et al. (2014), this finding is in line with the NCD recommendations, which state that basic exercises in PS, along with increasing students' cognitive capacity to understand tactical and problem-solving concepts, invasion and net/wall game/sports in SS, should be taken into consideration. Although this finding evidenced the adherence of Iranian PE teachers to the NCD, the focus on teaching the rules and techniques of game/sports may lead to poor learning of the principles and tactical concepts of group and racket sports. This reduces the rate of tactical transition between sports, with the selection of the types of physical activities and sports for life being influenced only by the sports climate and popular sports in the country.

## Conclusion

Summing up, it can be concluded that Iranian PE teachers in SS and PS were willing to use thematic approaches and modified games, although the older the students were, the more reluctant these teachers were to use GBAs, likely due to the attitudes of school principals and parents. The existence of teaching styles based on considering the rules of games/sports highlights the commitment of Iranian teachers to adhere to Iran's mandatory NCD guidelines for transferring theoretical knowledge. The strongest features for Iranian PE teachers were the use of modified games and questioning. Despite the importance of motor learning for PE teachers, Iranian teachers tended to involve students in motor activities with less questioning. The motivation to use all the features of GBAs in the PE classes was more common in the female teachers than in their male counterparts, highlighting the importance of greater participation of girl students in student-centered activities. Finally, the SS teachers performed better than their PS counterparts in all features of GBAs. This suggests that the importance of cognitive capacity to understand

tactical and problem-solving concepts for invasion and net/wall game/sports have been taken into account in SS physical education. Taken together, these findings imply that it is advisable, in the future, to take the principles of GBAs into greater consideration in developing the NCD's guidelines for practice.

In the present study, we did not perform a comparison between teachers that graduated from PETE courses and those that graduated from sport sciences at university. It is recommended that further research should examine this issue to better understand teachers' knowledge of content and tactics. Given the possible tendency of older teachers to use traditional instruction, as well as the limited experience of young teachers in designing questions during teaching PE, we suggest considering the homogeneity of teachers in terms of age and experience to determine whether their willingness to use GBAs is affected by age and experience.

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## References

Alimohammadi, H., Sohrabi, M., & Saberi, A. (2017). Teaching Methods of Physical Education Teachers as Predictors for Achievement Motivation of their Students. *Studies in Learning & Instruction*, *9*(1), 129–141.

Almond, L. (1986). Reflecting on themes: a games classification. In *In R. Thorpe, D. Bunker, & L. Almond (Eds.), Rethinking games teaching* (pp. 71-72). Loughborough University of Technology.

Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teaching: What makes it special? *Journal of Teacher Education*, *59*, 389–407. https://doi.org/https://doi.org/10.1177/00224871083 24554

Baños, R., Ortiz-Camacho, M. D., Baena-Extremera, A., & Zamarripa, J. (2018). Effect of teachers' gender on the importance of physical education, motivational climate, disruptive behaviors, future practice intentions, and academic performance. *Retos*, *33*, 252-257. https://doi.org/https://doi.org/10.47197/retos.v0i33.5 9991

Bryman, A. (2016). *Social Research Methods* (fifth ed.). Oxford University Press.

Bunker, D., & Thorpe, R. (1982). A model for the teaching of games in secondary schools. *Bulletin of Physical Education*, *18*(1), 5-8.

Butler, J. I., & McCahan, B. J. (2005). Teaching Games for Understanding as a Curriculum Model. In L. B. E. J. Griffin (Ed.), *In Teaching Games for Understanding: Theory, Research, and Practice* (pp. 33–54). Windsor: Human Kinetics.

Díaz-Cueto, M., Hernández-Álvarez, J., & Castejón, F. (2010). Teaching games for understanding to in-service physical education teachers: Rewards and barriers

regarding the changing model of teaching Sport. *Journal of Teaching in Physical Education*, *29*(4), 378–398. https://doi.org/https://doi.org/10.1123/jtpe.29.4.378

Fernandez-Rivas, M., & Espada, M. (2020). Physical education teachers' use of and feeling for teaching styles. *Journal of Physical Education and Sport*, *20*(1), 3–13. https://doi.org/https://doi.org/10.7752/jpes.2020.010 01

García-López, L. M., & Gutiérrez, D. (2016). *Aprendiendo a Enseñar Deporte. Modelos de Enseñanza Comprensiva y Educación Deportiva*. INDE.

García-López, L. M., Gutiérrez, D., Sánchez-Mora, D., & Harvey, S. (2019). Teachers' use of teaching games for understanding in Central Spain. *Physical Education and Sport Pedagogy*, *24*(5), 463–477. https://doi.org/https://doi.org/10.1080/17408989.201 9.1628931

Gibson, J. J. (1979). *The Ecological Approach to Visual Perception*. Houghton-Mifflin. https://doi.org/https://doi.org/10.1002/bs.3830260313

Gil-Arias, A., Diloy-Peña, S., Sevil-Serrano, J., García-González, L., & Abós, Á. (2021). A Hybrid TGfU/SE Volleyball Teaching Unit for Enhancing Motivation in Physical Education: A Mixed-Method Approach. *International Journal of Environmental Research and Public Health*, *18*(1), 1-20. https://doi.org/http://dx.doi.org/10.3390/ijerph18010 110

Gómez, V. M., Salvador-Garcia, C., Chiva-Bartoll, O., & Maravé-Vivas, M. (2022). Analysis of the motivational climate in Physical Education from the use of the Teaching Games for Understanding model. *Retos*, *44*, 1063-1072.

Griffin, L. L., Brooker, R., & Patton, K. (2005). Working towards legitimacy: Two decades of teaching games for understanding. *Physical Education and Sport Pedagogy*, *10*(3), 213–223. https://doi.org/https://doi.org/10.1080/17408980500 340703

Gutierrez, D., & García-López, L. M. (2012). Gender differences in game behaviour in invasion games. *Physical Education and Sport Pedagogy*, *17*(3), 289-301. https://doi.org/https://doi.org/10.1080/17408989.201 2.690379

Gutiérrez, D., & García-López, L. M. (2015). Theory and practice of game-based approaches in school context (II). *Agora for Physical Education and Sport*, *17*(1), 3-14.

Hall-López, J. A., & Ochoa-Martínez, P. Y. (2023). Gender gap in the participation of physical education motor tasks *Retos*, *48*, 298-303.

Harvey, S. (2016). Dilemmas Facing Physical Education Teachers' When Teaching Using Game-Centered Approaches. *Cultura Ciencia Deporte 11* (33), 181–184. https://doi.org/http://dx.doi.org/10.12800/ccd.v11i33 .762

Harvey, S., Cushion, C. J., & Sammon, P. (2015). Dilemmas faced by pre-service teachers when learning about and implementing a game-centred approach. *European Physical Education Review*, *21*(2), 238–256. https://doi.org/https://doi.org/10.1177/1356336X145 60773

Harvey, S., & Jarrett, K. (2014). A review of the game-centred approaches to teaching and coaching literature since 2006. *Physical Education and Sport Pedagogy*, *19*(3), 278–300. https://doi.org/https://doi.org/10.1080/17408989.2012.754005

Hastie, P., & Mesquita, I. (2016). Sport-based physical education. . In I. C. E. (Ed.) (Ed.), *Routledge handbook of physical education pedagogies* (pp. 664). Routledge.

Hortigüela-Alcalá, D., González-Víllora, S., & Hernando-Garijo, A. (2021). Do we really assess learning in physical education? Teachers' perceptions at different educational stages. *Retos*, *42*(643-654).

Katoozian, B., Mirzazadeh, Z. S., Azimzadeh, M., & Keshtidar, M. (2015). Examining the sitution of physical education in primary school using SWOT matrix *Novel Approaches in Sport Management*, *3*(11), 47–56.

Kirk, D. (2010). *Physical Education Futures*. Routledge.

Mateo-Orcajada, A., Abenza-Cano, L., Vaquero-Cristóbal, V., Martínez-Castro, M. S., Leiva-Arcas, A., Gallardo-Guerrero, A. M., & Sánchez-Pato, A. (2021). Gender Stereotypes among Teachers and Trainers Working with Adolescents. *International Journal of Environmental Research and Public Health*, *18*(24), 1-10. https://doi.org/https://doi.org/10.3390/ijerph182412964

Mitchell, S. A., Oslin, J. L., & Griffin, L. L. (2006). *Teaching Sport Concepts and Skills. A Tactical Games Approach (2nd ed.)*. Human Kinetics.

Mohammadi, M., Solymani Balavi, O., Jahani, J., Shafiei Sarvestan, M., & Daryanoosh, F. (2019). The Impact of the "TGFU" Approach on Students' Sport Skills in Secondary First Course (In Persian). *Studies in Learning & Instruction*, *11*(1), 163–182.

National Curriculum Document. (2011). Secretariat of the Curriculum Production Plan.

Oslin, J. L., Mitchell, S. A., & Griffin, L. L. (1998). The Game Performance Assessment Instrument (GPAI): Development and Preliminary Validation. *Journal of Teaching in Physical Education*, *17*(2), 231–243. https://doi.org/https://doi.org/10.1123/jtpe.17.2.231

Otero-Saborido, Carmona-Márquez, J., Albornoz-Cabello, M., Calvo Lluch, A., & Díaz-Mancha, J. A. (2014). Teacher´s methodology of invasion games in primary child. *Revista Internacional de Medicina y Ciencias de la Actividad Física y del Deporte*, *14*(53), 69-87. https://doi.org/https://doi.org/http://hdl.handle.net/10486/660056

Peral-Suárez, Á., Cuadrado-Soto, E., Perea, J. M., Navia, B., López-Sobaler, A. M., & Ortega, R. M. (2020). Physical activity practice and sports preferences in a group of Spanish schoolchildren depending on sex and parental care: A gender perspective. *BMC Pediatr*, *20*(337), 1–10. https://doi.org/https://doi.org/10.1186/s12887-020-02229-z

Physical Education and Health Curriculum Guide for the First Level Secondary School. (2016). In Department of Physical Education Curriculum (Ed.), (pp. 8-20). Tehran: Compilation Office of Textbooks of the Research and Educational Planning Organization of the Ministry of Education.

Pill, S. (2011). Teacher Engagement with Teaching Games for Understanding - Game Sense in Physical Education. *Journal of Physical Education & Sport*, *11*(2), 115–123.

Salehi Omran, E., Javadipour, M., & Mohammadizad, S. (2015). The amount of educational goals achievement in physical education course in elementary schools of Mazandaran province. *Management and Sport Development: A Biannual Journal*, *2*(7), 124–135.

Silva, R., Farias, C., & Mesquita, I. (2021). Challenges faced by preservice and novice teachers in implementing student-centred models: A systematic review *European Physical Education Review*, *27*(4), 1-19. https://doi.org/https://doi.org/10.1177/1356336X21995216

Smith, W. (2014). Fundamental movement skills and fundamental games skills are complementary pairs and should be taught in complementary ways at all stages of skill development. *Sport, Education and Society*, *21*(3), 431-442. https://doi.org/https://doi.org/10.1080/13573322.2014.927757

Stolz, S., & Pill, S. (2014). Teaching games and sport for understanding: Exploring and reconsidering its relevance in physical education. *European Physical Education Review*, *20*(1), 36–71. https://doi.org/https://doi.org/10.1177/1356336X13496001

Stran, M., Sinelnikov, O., & Woodruff, E. (2012). Pre-service teachers' experiences implementing a hybrid curriculum: Sport Education and Teaching Games for Understanding *European Physical Education Review*, *18*(3), 287–308.

Teaching Games for Understanding Special Interest Group. (2021). *Game-Based Approach consensus statement*. http://www.tgfu.info/consensus-statement.html

Thorpe, R., & Bunker, D. (1989). A changing focus in games teaching. In L. Almond (Ed.), *In: The Place of Physical Education in Schools* (pp. 42-81). Kogan Page.

Thorpe, R., Bunker, D., & Almond, L. (1984). A change in focus for the teaching of games. In Sport Pedagogy. Olympic Scientific Congress Proceedings,

Thorpe, R., Bunker, D., & Almond, L. (1986). *Rethinking Games Teaching*. Department of Physical Education and Sport Science, University of Technology of Loughborough.

Wang, C. L., & Ha, A. (2009). Pre-service teachers' perception of Teaching Games for Understanding: A Hong Kong perspective. *European Physical Education Review*, *15*(3), 407–429. https://doi.org/https://doi.org/10.1177/1356336X09364724

Zolghadri, P., Kian, M., Aliasgari, M., & Elahi, A. R. (2019). Pathology of the Implementation of Physical Education and Health Curriculum in First Level Secondary School, based on Aker Model. (Persian) *Research on Educational Sport*, *7*(17), 229-252. https://doi.org/https://doi.org/10.22089/RES.2019.5941.1475