

Review of the Instruments Most Frequently Employed to Assess Tactics in Physical Education and Youth Sports

José L. Arias¹ and Francisco Javier Castejón²

¹Catholic University of San Antonio, ²Universidad Autónoma de Madrid

Investigators' increased interest in teaching game tactics requires generalizable assessment instruments that are appropriate to whatever is needed by the tactic. This literature review aims to provide information about the instruments most frequently used to assess tactics in youth sports. We found that very few studies used instruments that fulfilled the criteria required by this review. The most frequently used tool was The Game Performance Assessment Instrument, followed by the Team Sport Assessment Procedure. Some other instruments, labeled Nonhabitual instruments, were only used sporadically. The instruments were mainly used in invasion and net/wall games. Each instrument defined a set of components and indexes to quantify the assessment, but only the Game Performance Assessment Instrument allows the assessment of the attack and the defense both of the player who possesses the ball and the player who does not. Suggestions were proposed for instruments to be used for assessing tactics.

Keywords: sport pedagogy, teaching games for understanding, evaluation, tactical assessment, decision making, tactics

Invasion games and their modified versions are normally a very central and habitual content in Physical Education curricula (Oslin, Mitchell, & Griffin, 1998). Teachers and coaches traditionally design the teaching-learning of these games with focus on mastering the technical skills that are subsequently applied in the game play (teaching by technique), which has been criticized from the perspective of Teaching Games for Understanding (TGfU) (Bunker & Thorpe, 1982). However, various works reveal how important it is for teaching proposals to focus on mastering the tactical skill, which implies learning skill execution and decision making at the same time (Bunker & Thorpe, 1982; Holt, Streat, & García-Bengochea, 2002). The definition of tactic includes two different aspects, which Mahlo (1974) called mental solution and motor solution (this

Arias is with the Department of Physical Activity and Sport Sciences Catholic University of San Antonio, Murcia, Spain. Castejón is with Physical Education, Sport and Human Kinetics at the Universidad Autónoma de Madrid, Madrid, Spain.

corresponds with decision making and skill execution in the model of Bunker & Thorpe, 1982).

The logic of teaching by technique leads to a certain way of assessing what is learned. A series of specific tests for games are used (Strand & Wilson, 1993), whose aim is to verify the technical mastery acquired, although these tests do not detect whether that same mastery can be used in real game situations. With the emergence of teaching proposals of games through tactics (Bunker & Thorpe, 1982; Holt et al., 2002), assessment no longer consists of using a series of tests targeting the technique; instead, other tests or instruments are necessary, which mainly focus on tactics (Tallir, Lenoir, Valcke, & Musch, 2007).

This change of conception makes it more difficult for Physical Education teachers and coaches to assess tactics due to the variety and complexity of the instruments, which increases at the beginner levels. In view of investigators' increased interest in teaching games from a tactical perspective (Chatzopoulos, Drakou, Kotzamanidou, & Tsorbatzoudis, 2006a; Chatzopoulos, Tsorbatzoudis, & Drakou, 2006b; Mesquita, Graça, Gomes, & Cruz, 2005; Pritchard, Hawkins, Wiegand, & Metzler, 2008; Tallir et al., 2007), it seems appropriate to request instruments that address tactics in their defining elements.

The goal of the current study was to review and provide information about the assessment instruments used to assess tactics in youth sports to identify strengths and deficiencies to guide teachers and coaches when they must assess tactics.

Method

The descriptive data analyzed in the present work were taken from manuscripts that met the following inclusion criteria: (a) published between 1996 and January 2010; (b) appeared in journals indexed in the Science Citation Index, to guarantee the soundness of the results; (c) an empirical study that presented the process of teaching-learning and assessment from a tactical approach; (d) used the framework of TGfU (or similar), as indicated in the theoretical framework; and (e) conducted in Physical Education or youth sports. The studies published in the journal *Physical Education & Sport Pedagogy* were included because, although this journal was not indexed in the Science Citation Index, it is one of the specific and relevant journals for the topic addressed in this review. Studies that used instruments designed for students' self-rating (questionnaires, video-tests, image recognition, etc.) and interviews were excluded to prevent the results of real assessment of participants' tactical skill from being confounded with the assessment of the verbalization of their tactical skill.

The authors adopted the snowball technique (Noy, 2008) and reviewed the titles of the reference lists of the selected manuscripts. Of the 70 studies reviewed, only the 21 marked with an asterisk in the reference list met the established inclusion criteria (see Table 1 for unselected manuscripts). The authors reached a consensus about the series of variables that should be analyzed to determine which ones had been analyzed with the instruments employed to assess the

Table 1 References That Were Not Selected and the Reason for Exclusion

Reference	RE	Reference	RE
CA, 26, 199–210, 2002.	1	JTPE, 21, 427–440, 2002.	2
EJSS, 7, 35–45, 2007.	2	JTPE, 27, 220–240, 2008.	2
EPER, 12, 99–117, 2006.	2	P&MS, 99, 883–895, 2004.	3
EPER, 12, 131–150, 2006.	2	P&MS, 103, 463–470, 2006.	1
EPER, 14, 407–425, 2008.	2	P&MS, 109, 459–472, 2009.	3
EPER, 15, 65–89, 2009.	2	PE&SP, 3, 65–74, 1998.	2
EPER, 15, 407–429, 2009.	2	PE&SP, 5, 208–219, 2000.	1
IJSP, 36, 107–126, 2005.	3	PE&SP, 6, 139–155, 2001.	5
JHMS, 35, 137–150, 1998.	1	PE&SP, 10, 213–223, 2005.	2
JHMS, 49, 215–230, 2005.	1	PE&SP, 10, 225–240, 2005.	2
JS&EP, 29, 365–381, 2007.	2	PE&SP, 10, 255–269, 2005.	2
JSS, 27, 807–812, 2009.	3	PE&SP, 10, 271–286, 2005.	2
JSS, 28, 171–182, 2010.	2	PE&SP, 10, 287–301, 2005.	2
JSS, 28, 521–528, 2010.	3	PE&SP, 12, 105–126, 2007.	2
JTPE, 10, 261–274, 1991.	4	PE&SP, 13, 231–249, 2008.	2
JTPE, 15, 399–417, 1996.	2	PE&SP, 15, 103–115, 2010.	2
JTPE, 16, 211–228, 1997.	2	Quest, 53, 59–76, 2001.	2
JTPE, 17, 468–492, 1998.	2	Quest 55, 161–176, 2003.	2
JTPE, 18, 159–174, 1999.	2	Quest, 56, 226–240, 2004.	2
JTPE, 19, 325–337, 2000.	3	Quest, 60, 387–404, 2008.	2
JTPE, 20, 341–351, 2001.	2	RER, 77, 251–278, 2007.	2
JTPE, 20, 370–388, 2001.	2	RQES, 69, 368–379, 1998.	2
JTPE, 20, 389–401, 2001.	2	RQES, 74, 98–103, 2003.	2
JTPE, 21, 162–176, 2002.	2	SES, 14, 421–442, 2009.	2
JTPE, 21, 177–192, 2002.	2		

Note. CA: Collegium Antropologicum; EJSS: European Journal of Sport Science; EPER: European Physical Education Review; IJSP: International Journal of Sport Psychology; JHMS: Journal of Human Movement Studies; JS&EP: Journal of Sport & Exercise Psychology; JSS: Journal of Sports Sciences; JTPE: Journal of Teaching in Physical Education; P&MS: Perceptual & Motor Skills; PE&SP: Physical Education & Sport Pedagogy; RER: Review of Educational Research; RQES: Research Quarterly for Exercise & Sport; SES: Sport, Education & Society; RE: Reason for Exclusion; 1: Research that did not attend the general precepts of teaching for understanding; 2: Did not use an instrument to assess tactics; 3: Used instrument designed for students' self-rating; 4: It was published before 1996; 5: Not carried out in Physical Education or with participants at youth sports.

tactic (assessment instruments, game category, type of information provided by the instrument, overall variables, game phases, and roles). The results of the review (see Table 2) are presented by means of counts and percentages of occurrence of the categories of each variable over the total amount of manuscripts of each instrument, except for the variable referring to the type of game because, in various manuscripts, the assessment was not carried out with just a single game.

Table 2 **Counts and Percentages of the Variables Analyzed**

Variables	GPAI		TSAP		Nonhabitual	
	n	%	n	%	n	%
Game Category*						
Invasion	8	50	8	88.9	3	60
Net/wall	7	43.7	1	11.1	2	40
Field/run/score	1	6.2	-	-	-	-
Target	-	-	-	-	-	-
Type of information						
Base	1	9.1	-	-	-	-
Adjust	4	36.4	-	-	-	-
Decision made	11	100	-	-	5	100
Skill execution	11	100	-	-	4	80
Support	4	36.4	-	-	-	-
Cover	1	9.1	-	-	-	-
Guard/mark	1	9.1	-	-	-	-
Gaining possession of the ball (conquered ball, received ball)	-	-	5	100	-	-
Disposing of the ball (lost ball, neutral ball, offensive ball, successful shot on goal)	-	-	5	100	-	-
Receiving puck and successful icing	-	-	2	40	-	-
Hindering progression and blocked shot	-	-	1	20	-	-
Quantifiable indexes						
Volume of play	-	-	5	100	-	-
Volume per minute	-	-	1	20	-	-
Efficiency index	-	-	5	100	-	-
Game performance	4	36.4	4	80	-	-
Adjust game performance	1	9.1	-	-	-	-
Game involvement	2	18.2	-	-	-	-
Decision-making index	5	45.5	-	-	-	-
Skill-execution index	4	36.4	-	-	-	-
Support index	3	27.3	-	-	-	-
Mark/guard index	1	9.1	-	-	-	-
Game phases						
Attack	5	45.4	5	100	4	80
Defense	-	-	-	-	-	-
Attack and defense	6	54.5	-	-	1	20
Roles						
Player with possession of the ball	-	-	5	100	2	40
Player with and without possession of the ball	11	100	-	-	3	60

Note. *Data obtained from all the games, differentiating each instrument.

Results and Discussion

Assessment Instruments

The instrument that appeared most frequently in the publications was the Game Performance Assessment Instrument (GPAI, 52.4%). It was designed by Oslin et al. (1998) who provided evidence of the validity (face, content, construct, ecological) and reliability (instrument reliability $> .83$, observers reliability ranged from 73% to 97%) that support the GPAI as one of the instruments that could be used for tactical assessment, following the teaching proposal of the TGfU model. The GPAI was designed to provide teachers and investigators with an instrument that could reveal the players' skill to resolve tactical problems during their game time (Mitchell & Oslin, 1998). Other investigators have used the GPAI for their studies, sometimes with variations and also in different games (e.g., tennis in Casey & Dyson, 2009; soccer in Harvey, Cushion, Wegis, & Massa-Gonzalez, 2010; badminton in Hastie, Sinelnikov, & Guarino, 2009; netball in MacPhail, Kirk, & Griffin, 2008). This currently makes the GPAI one of the most frequently applied instruments in tactical assessment, although according to MacPhail et al. (2008), it is still not very popular or frequently used by teachers and investigators in Physical Education, perhaps due to lack of dissemination of its characteristics and use.

The Team Sport Assessment Procedure (TSAP, 23.8%) is the assessment procedure developed by Gréhaigne, Godbout, and Bouthier (1997) and for which evidence of validity (content, concurrent, ecological) and reliability (interobserver reliability $> .82$, performance stability $> .86$) was provided. It was created to assess students' tactical performance in various team sports. Its underlying pedagogical approach not only resides in the cognitive nature of tactical learning, but also in its constructivist dimension (Gréhaigne et al., 1997). The TSAP allows participants to be active in the assessment process. The groups that used the TSAP were either its original authors in their own works (Richard, Godbout, & Gréhaigne, 2000; Richard, Godbout, Tousignant, & Gréhaigne, 1999), or in collaboration with other authors (Nadeau, Godbout, & Richard, 2008a; Nadeau, Richard, & Godbout, 2008b). In the reviewed studies, this instrument was not used by research groups except for the authors who validated it, in contrast to the case of the GPAI.

The Nonhabitual category (23.8%) included a series of instruments that were normally used in very few studies and therefore their use was not generalized. In addition, the Nonhabitual instruments were not usually applied except by the author's own work or in specific games, and, according to their own authors they produced valid and reliable scores (Blomqvist, Vääntinen, & Luhtanen, 2005—Coding Instrument; French, Werner, Rink, Taylor, & Hussey, 1996a; French, Werner, Taylor, Hussey, & Jones, 1996b—Game Play Instrument; Nevett, Rovegno, Babiarczyk, & McCaughy, 2001; Turner & Martinek, 1999—Game Play Observational Instrument; see Table 3).

Game (Invasion, Net/Wall, Field/Run/Score, and Target)

According to Almond's (1986) game category classification, the GPAI was used 50% of the time in invasion games, 43.7% in net/wall games, and 6.3% in field/run/score games (Table 2). This is logical, because the GPAI was originally developed

Table 3 Summary of the Similarities and Differences of the Features of the Instruments Most Frequently Employed to Assess Tactics

Variables	GPAI	TSAP	Nonhabitual		
			Coding instrument	Game play instrument	Game play observational instrument
Game category	Invasion, net/wall, field/run/score, target	Invasion, net/wall	Invasion	Net/wall	Invasion
Type of information (game components)	Base, adjust, decision made, skill execution, support, cover, guard/mark	Gaining possession of the ball (conquered ball, received ball), disposing of the ball (lost ball, neutral ball, offensive ball, successful shot on goal)	Tactical decision (offense with-the-ball or off-the-ball or defense), skill execution (passing, receiving, dribbling, shooting, duel, interception)	Contact decision, contact execution, type of shot, game decisions, game execution, serve decision, serve execution	Control, decision, execution
Game phases	Attack, defense	Attack	Attack, defense	Attack	Attack
Roles	Player with and without possession of the ball	Player with possession of the ball	Player with and without possession of the ball	Player who hit the shuttle	Player with possession of the ball
Quantifiable indexes (overall variables)	Game performance, game involvement, base index, adjust index, decision-made index, skill-execution index, support index, cover index, mark/guard index.	Performance score, number of attack balls, volume of play, volume per minute, efficiency index	No	No	No
Data collection	Live and by video	Live and by video	By video	By video	By video

and tested across three game categories: invasion, net/wall, and field/run/score (Oslin et al., 1998). Taking into account each one of the games in which the GPAI was used, its application was very variable.

The TSAP was used more in invasion games (88.9%) and to a lesser extent in net/wall games (11.1%). This is also reasonable because the TSAP was designed to provide tactical information about students' performance in diverse invasion and net/wall games (volleyball in Gréhaigne et al., 1997; ice hockey in Nadeau et al., 2008a,b; basketball in Richard et al., 1999; 2000). In the original validation study of the TSAP, the researchers also used volleyball, but no other studies were found that met the inclusion criteria required in the present review and that had used the TSAP in net/wall games.

With the Nonhabitual instruments, the difference between invasion games (60%) and net/wall games (40%) was not as extreme as in the TSAP. The issue was that each one of the instruments was designed for a particular game and they were not meant to be adapted to other games, such as the Coding Instrument of Blomqvist et al. (2005), which was only used for soccer.

Type of Information (Game Components)

Decision making and skill execution components of the GPAI were present in all studies using this instrument (Table 2). Although the goal of Oslin et al. (1998) was to identify observable components of game performance that were applicable across Almond's (1986) four game categories, it was difficult for all seven components (see game components in Table 3) to be applied to a particular game due the differences between invasion, net/wall, field/run/score, and target. On 36.4% in Table 2, only the components adjust and support appeared, and base, cover, and guard/mark appeared only once (9.1%).

All studies using the TSAP included each of the components of the original instrument (see game components in Table 3). Nadeau et al. (2008b) added two new components (i.e., received puck and successful icing) to the original ones, and subsequently Nadeau et al. (2008a) added two more components to the previous ones (i.e., hindering progression and blocked shot), in both cases to assess tactics in ice hockey.

The Nonhabitual instruments were designed to assess the decisions made (100%) and skill execution (80%). Both components were assessed through characteristic skills of the games in question. For example, the Game Play Instrument (French et al., 1996a) was used in badminton to assess contact decision and execution, type of shot, game decision and execution, and also serve decision as well as execution (see Table 3 for the other two Nonhabitual instruments).

Quantifiable Indexes (Overall Variables)

Quantifiable indexes are the transformation of the result of the assessed tactical variables into a number that is representative of the assessment (e.g., volume of play or game performance, see Table 3). Of the studies that used the GPAI, 63.6% applied indexes to quantify participants' performance and general involvement. Oslin et al. (1998) proposed using the game performance index with the GPAI to

assess overall game performance. This coefficient appeared in 36.4% of the articles, whereas game involvement was only used in 18.2%. No quantifiable indexes appeared in any of the manuscripts that used Nonhabitual instruments (Table 2).

The use of indexes to quantify overall performance is also a characteristic of the TSAP. All the articles reviewed used at least two indexes: volume of play (Gréhaigne et al., 1997), which is similar to the game involvement of Oslin et al. (1998), and efficiency index. Both coefficients determine each player's performance score. This performance score was calculated in 80% of the articles that used the TSAP. In addition to obtaining the volume of play, Nadeau et al. (2008a) also calculated the volume per minute, an adaptation of the former to the time unit.

The decision-making index provides the most direct indication of this information and is therefore the index most frequently used by authors employing the GPAI (45.5%). In contrast, this index was not used in any of the manuscripts reviewed that used the TSAP, which used the efficiency index (100%).

Game Phases

Game phases are defined as tactical situations of attack and defense, but the set of instruments analyzed was used more frequently to assess tactics in attack situations (Table 2). The TSAP (100%) and the Nonhabitual instruments (80%) were predominantly used by authors to analyze the attack phase. It is logical that there are no studies with the TSAP that assess defense behaviors because this instrument was based on two main ideas: (a) how the player gains possession of the ball and (b) how the player who possesses the ball acts (Gréhaigne et al., 1997).

In 45.4% of the cases, the authors who used the GPAI assessed the attack phase, but they also assessed the defense phase in 54.5% of the cases, albeit without neglecting the attack phase. This was due to the fact that all seven components used by this instrument (base, adjust, decision made, skill execution, support, cover, and guard/mark) can be adapted both to attack and to defense game phase (Casey & Dyson, 2009; Oslin et al., 1998).

Roles

All studies (100%) that used the GPAI assessed the player with and without possession of the ball (Table 2). This was mainly due to the fact that four of the components (base, adjust, decision made, and skill execution) assessed with the GPAI involved players with possession of the ball, and all seven components can involve players without possession of the ball (Oslin et al., 1998). Decisions and actions carried out without possession of the ball are essential for a team's success. This means that the participants who do not gain possession of the ball but who show a tactical understanding of the game can make a difference to the team. One of the premises of games for understanding refers to the fact that participants without a high degree of skill to gain possession of the ball can still play the game if they have tactical understanding.

In the case of the TSAP, 100% of the studies analyzed the role of the player who possessed the ball. This seems coherent because, in the instrument proposed by Gréhaigne et al. (1997) to assess performance in team sports, the indexes proceed from behaviors of the attacking players who possess the ball. The authors granted

more importance to this role, despite being aware of the relevance of observing players when they are not in possession of the ball; however, the assessment procedure was chosen so as to make it much more likely for an efficient player to gain possession of the ball (Gréhaigne et al., 1997).

Of the Nonhabitual instruments, designed mainly for invasion games, 100% focused on the player who possesses the ball, and only 60% of them also took into account the player without the ball. The authors also analyzed players who directly affected the ball with these instruments in net/wall games.

Conclusion

From the systematic analysis conducted in this work, we found that the GPAI appears more frequently in the publications, especially with invasion and net/wall games. Its use provides more information about the components that determine the attack and defense tactics, both of the player who possesses and of the one who does not possess the ball. Moreover, the GPAI includes the following aspects: (a) it integrates components to assess decision-making and skill execution; (b) it is generalizable and appropriate to what is required by tactics for each game category; and (c) it allows strategies to specify information, such as quantification indexes, to facilitate the identification of positive and negative aspects of the assessment. However, the great limitation of the instruments reviewed is that they were not used in a broad variety of games and, therefore, their use in each game has not been validated or standardized. If teachers or coaches want to assess tactics, they should reflect upon the considerations of this review and, if they want to design an ad hoc instrument, they should at least take into account the aspects presented in this conclusion.

The main limitations of this review were two. First, the studies reviewed were selected according to the inclusion-exclusion criteria established to ensure the quality of the results, so that other studies were not taken into account. Second, in this review, we did not analyze aspects related to the process required to use the instruments (e.g., evaluators, participants assessed according to their age, data collection, etc.).

Future reviews are necessary to analyze aspects related to the assessment procedure of the diverse instruments for tactical assessment. Moreover, new studies are needed to show in detail the process of tactical assessment in games that were not addressed by the works analyzed herein. We suggest that the instruments analyzed should be systematized and standardized for each type of specific games. This would provide more detailed information about their use. This measure could favor the use of this type of instruments among teachers, thereby contributing to a change in the way games are taught.

References

- * Studies that met the inclusion criteria, from which the data were obtained.
- Almond, L. (1986). Research-based teaching in games. In J. Evans (Ed.), *Physical Education, Sport and Schooling: Studies in the Sociology of Physical Education* (pp. 155–165). London, UK: Falmer Press.

- *Blomqvist, M., Vääntinen, T., & Luhtanen, P. (2005). Assessment of secondary school students' decision-making and game-play ability in soccer. *Physical Education and Sport Pedagogy*, 10, 107–119. doi:10.1080/17408980500104992
- Bunker, D., & Thorpe, R. (1982). A model for the teaching of games in secondary schools. *Bulletin of Physical Education*, 18(1), 5–8.
- *Casey, A., & Dyson, B. (2009). The implementation of models-based practice in physical education through action research. *European Physical Education Review*, 15, 175–199. doi:10.1177/1356336X09345222
- *Chatzopoulos, D., Drakou, A., Kotzamanidou, M., & Tsorbatzoudis, H. (2006a). Girls' soccer performance and motivation: Games vs technique approach. *Perceptual and Motor Skills*, 103, 463–470. doi: 10.2466/pms.103.2.463-470
- *Chatzopoulos, D., Tsorbatzoudis, H., & Drakou, A. (2006b). Combinations of technique and games approaches: Effects on game performance and motivation. *Journal of Human Movement Studies*, 50, 157–170.
- *French, K.E., Werner, P.H., Rink, J.E., Taylor, K., & Hussey, K. (1996a). The effects of 3-week unit of tactical, skill, or combined tactical and skill instruction on badminton performance on ninth-grade students. *Journal of Teaching in Physical Education*, 15, 418–438.
- *French, K.E., Werner, P.H., Taylor, K., Hussey, K., & Jones, J. (1996b). The effects of a 6-week unit of tactical, skill, or combined tactical and skill instruction on badminton performance of ninth-grade students. *Journal of Teaching in Physical Education*, 15, 439–463.
- *Gréhaigne, J-F., Godbout, P., & Bouthier, D. (1997). Performance assessment in team sports. *Journal of Teaching in Physical Education*, 16, 500–516.
- *Harvey, S., Cushion, C.J., Wegis, H.M., & Massa-Gonzalez, A.N. (2010). Teaching games for understanding in American high-school soccer: A quantitative data analysis using the game performance assessment instrument. *Physical Education and Sport Pedagogy*, 15, 29–54. doi:10.1080/17408980902729354
- *Hastie, P.A., Sinelnikov, O.A., & Guarino, A.J. (2009). The development of skill and tactical competencies during a season of badminton. *European Journal of Sport Science*, 9, 133–140. doi:10.1080/17461390802542564
- Holt, N.L., Streat, W.B., & García-Bengoechea, E. (2002). Expanding the teaching games for understanding model: New avenues for future research and practice. *Journal of Teaching in Physical Education*, 21, 162–176.
- *MacPhail, A., Kirk, D., & Griffin, L.L. (2008). Throwing and catching as relational skills in game play: Situated learning in a modified game unit. *Journal of Teaching in Physical Education*, 27, 100–115.
- Mahlo, F. (1974). La acción táctica en el juego. [Tactical action in game]. La Habana, Cuba: Pueblo y Educación.
- *Mesquita, A., Graça, A., Gomes, A.R., & Cruz, C. (2005). Examining the impact of a step game approach to teaching volleyball on student tactical. *Journal of Human Movement Studies*, 48, 469–492.
- *Mitchell, S.A., & Oslin, J.L. (1998). An investigation of tactical transfer in net games. *Physical Education and Sport Pedagogy*, 4, 162–172.
- *Nadeau, L., Godbout, P., & Richard, J-F. (2008a). Assessment of ice hockey performance in real game conditions. *European Journal of Sport Science*, 8, 379–388. doi:10.1080/17461390802284456
- *Nadeau, L., Richard, J-F., & Godbout, P. (2008b). The validity and reliability of a performance assessment procedure in ice hockey. *Physical Education and Sport Pedagogy*, 13, 65–83. doi:10.1080/17408980701444718
- *Nevett, M., Rovegno, I., Babiarz, M., & McCaughy, N. (2001). Changes in basic tactics and motor skills in an invasion-type game after a 12-lesson unit of instruction [Monograph]. *Journal of Teaching in Physical Education*, 20, 352–369.

- Noy, C. (2008). Sampling knowledge: The hermeneutics of snowball sampling in qualitative research. *International Journal of Social Research Methodology*, 11(4), 327–344. doi:10.1080/13645570701401305
- *Oslin, J.L., Mitchell, S., & Griffin, L.L. (1998). The game performance assessment instrument (GPAI): Development and preliminary validation. *Journal of Teaching in Physical Education*, 17, 231–243.
- *Pritchard, T., Hawkins, A., Wiegand, R., & Metzler, J.N. (2008). Effects of two instructional approaches on skill development, knowledge, and game performance. *Measurement in Physical Education and Exercise Science*, 12, 219–236. doi:10.1080/10913670802349774
- *Richard, J-F., Godbout, P., & Gréhaigne, J-F. (2000). Students' precision and interobserver reliability of performance assessment in team sports. *Research Quarterly for Exercise and Sport*, 71, 85–91.
- *Richard, J-F., Godbout, P., Tousignant, M., & Gréhaigne, J-F. (1999). The try-out of a team sport assessment procedure in elementary and junior high school physical education classes. *Journal of Teaching in Physical Education*, 18, 336–356.
- Strand, B.N., & Wilson, R. (1993). *Assessing sport skills*. Champaign, IL: Human Kinetics.
- *Tallir, I.B., Lenoir, M., Valcke, M., & Musch, E. (2007). Do alternative instructional approaches result in different game performance learning outcomes? Authentic assessment in varying game conditions. *International Journal of Sport Psychology*, 38(3), 23–32.
- *Turner, A.P., & Martinek, T.J. (1999). An investigation into teaching games for understanding: Effects on skill, knowledge, and game play. *Research Quarterly for Exercise and Sport*, 70, 3–21.

STATEMENT OF OWNERSHIP, MANAGEMENT, AND CIRCULATION of the *JOURNAL OF TEACHING IN PHYSICAL EDUCATION* (ISSN 0273-5024), as required by 39 U.S. Code 3685:

The *Journal of Teaching in Physical Education* (ISSN 0273-5024) is published four times a year (quarterly). Subscription fees are \$71 per year for individuals and \$426 per year for institutions.

The owner of the *Journal of Teaching in Physical Education* is Human Kinetics, Inc., whose office of publication is at 1607 N. Market St., Champaign, IL 61820-2200. The editor is Ping Xiang, Texas A&M Univ., College Station, TX 77843. The publisher is Human Kinetics, Inc., whose address of publication is PO Box 5076, Champaign, IL 61825-5076. There are no bondholders, mortgagees, or other security holders.

Average number of copies printed per issue (net press run) during the preceding 12 months is 892; number nearest to filing date is 734. Average number of copies of each issue distributed in mass mailing to subscribers during the preceding 12 months is 763; number nearest to filing date is 583. Average number of copies of each issue distributed after mass mailing to subscribers during the preceding 12 months is 32; number nearest to filing date is 39. Average number of copies of each issue distributed free during the preceding 12 months is 24; number nearest to filing date is 39.