

# **The Effect of the Relationship to Knowledge of Physical Education Teachers on the Ostensive Forms in Swimming**

***Hejer Ben Jomâa Ben Hsouna, PhD***

Higher Institute of Sport and Physical Education of Tunis,  
Manouba University.

UMR EFTS, Jean-Jaures Toulouse University,  
UR ECOTIDI (UR16ES10). Virtual University, Tunisia

***Donia Sghaier, PhD, candidate***

***Mohamed Mami, PhD, candidate***

Higher Institute of Sport and Physical Education of Kef,  
Jendouba University.

Research Unit of Sportive Performance  
and Physical Rehabilitation of Kef, Tunisia

***Georges Kpazai, PhD***

School of Human kinetics, Laurentian University, Sudbury (ON), Canada

doi: 10.19044/ejes.v4no4a2 [URL:http://dx.doi.org/10.19044/ejes.v4no4a2](http://dx.doi.org/10.19044/ejes.v4no4a2)

---

## **Abstract**

This article is interesting in ostensive forms of two physical education (PE) teachers within the activity of Swimming in Tunisia. Its objective is to analyze the ostensive forms of PE teachers and to extricate their effects on the relationship to knowledge. The methodology of the research is qualitative. It subscribes in the field of didactic clinical interactions of PE and on the clinical analysis of teaching practice of an experimented and a novice teacher in order to glimpse « case by case » the singular subject (Terrisse, 1999). Data collection and analysis subscribe in the constructed temporality in one time of professorial action. The test (Terrisse, 2000) relies on the knowledge ostension scale (Robert, 2012; Salin, 2002). Results put in evidence that PE teachers use ostensive forms to influent the relationship to knowledge in Swimming.

---

**Keywords:** Ostension, physical education teachers, relationship to knowledge, clinical didactics, swimming.

## Introduction

Many researches of Mathematics didactics went around ostension, but few of them (Carnus, 2008; Robert, 2012; Robert & Carnus, 2013) have studied ostension on the framework of PE didactics. This article offers to study the *combined* ostension in swimming like a professional gesture (Sghaier, Ben Jomâa, Mami & Bouassida, 2016), when highlights PE teachers relationship to knowledge.

In PE, some works (Zimmerman 1976; Pujade-Renaud, 1977; Vigarello & Vives 1986; Gal-Petitfaux, 2000) stroke the role of the verbal, as it is the principal support of teaching. However, so many authors (Quintillan, 1992; Kohler, 1998) sustain professor action in their studies notably in PE activities where the relationship between teacher and students involves the body. In this context, teaching situations where teachers introduce the knowledge more or less directly to the pupils are qualified as « ostensive » practices (Salin, 2002). They represent « knowledge communication practice, when the teacher provides all the constitutive element of referred notion » (Ratsimba-Rajohn, 1977).

Historically speaking, Ratsimba-Rajohn (1977) was the first didactician who identified ostension under the name of *ostensive introduction*. The introduction of Mathematical objectives by this author (Ratsimba-Rajohn, Op. cit) leads Bautier (1988) to offer a new definition to the term « ostension »: « Ostension (...) in a teaching situation allows the pupil to detect some objects and the illusion to maintain a general and precise intellectual knowledge ». In such approach, ostension is a resolution to a particular case where the teacher gives « all elements and relationships of the aimed notion » (Ratsimba-Rajohn, Op. Cit).

For Berthelot and Salin (1992), ostension results from the empiricist conception of knowledge formation. These two Math didacticians have criticized the assumed ostension from the geometry boundaries. They have considered that the « assumed » ostension, offered its place to other teaching forms such as « disguised » forms which predominates the practice in Math activities. That is why Salin (1999) has identified many conclusions from many works in ostension. In 2002, Matheron and Salin noted that ostensive practices persistence, put in evidence that « ostension captures the others didactic process ».

Furthermore, as a professional act Brousseau (1996) underlines that the combination between ostensions is a means that appears as a « professional gesture ». Thereby, this combination seems to be dear to this author via « possible-necessary articulation ». In the same order of ideas, Berdot, Blanchard-Laville and Dos Santos (1997) define ostension (at least in its forms) like a « revealing of the distance between the teacher and the knowledge and like identifiable by the analysis and the study of different

direction gestures, the study of the teacher in his management of different contract ruptures ». In others words, it is the way for the teacher to distance and to manage less or more his knowledge in a relationship with those proposed by pupils.

Since then, we think that trough this phenomenon, that the teacher has the choice of many ostension forms to teach, and the combination of this ostension forms could influence the relationship to knowledge in its proper way to be transmitted and apprehended.

## **Conceptual and theoretical framework**

### **Ostensive forms**

In the field of clinical didactics, few researches have focused on ostensive practices in PE. The only one is that of Robert (2012) which is concentrated on non verbal ostensive practices in gymnastics. The objective of this author is to extricate the convergence and the difference related to the teaching activity of two PE teachers in connection with ostensive practices in a gymnastics course. According to Robert and Carnus (2013), these ostensive forms are methods to transmit and/or to communicate knowledge ambiguities, moreover leal and Carnus (2014) noted that the imaged representation of the knowledge and the possibility to affect directly on persons accentuating the tendency to resort to ostensive procedures. These two teachers put in evidence that the private physical ostension and the direct physical ostension are two professional gestures in physical and sporting education (Leal and Carnus, Op.Cit).

However ostension forms and/or ostensive procedures could coexist during the action of teaching PE through the direct and/or the verbal ostension. We will quote some previously performed researches such as (Buznic-Bourgeacq, 2004; Guirat, 2005; Léal, 2006; Ben Jomâa, 2009). Buznic-Bourgeacq (2009) lists three ostension forms and/or knowledge expositions: The explanation through discourse, the manipulation of student body and the demonstration by the intermediate of teacher body. Therefore, in this research we will rely on the scale of knowledge ostensions (Robert, 2012; Salin, 2002).

### **The relationship to knowledge**

Ostension process refers to the report that relates the teacher with the knowledge in his didactic interactions with pupils to know the characteristics. Knowledge demonstration through gestures presents « an image » (to pupils) which is more precise and more rapid of the result to be known during the apprenticeship. Therefore, the relationship to knowledge is the image of this intimate relationship to learners, to others and/or to anyone that has to learn a subject. Ben Jomâa, Terrisse and Berhaim (2007) affirm that « the relationship to knowledge is the way when the teacher designs and treats the activity that

he teaches in the moment of transmitting the knowledge ». As a research tool, the relationship to knowledge allows analyzing a connection between a subject (pupil or teacher) and knowledge in PE, the subject needs different relationship to knowledge according to the nature of the physical activity. The relationship that he establishes with this activity is taking into account the clinical anchorage of the present research. Our attention is particularly focalized on ostensive forms of the subject teacher and his relationship to knowledge.

### **Problem setting and research questions**

In the framework of PE teaching, swimming activity is performed in difficult conditions where the communication is disturbed and the proxemics between teacher and pupil are unstable. However, the intake of information is performed in a condition only when the pupil stops his action, which interrupts the activity in water and constraints the apprenticeship evolution. Since then, the only one wording of contents by the teacher seems inadequate, insufficient and misunderstood in an aquatic environment.

In these complex conditions, how could pupils understand what the teacher said and how the teacher of swimming can transmit the knowledge(s)? From here, our research is interesting in ostensive forms in swimming while studying the effect of the relationship to knowledge on ostensive practices of PE teachers.

This manuscript on the ostensive practices in swimming is exploratory and original at least in University environment. In the problem setting, we are questioning the impact of these forms, as well as answering the following questions:

Is the combination between ostension forms are effective in an aquatic environment?

Could the relationship to knowledge affect the combined ostension?

Inspiring Robert and Carnus works (2013) that underlines that these ostensive practices are methods to transmit and/or to communicate the challenges of knowledge.

Brousseau (1996) underlines that the combination between ostensive forms is a mean seem as a « professional gesture ». Our objective is to show that the variation and the combination of the ostensive forms to the teacher is not a spontaneous and hazardous phenomenon. We postulated that the combination is the veritable object of expertise in the taught activity in PE and is revealing to the relationship to knowledge.

### **Method and Tools**

We have started from a finding where the communication in the activity of swimming is ambiguous and difficult to manage and from a

hypothesis where the combination between ostension forms of the teacher can reveal the relationship to knowledge. To treat our hypothesis, we inscribed on the field of PE didactic clinics, then we realize a study in the case near two PE teacher and their students. They are students of the first year LFEP<sup>1</sup> at the ISSEP<sup>2</sup> of Tunis. The finality of the study is descriptive and comprehensive and it does not have the objective of modeling or generalization.

### **Study population**

In the framework of our study, a pre-observation was carried out to the impregnate some specifics of the class and to familiarize students and teacher to the presence of a research and a came of experimentation is performed at the University of Manouba, Bardo swimming pool. Two first years LFEP are retained to experimentation of our protocol. Each has been submitted to some meeting of apprenticeship in the movement « Crawl ». Two-specialist teacher of swimming straddled students, they have a different degree of expertise and different professional experience. We call the expert teacher (TA) and the novice teacher (TB).

### **Observation protocol**

We have observed, to each of the two teachers, a session in the middle of the cycle that is concerning the movement « Crawl ». This observation is in the core of apprenticeship during the cycle. The first observation took place with the TA and the second observation took place with the TB. Each meeting lasts near 45 minute.

### **Clinical didactic Methodology**

Didactics takes in to consideration, all methods, techniques and procedures of teaching. Terrisse (1998) justify the interest of the clinical approach in didactics of the PE by the consideration of the singularity of each subject (personal history, personal experience etc.) in the teaching-learning process. For him, the originality of this approach consists in the articulation between didactic concepts, that try to identify the transmitted knowledge (and its stakes), and the clinical which integrates the contingency of this transmission and the fact that this knowledge is transmitted by « devised » and singular teacher (Terrisse, 2009).

Facing the constraints in an aquatic environment, the teacher has to intervene through diverse ostensive procedures (Salin, 2002). Since then PE teacher uses hard ostensive forms like particular strategies. Some implemented modalities; answers that are adapted to environment contingency obviously, which can ameliorate his relationship to knowledge in particular test moments.

---

1 Licence Fondamentale en Education Physique.

2 Institut Supérieur du Sport et de l'Education Physique de Tunis, Tunisie.

Knowing that this research is subscribing in PE clinical didactic orientation, our methodology privileges the case study and it is qualitative. This methodology rests on the study of « case by case, one by one » (Terrisse, 1999; Carnus & Terrisse, 2013) in order to apprehend the subjects in their singularities and in their complexities. This singularity is taken into account in clinical didactics by a particular attention to the personal history of each teacher. The study of his « already there » (Carnus, 2003), that is to say to put into consideration *a priori* and *a posteriori* of what « singularize each teacher and so his practices from an epistemological and a didactic point of view » (Buznic-Bourgeacq, 2009).

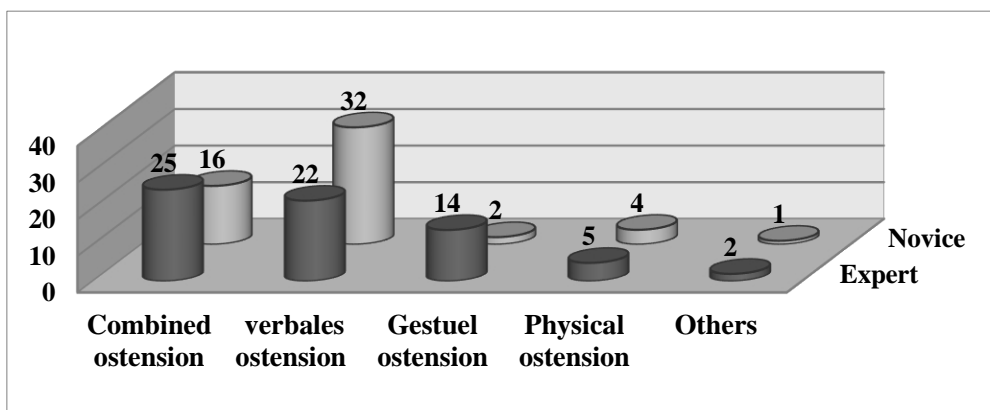
### **Data collection**

The method of collection and data analysis subscribed registered in a constructed temporality of three and distinct crossed times of professorial action: the *already there*, the *test proof* and the *after-stroke* (Terrisse, 2000). However, in the framework of this article we limit ourselves in the second time that of the test proof. The test corresponds to the moment of interaction between the teacher and pupils. The ostensive practices that were described and categorizing starting from Audio and Video recording of sessions and semi-directive data of interview and/or verbatim (*a priori*, *ante* and *post* séance and the *after-stroke*).

The treatment of the collecting data is organized to this three distinct times of clinical didactic methodology. It is about in this article to study only the second time; that of the test proof. The Audio and Video recording of meeting is completed by an ante-session interview and a post-session interview. The collection and data analysis rests on knowledge ostension scale (Salin, 2002; Robert, 2012). We use the software Sports Code V10 with Mac OS X El Captain version 10.11 for the data treatment.

### **Results**

The obtained results of each study of case are illustrated in **graphic 1** according to (Terrisse, 2000) the professorial action.

**Graphic 1.** Knowledge ostension forms with TA and TB.

## Discussion

Through knowledge ostension scale (Salin, 2002; Robert, 2012), graphic 1 analysis allows to illustrate some divergence between the ostensive practices of two the teachers. During the test with TA, we have enumerated 25 combined ostensions. In addition, we have identified 14 ostensions of gestural symbolic type including two oratory and rhythmic ones. We have recorded five physical private ostensions under the partial gesture demonstration. However, TA privileges the gesture, the verbal completes the gesture and it completes in the second place. He stands in a personal distance from conversation, where students can observe and see him. The latter uses the combined part preferentially in the interaction teacher/student. In effect, TA ostensive actions whether combined or gestural can have a capital importance in function of place, space, the moment and the taught activities. More specially, in swimming as a taught discipline the interaction nature varies between teacher and students. For that TA varies his communication procedures and particularly the ostensive forms. These ostensive variations could be obviously tributary to the singular history of the experience and the general life of the subject teacher. That is what we are trying to put in evidence in this article starting from the focal « the effect of the relationship to knowledge on ostensive practices in teaching » (Sghaier, & al., 2017). Since then, the dominant number of combined and gestural symbolic ostension recorded with TA shows that he transmits more often his personal experiences and his corporal expertise. Brought from « his personal life » of a specialist and a « corporal feeling » (Ben Jomâa & Terrisse, 2014), when body drawn the « only environment of adventure » (Vigarello, 1982).

Although, he notes « *that according to my experience, it occurs obviously to demonstrate physically and to combine and this due to my experience in swimming as a sport but this precludes me to explain verbally*

*because the verbal usually rests on the gestural* » (after-stroke, interview of TA).

Through these different ostensive forms, the expert teacher adopts his interventions in function of capacities and intentions of his learners in order to ameliorate the relationship to knowledge. Besides the relationship to knowledge is « the way for the teacher to conceive and treat the activity that he teaches during the knowledge transmission test» (Ben Jomâa, Terrisse & Berhaim, 2007). Since then, his combined ostensive practices are dominantly gestural, knowledge image that are vehiculed by his body which revealing his « personnel » or « private » relationship to knowledge and testifies his sporting expertise in swimming.

By contrary, TB uses preferentially some verbal ostensions, where 32 ostensions, 14 of them are particularly verbals and 18 are direct. For the combined ostensions, we have enumerated 9 from 12 are gestural symbolic ostensions during the TB session. According to her, the verbal is in the first place and the gesture completes the proposal. Besides, she does not appreciate to demonstrate physically which translates in her professoral activity by her « impossible to support ». Moreover, she prefers to be more close to her students to better be under control. She confirms that *« yes it is by evidence that i am close to my students and it is only to make them listen to what i am transmitting like instructions, but mainly to control them and keep them close »* (after-stroke, interview of TB).

Nevertheless, the reduced numbers of combined and gestural ostensions recorded with the TB shows she states and she explains the knowledge verbally. In effect, she tends to adopt a verbal strategy and to pass by the cognitive canal of the students. That she resorts either to the direct verbal ostension form or to the particular form. These two ostensive forms remain insufficient when it concerns the technical apprenticeship. Besides, (Mahut & al., 2005) noted that during the situation of verbal conversation, the gestural index or register of PE teacher in intervention situation is relatively varied.

Besides Vigarello and Vives (1983) works have already shown that the technical discourse needs some deviation through gestural phases. This interpretation is totally supported by Marsenach and Merand (1987) that they consider the gestuality as a part of ostensive practices to PE teacher.

Through these ostensive forms, TB finds herself facing didactic external constraints and notably those related to the didactic interaction. From one part from the other part, she abrupt to some constraints related to internal logic and to the complexity of swimming practice that is she does not master the motor knowledge and she does not want to « demonstrate » physically. In consequence, these ostensive practices are limited in verbal form reveal her



« distant » or « official » relationship to knowledge of professional experience notably in swimming teaching.

## Conclusion

Through knowledge ostension scale (Salin, 2002; Robert, 2012), results put in evidence that the used ostensive forms with the expert teacher are varied. However, the ostensive forms of the novice are limited to theoretical knowledge. From this, we deduced that the use of many ostension forms in different moments of the same situation allows us to favorize student implication in the apprenticeship. With this meaning we can refer to Beillerot (1996), to him the relationship is a « knowledge creator process to an author-subject necessary to affect and to think ». In others words, the knowledge is reconstructed and reformulated by the subject himself in function of his proper corporal and professorial experience.

Moreover, the expert teacher adopts his intervention in function of capacities and intentions of his learners in order to ameliorate the relationship to knowledge. In addition to that the number of combined ostensions put in evidence his corporal and professorial experience that makes him think at the same time about « corporal expression, the language of silence » (Pujade-Renaud, 1977) and a « speaking bodies » (Jorro, 2004).

By contrary of the expert teacher, the ostensive practices of the novice teacher are limited and little varied. She deploys obviously under verbal ostension forms, which are punctual, brief and superficial.

Since then, speech and words prove powerless to express the complexity of situation and the emergence of many simultaneous elements at the moment when the gesture to concrete what you want to be seen and known.

In consequence, the absence of the knowledge image gave the reference of his students and to stands advantageous from her manner of his transmitted knowledge. Moreover, the ostension takes a predominant dimension in the relationship that unifies the teacher to the knowledge.

In fact, through the didactic interactions, the teacher has to guide his interventions in function of different obstacles have to be faced by students. In addition, he chooses the principle obstacle to intervene progressively from the easy to the difficult. But, he could also intervene in different manners and he uses specially a targets' and adopted ostension forms. Consequently, intervention choice is effective and the variation of study gesture could be registered in the complexity of the didactic relationship between the teacher, the pupils and the knowledge.

Facing the didactic relationship obstacles that are relative to the knowledge transmission, the teacher is the only responsible about knowledge emergency. In effect, he intends to mobilize some reflexive or strategic taught to intervene. In consequence, the only one solution to know the knowledge is

through ostensive procedures (Salin, 2002). From her on, teacher's experiences allow him to resort the many solutions during the meeting. More than that, the ostensive practices are considered as methods and strategies that each teacher uses to intervene and regulate the didactic relationship. Since then, the relationship to knowledge differs between the expert teacher and the novice one who is influenced not only by her didactic action but also by her professional competence.

Finally, Robert and Carnus (2013) put in evidence that these ostensive practices are methods to transmit and/or to communicate the difficulty or the challenge of knowledge. By instance, (Robert, 2012) confirms in his non verbal ostension research that the teacher affects his ostensive practices.

The perspective of this research consists of thinking about this combination like susceptible didactic strategy to help PE teacher and particularly swimming teachers to optimize their teaching activities.

### References:

Bautier, T. (1988). Une modélisation didactique des activités d'enseignement des premières propriétés de la symétrie orthogonale, Séminaire de didactique des mathématiques et de l'informatique, LSD-IMAG, Institut Fourier, Université J. Fourier, Grenoble, année 86-88.

Beillerot, J. (1996). *Pour une clinique du rapport au savoir*. Paris : L'Harmattan.

Ben Jomâa, H. (2009). *L'expertise dans l'enseignement de l'EPS : analyse didactique clinique de quatre professeurs*. Thèse de doctorat en cotutelle. Université Paul Sabatier. Toulouse III, Université de la Manouba (Tunisie).

Ben Jomâa, H. & Terrisse, A. (2014). L'effet d'un déjà-là sur la pratique d'un enseignant : le point de vue de la didactique clinique de l'EPS. *Revue Recherches en Education*, n° 20, pp.116-126. CREN. Université de Nantes.

Ben Jomâa, H., Terrisse, A., & Berhaim, B. (2007). Le poids de l'expertise personnelle dans l'enseignement de l'EPS : signature de l'enseignant et différenciation de pratiques - étude de cas. *eJRIEPS*, 12, pp. 82-98.

Berdot, P. ; Blanchard-Laville, C., & Camara Dos Santos, M. (1997). La construction de l'espace psychique dans la classe. In C. Blanchard Laville, (dir.), *Variations sur une leçon mathématiques : analyses d'une séquence : « l'écriture des grands nombres »*, pp. 217-258. Paris : L'Harmattan.

Berthelot, R. & Salin, M.-H. (1992). L'enseignement de l'espace et de la géométrie dans l'enseignement obligatoire. Thèse de l'Université de Bordeaux I, Talence.

Brousseau, G. (1996). Cours 2 : Les stratégies de l'enseignant et les phénomènes typiques de l'activité didactique. In R. Noirfalise et M.-J. Perrin-Gionan (Éds), *Actes de la VIIIe École d'Été de didactique des mathématiques* (pp. 16-30). Clermont-Ferrand : IREM.

- Buznic-Bourgeacq, P. (2004). *De l'expérience à l'enseignement. Une étude de cas didactique d'une enseignante d'EPS débutante*. Mémoire de DEA en Sciences de l'éducation, sous la direction d'A. Terrisse, UFR Espaces et Sociétés, Université Toulouse Le Mirail, document non publié. UTM.
- Buznic-Bourgeacq, P. (2009). *La transmission du savoir expérientiel. Etudes de cas et analyses comparatives en didactique clinique de l'EPS*. Thèse non publiée, Université Paul Sabatier, Toulouse.
- Carnus, M.-F. (2003). Analyse didactique du processus décisionnel de l'enseignant d'EPS en gymnastique : une étude de cas croisés. In : C Amade-Escot (éd) *Didactique de l'éducation physique, état des recherches*, pp. 195-224. Paris : Revue EPS.
- Carnus, M.-F. (2008). Analyse didactique clinique de pratiques d'enseignants expérimentés et débutants. Une étude de cas croisée sur l'usage de la notion de « gainage » en cours d'éducation physique et sportive (E.P.S). In Carnus, M.-F. Garcia-Debanc, C. Terrisse, A. (dir.). *Analyse des pratiques des enseignants débutants, approches didactiques (pp.213-232)*. Édition: La Pensée Sauvage.
- Gal-Petitfaux, N. (2000). *Typicalité dans la signification et l'organisation de l'intervention des professeurs d'EPS en situation d'enseignement de la Natation : le cas des situations de nage en file indienne*. Thèse non publiée de doctorat en STAPS, Université Montpellier.
- Guirat, Najeh Ben Hmida (2004-2005). *L'étude sur l'impact de l'expérience sur l'enseignement de l'EPS : le cas d'un enseignant*. Mémoire de Mastère en S.T.A.P.S. Université Paul Sabatier (Toulouse) et de la Manouba (Tunisie).
- Jorro, A. (2004). *Le corps parlant de l'enseignant*. Actes du 9<sup>ème</sup> colloque de l'AIRDF, Québec, 26-28 Août.
- Kohler, M. (1998). *La démonstration partielle des enseignants d'EPS en gymnastique sportive : une technique corporelle pour une meilleure représentation du geste*. Dossier EPS N° 3, pp. 84-88. Paris : Éditions revue EPS.
- Léal, Y. (2006). L'analyse didactique clinique de pratiques ostensives : une étude de cas croisés en EPS au collège et à l'école primaire. Mémoire de Master recherche 2<sup>ème</sup> année.
- Léal, Y. & Carnus, M.-F. (2014). Ostension en EPS : Influence des déterminants personnels et du contexte institutionnel », *Recherches & éducations*, 12, pp.75-88.
- Mahut, B., Mahut, N., Gréhaigne, J.-F., & Masselot, M. (2005). Gestuelle de l'enseignant en natation et co-construction du sens. *Science et Motricité*, 56, pp. 43-63.
- Marsenach, J. & Merand, R. (1987). *L'évaluation formative dans les collèges*. Paris, INRP.
- Matheron, Y. & Salin, M.-H. (2002). Les pratiques ostensives comme travail

- de construction d'une mémoire officielle de la classe dans l'action enseignante. *Revue Française de Pédagogie*, n° 141, pp. 57-66.
- Pujade-Renaud, C. (1977). Expression corporelle langage du silence, Editions E.S.F., Science de l'Education, 4<sup>e</sup> édition.
- Quintillan, G. (1992). *Enseignement sportif et communication non verbale. La gestualité spécifique de l'entraîneur*. Thèse de doctorat en Sciences de l'éducation, non publiée, Université de Paris V.
- Ratsimba-Rajohn, H. (1977). *Etude de l'introduction ostensive d'un objet mathématique*. Mémoire de DEA. Université Bordeaux 1.
- Robert, M. (2012). *L'ostension non verbale en EPS : Analyse didactique clinique des pratiques gestuelles de deux enseignants aux profils contrastés lors de l'enseignement de la rotation avant*. Mémoire en Master 2 recherche Éducation, Formation, Travail et Savoirs, UTM.
- Robert, M. & Carnus, M-F. (2013). Les formes ostensives non verbales en gymnastique constitutives de la signature professionnelle de deux enseignants d'EPS. In M-F. Carnus et A. Terrisse (Dir). *Didactique clinique de l'EPS. Le sujet enseignant en question.*, (pp. 81-92). Paris : *Revue EPS* (Eds.).
- Salin, M.-H. (1999). Pratiques ostensives des enseignants et contraintes de la relation didactique. In G. Lemoyne et F. Conne (éds), *Le cognitif en didactique des mathématiques.*, pp. 327-352. Montréal : Les Presses de l'Université de Montréal.
- Salin, M.-H. (2002). Les pratiques ostensives dans l'enseignement des mathématiques comme objet d'analyse du travail du professeur. In O. Venturini, C. Amade-Escot et A. Terrisse (éds). *Etude des pratiques effectives : l'approche des didactiques*, pp.71-81. Grenoble : La Pensée Sauvage.
- Sghaier, D., Ben Jomaa, H., Mami, M., & Bouassida, A. (2016). The combination of the physical ostension to the verbal ostension in swimming revealing of professorial action. *Creative education*, 7, 3, pp. 500-505.
- Sghaier, D., Ben Jomaa, H., Mami, M., & Bouassida, A. (2017). Les pratiques ostensives des enseignants d'Education Physique et Sportive révélatrices du rapport au savoir en natation. *IOSR Journal of Research & Method in Education*, 7, 4, version II, pp. 36-44.
- Terrisse, A. (1998). Transposition didactique et prise en compte du sujet : perspectives de recherche en éducation physique et sportive. In Amade-Escot, C. ; Barrué, J.P. ; Bos, J.-C. ; Dufor, F ; Dugrand, M. ; et Terrisse, A. : *Recherches en EPS, bilans et perspectives.*, pp. 81-90. Paris : Éditions Revue EPS.
- Terrisse, A. (1999). La question du rapport au savoir dans le processus d'enseignement-apprentissage : le point de vue clinique. *Carrefour de l'éducation*, 7, pp. 62-87.
- Terrisse, A. (2000). Epistémologie de la recherche clinique en sports de

combat. Recherches en sports de combat et en arts martiaux : état des lieux et perspectives. *Collection Recherche et Formation*. Paris : Editions Revue EPS.

Terrisse, A. (2009). La didactique clinique en EPS. Origine, cadre théorique et recherches empiriques. In A. Terrisse et M.-F. Carnus, *Didactique clinique de l'EPS, quels enjeux de savoirs ?*, pp. 13-31. Bruxelles : De Boeck.

Vigarello, G. (1982). Les vertiges de l'intime. In *Le corps entre illusions et savoirs. Revue Esprit*, 2. Paris : Editions revue Esprit.

Vigarello, G. & Vivès, J. (1983). Technique corporelle et discours technique, *Revue EPS*, 184, pp.40-47.

Vigarello, G. & Vivès, J. (1986). Discours de l'entraîneur et technique corporelle. *Revue EPS*, pp. 200-201, pp. 146-153.

Zimmermann, D. (1976). *Les voies non verbales de la relation pédagogique*. Edition ESF science de l'éducation.