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157 East ELM Street, Unit A, Greenwich, CT 06830-6614, USA

E-mail: jae@1088.email

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Forty Years Later, a Systematic Literature Review on Inclusion in Physical Education (1975–2015): A Teacher Perspective

Maxime Tant^{1, *}, Eric Watelain^{2, 3, *}

¹ Laboratoire RECIFES EA 4520, Université d'Artois, France

² LAMIH UMR CNRS 8201 Equipe DEMoH, Decision, Emotion and Human Motricity, Université de Valenciennes et du Hainaut-Cambrésis, France

³ Université du Sud Toulon-Var, France

* Corresponding Author. E-mail: ctlee@umich.edu

Abstract. The first objective of this work is to systematically list the international studies about the inclusion of students with disabilities in physical education (PE) from the teachers' perspective. Sixty studies met our selection criteria and are listed. The second objective is to analyse the content of the literature according to the inductive and thematic approach of Thomas and Harden (2008). Our thematic analysis highlights: a) the factors that influence PE teachers' positive or negative attitudes and predispositions towards the inclusion of students with disabilities and b) the factors that can positively influence the inclusion of students with disabilities in PE classes, according to the teachers' representations. Based on these sets of factors, we propose some adapted PE training content for PE teachers. These training content proposals form the basis of research perspectives.

Keywords: Inclusion; Physical education; Teachers; Attitudes; Representations.

1. Introduction

In numerous countries, educational policies have evolved towards inclusive education and encouraging mainstream schools to include students with disabilities, i.e., allowing those students to truly follow the course of their typically developing classmates.

Indeed, the UNESCO Salamanca Statement (1994) shows that international authorities agree that inclusive education is not simply placing students with disabilities in regular schools; rather, the statement refers to the students' social and active participation in class and to the full development of their potential through access to teaching according to the students' special educational needs (SEN). Therefore, the inclusive education of students with disabilities targets the education of all students in community classes and schools, which are considered the best places for experiencing diversity and learning about one another. Inclusion considers heterogeneity not as a problem but as a chance to transform schools to better respond to their students' diversity (Booth & Ainscow, 2002). The development of this educational philosophy combined with an increasing amount of inclusive legislation has led to an increase in the number of students with disabilities who participate in traditional learning environments.

Among these traditional classes, physical education (PE) seems to be an interesting context for inclusion. Indeed, PE is often, along with music and art education, one of the first courses to “experiment” with inclusion (Alquraini & Gut, 2012). Moreover, the participation of students with disabilities in PE activities increases their sense of belonging to a class or a school community, optimizes their physical functioning and motor skill acquisition and enhances their overall well-being (Murphy & Carbone, 2008). Another advantage is that as a socially structured environment, PE classes provide a unique opportunity for the development of students' social behaviour (Sherrill, 2004).

These elements contribute to the increasing frequency with which PE teachers are entrusted with the mission to take up the challenge of inclusion. This increased involvement explains why two literature reviews regarding inclusion in PE have already been published in the 2000s. Indeed, Block

and Obrusnikova (2007) reviewed studies pertaining to the inclusion of students with disabilities in PE from 1995 to 2005. Thirty-eight studies were retrieved, and after an analysis, six focus areas were selected. One of these areas focused on PE teacher attitudes ($n = 12$); that is, their predispositions and intentions towards the inclusion of students with disabilities in their courses. The authors concluded that a lack of adapted physical education (APE) training and a lack of teaching experience with students with disabilities were two factors that negatively influenced the attitudes of PE teachers. For their part, O'Brien, Kudláček, and Howe (2009) reviewed the literature on the inclusion of students with disabilities in PE over a period of eight years (2000–2008). Twenty-seven studies were selected. Thirteen studies focused on teacher perceptions and suggested that PE teachers believed that inclusion could be achieved if:

- training were more appropriate,
- PE teachers received more assistance from an APE specialist,
- the PE curriculum supported inclusion.

These interesting results highlight two complementary topics regarding inclusion in PE: a) the factors that influence PE teachers' attitudes and predispositions towards the inclusion of students with disabilities and b) the factors that can positively influence the inclusion of students with disabilities, according to teachers' representations.

However, these reviews cover a relatively short period (1995–2008). It would be interesting to review a larger period, especially from 1975 (the date of significant relevant laws: Public Law 94–142: The Education For All Handicapped Children Act in the United States and Law 75–534, June 30, 1975, in favour of the disabled people in France). Moreover, since 2008, other studies on this topic have been published that could enrich a new review of the literature. Finally, these two previous reviews of the literature examined all parameters of inclusion and not specifically the attitudes and representations of PE teachers. However, among the factors that contribute to the success of inclusion (class size and composition, teaching context, etc.), the most influential are undoubtedly the teachers' attitudes and representations of inclusion (European Agency for Development in Special Needs Education, 2010). For all these reasons, a number of studies may not have been included in previous reviews. To our knowledge, no such review of PE teachers' attitudes and representations since 1975 has ever been performed.

Thus, our first objective is to systematically list the high-quality international scientific studies on the connection between PE teachers' attitudes and inclusion over a period of 40 years. Our second objective is to thematically analyse the content of this literature to answer three research questions:

- 1) What are the factors that influence PE teachers' positive or negative attitudes and predispositions towards the inclusion of students with disabilities?
- 2) What are the factors that can positively influence the inclusion of students with disabilities in PE classes, according to PE teachers' representations?
- 3) Based on this set of factors, how can PE teachers can be more inclusive and accessible in their teaching?

2. Method

2.1. Search procedures

To reach our first goal, we identified potentially relevant studies published between January 1975 and January 2015 via computer-assisted document research. The following eight databases were consulted: PubMed, Education Resources Information Centre, Academic Search Premier, Science Direct, Web of Science, Education Research Complete, Psychology and Behavioural Sciences, and PsycINFO. The keywords used for the electronic searches were “inclusion” or “mainstreaming” or “integration” & “physical education teachers”. The bibliographic references of each of these studies were also manually searched to identify possible additional studies. To be included in our literature review, each article had to fulfil the following seven inclusion criteria:

- a) be published between January 1975 and January 2015,
- b) be published in English,

c)include at least one primary or secondary school pupil clinically diagnosed with a disability (for example, studies of preschool children or disabled adults were excluded),

d)include at least one PE teacher in the sample (for example studies, exclusively centred on initial teacher-training students or specialized teachers were excluded),

e)be published in periodic publications (for example, books, unpublished documents, doctoral theses, master's theses, conference proceedings or book chapters were excluded),

f)be based on field research (for example, studies that only developed new instruments were excluded),

g)include information in the methodology about the following four elements in enough detail to allow replication:

-sample(s),

-measured variable(s),

-data collection instrument(s) used,

-data analysis method(s) used.

To ensure that reliability of the selection process, two researchers independently evaluated all of the selected studies according to these seven criteria. The absence or presence of each criterion in each study was noted on a dichotomized scale. In instances of disagreement, the studies were jointly reassessed to reach 100% consensus between the assessors.

2.2. Procedures for analysing studies

To achieve our second objective, we conducted a thematic analysis of the results of selected studies according to the approach of Thomas and Harden (2008). The analysis procedure was divided into 3 stages:

-coding text: a line-by-line coding of the main results of each study,

-developing a descriptive theme: thematic grouping by code and categories related to a) the factors that influence the attitudes and predispositions of PE teachers towards inclusion and b) the factors that can positively influence inclusion, according to the PE teacher representations. After defining each code and category, the two reviewers revisited the raw data of each study to validate this inductive and thematic analysis.

-generating analytical themes: Structuring all factors related to the attitudes and representations of PE teachers in a way that helps them be more inclusive and accessible in their teachings.

To ensure a maximum of rigour, we used the blind parallel coding procedure described by Lincoln and Guba (1985). To this end, each author performed each of the three steps blindly and in parallel. At the end of each step, both authors discussed their analyses.

2.3. Study selection

Fig. 1 shows results of the study selection procedure. Of the 510 studies identified from the databases, 60 met our selection criteria (selection rate = 11.8%). The main criteria leading to the rejection of studies were scientific rigour (for example, the sample and/or data collection and analysis techniques were missing from the methodology) and the absence of the PE teachers' attitudes and representations from the measured variables. Regarding the journals, 36 studies came from journals with an average impact factor (Journal Citation Reports 2014 of Thomson Reuters) of 1.03; the average impact factor for all 60 studies was 0.62.

3. General results

3.1. PE teachers' descriptions

Table A1 (appendix) presents the demographic data of the PE teachers in terms of attitudes and predispositions, and Table A2 (appendix) presents the demographic data for the representations of PE teachers. The total number of PE teachers was 6495. Of these 6495 teachers, 1865 (28.7%) had experience with students with disabilities (based on 32 studies), and 2208 (34%) had APE training (based on 31 studies). Based on 48 studies, there were 2551 male teachers (49.6%) and 2594 female teachers (50.4%). The average age of the teachers was 36.4 years (based on 26 studies). The average duration of PE teaching experience was 11.8 years (based on 31 studies). Regarding teaching level, 22.2% of the teachers taught at the elementary level, 37.8% of the teachers taught at the secondary

level, and 40% of the teachers taught at multiple levels (based on 45 studies). The studies were based on teachers from all 5 continents but with very different repartitions. Indeed, most of the studies examined teachers from the United States ($n = 34$), followed by the United Kingdom ($n = 8$). Ireland, Greece, Finland, Turkey and Japan were represented by 2 studies each. Germany, Sweden, Latvia, Israel, China and Australia were represented by 1 study each. Two studies focused on several countries at the same time: Germany and the United States for one, and Puerto Rico, the United States, Japan and Ghana for the other.

3.2. Thematic procedure

Table 1 presents the tree diagram of our thematic analysis. The line-by-line coding of the results of each study identified 24 codes. These 24 codes were grouped into 6 categories which divided into two themes: factors that influence PE teachers' attitudes and factors that the PE teachers reported could influence their representations.

The theme of the PE teachers' attitudes and predispositions regarding inclusion ($n = 28$ studies) adopts Allport's definition (1935), i.e., that an attitude is not a behaviour as such but a predisposition to act, i.e., “a mental and neural state of readiness, organized through experience, exerting a directive and dynamic influence upon the individual's response to all objects and situations with which it is related” (Allport, 1935, p. 810). In other words, these studies try upstream to list the factors that influence the teachers' attitudes (positive or negative) towards inclusion and downstream to measure the impact that the PE teachers' positive or negative attitudes has on their teaching practices.

The theme of the PE teachers' representations ($n = 32$ studies) is defined as “the product of processes of mental activity through which an individual or group reconstitutes the reality with which it is confronted and to which it attributes a specific meaning” (Abric, 1994, p. 13). In other words, these studies try to understand the factors that can positively influence inclusion, according to the teachers' perceptions of their inclusion experiences.

3.3. Methodological approaches used

3.3.1. Studies on attitudes

The factors that influence the PE teachers' positive or negative attitudes and predispositions towards inclusion of students with disabilities are based on quantitative studies that collected data via questionnaires. The most frequently used ones are the Physical Educators' Attitudes toward the Handicapped (PEATH, PEATH II) and the “Physical Educators' Attitudes toward Teaching Individuals with Disabilities” (PEATID III) from the academic works of Rizzo (1983). These questionnaires consist of a series of twelve statements to which the teachers respond according to their intentions to include pupils with a particular type of disability (associated or not with a severity level) in their PE courses. The responses are made on a five-level scale (from strongly in disagreement to totally in agreement) underneath each statement. These measures are based on the theory of reasoned action (Fishbein & Ajzen, 1975) and the theory of planned behaviour (Ajzen, 1985).

Other questionnaires have also been developed to study the attitudes of teachers, such as the Teacher Integration Attitudes Questionnaire (TIAQ) of Sideridis and Chandler (1995), which asks teachers to express their attitudes in response to 12 statements that fall into 4 areas of inclusion (skills, benefits, acceptance and support). The responses are given on a 4-point Likert-type scale (from strongly agree to strongly disagree). Contrary to the PEATH, the TIAQ is not based on a particular theory. All of these questionnaire-based studies included rather significant samples ($M = 176 \pm 181$) that allowed statistical analyses with a not-insignificant strength and supported the reliability of the results.

3.3.2. Studies on representations

Two types of methodologies are used to define and understand the factors that, according to the teachers' representations, can positively influence the inclusion. First, studies that took the form of a survey ($n = 8$) and had a relatively significant sample size (165 teachers ± 98) were analysed via descriptive statistics, thus allowing a general inventory of the teachers' representations regarding inclusion. For example, Klavina, Block, and Larins (2007) surveyed 250 PE teachers and found that they were concerned about their level of training in APE, practical considerations (for example, the

absence of an individual inclusion plan or the lack of accessibility and adapted sports equipment) and the absence of a teacher assistant to develop an APE approach.

Then, to investigate these representations in depth, qualitative approaches were developed ($n = 24$). Most of the time, data collection was performed through interviews (semi-structured interviews, focus groups); however, these were sometimes associated with observations of sessions or analyses of documents such as lesson plans, which were then qualitatively analysed (using content analysis, constant comparative method, thematic analysis, and mixed methods). The teacher samples are smaller (12 teachers \pm 13) in the studies on representations compared with the studies on attitudes because of the considerable amount of time needed to collect and analyse the data. The use of the qualitative approach is understandable because of the need to perform a deep and thorough analysis of representations that cannot be easily assessed or defined with a classic questionnaire approach. Indeed, unlike attitudes, which can be defined either as positive or negative, teachers' representations are less clear and more variable and can often be considered contradictory. Several studies agree that teachers generally have common a representation of inclusion as an ideal, but they ask themselves many questions about its practical implications, and they quickly feel helpless and concerned when facing the reality and complexity of inclusion (Ammah and Hodge, 2005, Hersman and Hodge, 2010, Hodge et al., 2004 and Hodge et al., 2009).

4. Specifics results of the thematic analysis

4.1. Attitudes and predispositions

4.1.1. Teacher-specific factors that influence their attitudes

Neither the teachers' level of experience in teaching general PE (Jerlinder et al., 2010, Obrusnikova, 2008 and Tripp and Rizzo, 2006) nor their degree earned in teaching general PE (Rizzo and Vispoel, 1991, Rizzo and Wright, 1988 and Rizzo, 1985) showed a significant effect on the attitudes of the teachers towards the inclusion of students with disabilities.

In the same sense, most of the studies showed no link between the PE teachers' age and their attitude toward including a student with disabilities (Jerlinder et al., 2010, Rizzo and Vispoel, 1991, Rizzo and Wright, 1988 and Tripp and Rizzo, 2006). Only Rizzo (1985), who questioned 194 PE teachers using the PEATH, indicated that younger teachers showed a more favourable attitude towards the inclusion of students with disabilities compared with their older colleagues in the United States. Rizzo (1985) added that recent policies (the Education for All Handicapped Children Act of 1975) may have allowed these young teachers to become more aware of these questions during their initial training, which led them to have more positive attitudes than their older colleagues.

Likewise, most of the studies showed no link between the teacher's gender and their attitude toward including students with disabilities in general (Doukeridou et al., 2011, Duchane and French, 1998, Jerlinder et al., 2010, Patrick, 1987, Rizzo and Vispoel, 1991, Rizzo and Wright, 1988, Rizzo, 1985 and Tripp, 1988). However, the studies concerning specific types of disabilities qualified these results (Aloia et al., 1980, Meegan and MacPhail, 2006 and Schmidt-Gotz et al., 1994). For example, Schmidt-Gotz et al. (1994) used the PEATH to question 722 PE teachers and 369 students (Physical Education and Sport University). They showed that the attitudes of female teachers were more favourable than those of their male colleagues only in regard to the students with physical or learning disabilities.

Contrary to the previously discussed elements, the factor that most strongly predicted the teachers' attitude seemed to be their perceived competence in teaching students with disabilities. All of the studies that examined this factor specific to teachers showed that it had a significant influence on their favourable attitudes towards inclusion (Block and Rizzo, 1995 and Obrusnikova, 2008; Papadopoulou et al., 2004; Rizzo and Vispoel, 1991, Rizzo and Wright, 1988, Schmidt-Gotz et al., 1994 and Tripp and Rizzo, 2006). In fact, the PE teachers who perceived themselves as more competent in inclusion (that is, they considered themselves to have a certain level of knowledge and control regarding inclusion) had more positive attitudes because they perceived inclusion as a rewarding and interesting professional challenge. On the contrary, a lack of perceived competence was considered a major obstacle to inclusion (Heikinaro-Johansson & Sherrill, 1994).

Strangely enough, the studies concerning the relationship between the teachers' experience with students with disabilities and their predispositions towards inclusion were reserved. Five studies showed a positive effect of experience teaching students with disabilities on teachers' attitudes (Marston and Leslie, 1983, Meegan and MacPhail, 2006, Obrusnikova, 2008, Rizzo and Vispoel, 1991 and Özer et al., 2013), while four others showed no effect (Block and Rizzo, 1995, Rizzo, 1985, Schmidt-Gotz et al., 1994 and Tripp and Rizzo, 2006). However, according to Rizzo and Wright (1988), certain studies did not obtain a direct correlation between the experience of teaching students with disabilities and positive attitudes because positive attitudes were sometimes developed indirectly. However, experience with teaching students with disabilities was directly linked to perceived teaching competence in inclusion, which represented the most significant predictor of a positive attitude.

Following the same logic, the studies that examined the relationship training in adapted physical education (APE) and the teachers' attitudes towards inclusion were contradictory. Six studies showed a positive effect of training in APE on the teachers' attitude towards the inclusion of students with disabilities (Block and Rizzo, 1995, Doulkeridou et al., 2011 and Obrusnikova, 2008; Papadopoulou et al., 2004; Patrick, 1987 and Tripp and Rizzo, 2006), while three others showed no effect (Bird and Gansneder, 1979, Meegan and MacPhail, 2006 and Rizzo and Vispoel, 1991). According to Rizzo and Wright (1988), it is important to emphasize that training in APE was strongly correlated with perceived teaching competence in inclusion. Moreover, the quality of the APE training seemed to strongly influence attitudes. Jarvis and French (1990), who replicated a study by Jansma and Shultz (1982), showed the ineffectiveness of short in-service trainings (2 days) for influencing attitudes. Additionally, concerning initial APE training for future teachers, Maeda, Murata, and Hodge (1998) showed that late training (during graduate studies) more positively and significantly influenced teachers' attitudes than early training (during undergraduate studies) did.

To summarize these results, the teacher-specific factor that most influenced their positive attitude towards the inclusion of students with disabilities was perceived teaching competence. Having said that, factors based on APE training or experience with teaching students with disabilities could influence the teachers' attitudes either positively and directly or indirectly, by contributing to the teacher's feelings of competence. However, it seems that other factors could influence PE teacher's attitudes. It is very likely that teachers' attitudes toward inclusion depend at least on the type and the severity of the student's handicap (Qi & Ha, 2012a).

4.1.2. Factors specific to the students with disabilities that influence teachers' attitudes

One factor associated with the students with disabilities was the disability label itself. Indeed, Tripp and Rizzo (2006) used a revised version of the Physical Educators' Intention Towards Teaching Individuals with Disabilities questionnaire (PEATID III) with two groups of 34 teachers: those who were given a description of a pupil with cerebral palsy symptoms who was labelled as a "pupil with cerebral palsy" and those who were given only the description of the pupil without the label. The study showed that the teachers whose descriptions included the label were significantly less enthusiastic about including the student compared with their colleagues who received student information without the label.

Another factor specific to the student with disabilities was his/her age or class level. Indeed, students with disabilities were more favourably perceived in lower-level classes than in higher grades (Minner and Knutson, 1982 and Rizzo, 1984). For example, using the PEATH with 194 PE teachers, Rizzo (1984) showed that the higher the class level was (from primary school [K-3] to an intermediate class [K4-6] then to high school [K7-8]), the less favourable the teachers' attitudes gradually became.

An hypothesis could be that as the students' levels increased, the teachers paid greater attention to the growing dissatisfaction of the typically developing students, particularly secondary school students, when PE sessions were adapted (Block, 2007).

The third student-specific factor was the type of disability. For example, although PE teachers were more positive than music teachers about including students with behavioural or emotional disorders (Sideridis & Chandler, 1996), studies agreed that PE teachers showed negative attitudes toward the

inclusion of these children (Obrusnikova, 2008, Rizzo and Vispoel, 1991 and Tripp, 1988). For Obrusnikova (2008), it was not surprising that teachers were less inclined to teach pupils with behavioural and emotional disorders (such as aggressive or impulsive behaviour, depression, hyperactivity, or social maladjustment) because these pupils required greater organization, management of the class, and involvement in relationships between pupils; consequently these students were considered too complex of a challenge and were negatively impacted teachers' attitudes.

In contrast, PE teachers' attitudes toward pupils with learning disabilities were often favourable (Meegan and MacPhail, 2006, Obrusnikova, 2008, Rizzo and Vispoel, 1991 and Rizzo and Wright, 1987). Indeed, for Rizzo and Wright (1987), teaching PE to students with learning disabilities (such as dyslexia, dysphasia or dysorthographia) seemed to be less challenging than teaching to students with physical disabilities, sensory disabilities or mental retardation.

In summary, studies have showed that teachers seemed to present a negative attitude towards students with emotional disorders and a rather favourable attitude toward students with learning disabilities. However, teachers adopted a mixed attitude towards students with physical, sensory or mental disabilities (Obrusnikova, 2008, Rizzo and Vispoel, 1991 and Tripp, 1988). This mixed attitude towards these types of disability arose partially because the type of disability was an important factor that, in association with the severity of disability, could evoke different attitudes.

Indeed, the final student-specific factor that influenced teachers' attitudes was the severity of the disability (Block and Rizzo, 1995, Duchane and French, 1998 and Meegan and MacPhail, 2006). To illustrate this point, Block and Rizzo (1995) examined (using the PEATID III) the relationship between the attitudes of 91 PE teachers towards pupils with a severe or profound mental disability. For the authors, the adjective "severe" described people who had relatively good levels of consciousness and a capacity to respond adequately to environmental constraints with significant support. The term "profound" described people with little consciousness or capacity to adapt to the environment, even with considerable support. The results revealed that teachers were undecided about teaching students with severe mental disabilities, and they disagreed about teaching pupils with profound mental disabilities in their regular classes. Similar results were also reported by Meegan and MacPhail (2006) and by Duchane and French (1998).

To synthesize these findings, we could say that the attitudes of PE teachers depended at least partly on whether the disability was labelled, the student's age (class level), and the type and severity of the disability. It goes without saying that the combination of these factors could have an even greater influence on the attitudes of teachers, and thus, a posteriori, on the efficiency of their teaching practices.

4.1.3. Influence of teachers' attitudes on their teaching practices

Three studies more specifically examined the influence of PE teachers' attitudes (positive or negative) on their objectives and teaching practices. The first study (Duchane & French, 1998) examined the relationship between the attitudes of 182 teachers and the participation objectives of the students with disabilities compared with those of the typically developing students (via a questionnaire about grading). The results showed that regardless of the nature (positive or negative) of the attitude measured via the PEATID III, teachers reported using different grading criteria for the pupils with disabilities versus those without disabilities. In fact, pupils with disabilities were first judged in terms of their effort or participation, while typically developing pupils were judged in terms of their fitness and performance on skills tests. In other words, this difference in assessment could be considered a reduction of the requirements and objectives for students with disabilities.

However, another qualitative study showed different results. Combs, Elliott, and Whipple (2010) used the PEATID III to identify two PE teachers with positive attitudes and two others with negative ones towards the inclusion of students with mental disabilities. Semi-directive qualitative interviews showed that both teachers who presented a positive attitude constantly insisted on the motor performance and success of the students with disabilities. They identified in their practices several ways to present class situations, various types of intervention, and multiple objectives, and they developed lesson plans that integrated several strategies to adapt the environment to the students with

disabilities. In contrast, the two PE teachers who presented negative attitudes defined inclusion in terms of the participation of the students with disabilities in traditional sport and not adapted physical activities.

These results were confirmed by the study by Elliott (2008), which dealt with the relationship between the attitude of the teachers (regarding including pupils with low or moderate mental disabilities) and the efficiency of their interventions in terms of the following:

- the participation of pupils with disabilities in the session (number of attempts) compared with that of typically developing pupils,

- the level of success achieved by pupils with disabilities compared with their typically developing peers. To examine this factor and determine the nature of the teachers' attitudes, 20 PE teachers completed the PEATID III and then were observed during PE sessions. The observers systematically collected data on the number of attempts completed by students with disabilities compared with typically developing students and associated them with the percentages of success and failure. The results showed a relationship between the teachers' attitude toward inclusion and the efficiency of the teaching. Indeed, the teachers with a positive attitude towards inclusion presented:

- higher expectations in terms of motor performances for all the pupils (with and without disabilities),

- a higher number of attempts, which was associated with a more significant rate of success for all the pupils (with and without disabilities).

To synthesize these findings, only three studies examined the impact of the nature of PE teachers' attitudes on their practices. It seemed that the teachers who favoured inclusion adapted their teaching to the specific needs of the students with disabilities without reducing the level of motor requirements. This implementation of inclusive practices seemed to be effective for students with and without disabilities. However, additional research on this topic is clearly needed.

4.2. Teachers' representations

4.2.1. Educationally inclusive policies and PE curriculum

Several studies showed that teachers were extrinsically motivated to conform to inclusive educational policies and to the directives of the school administrators (Qi and Ha, 2012b and Sato and Hodge, 2009). However, numerous studies in United Kingdom or in Japan noted problems with the inadequacy of the inclusive principles described in general texts when applied to the curriculum content or expectations of certifications in PE (Haycock and Smith, 2010a, Haycock and Smith, 2010b, Haycock and Smith, 2011, Sato and Hodge, 2009, Smith and Green, 2004 and Smith, 2004). Indeed, these studies agreed that the curriculum contents focused too broadly on competitive and collective activities (soccer, basketball, netball), thus creating a paradoxical situation that the teachers denounced. For example, Smith and Green (2004) interviewed 7 PE teachers via semi-directive interviews followed by a thematic analysis. The results showed that the teachers intended to provide the students with disabilities the same opportunities to participate in activities along with their typically developing peers; however, this did not occur in practice. Instead, students with disabilities were excluded from the class's sports activities because the official curriculum was very focused on competitive and collective activities, which the teachers said were not suitable for inclusion. Moreover, the teachers noted that students with disabilities could more easily be included with their typically developing classmates in individual activities that were not focused on comparing interpersonal performances. This situation was confirmed by Morley, Bailey, Tan, and Cooke (2005), who organized a focus group of 12 PE teachers, followed by a thematic analysis. The results showed that the increase in the number of students with disabilities in mainstream schools did not radically modify the contents of physical activity programming, which continued to be widely dominated by competitive team sports and a strong emphasis on performance, excellence and technical skills. The authors showed that this programming seemed to have reduced, rather than improved, the opportunities for students with disabilities to participate in the same activities as their typically developing peers. On the whole, pupils with disabilities took part in a limited number of physical and sports activities compared with their classmates. In some cases, students with disabilities practised PE without other pupils, during hours that were specially designed for them with the aim of meeting their

special needs and motor capacities. Programming centred on collective and competitive activities hindered the participation of students with disabilities, especially students with autism spectrum disorders. Indeed, Obrusnikova and Dillon (2011) showed that the 43 PE teachers (examined using an elicitation questionnaire) reported that instructional tasks were more often challenging during social and competitive activities because first, impaired social relationships and social behaviour constitutes a main characteristics of individuals with autism spectrum disorders and second, because these students often failed to develop a sense of competition.

In addition to programmes based on sports activities, several studies showed that certifications were also inadequate with regard to the principles of inclusion (Haycock & Smith, 2010b), in the United Kingdom; Sato & Hodge, 2009, in Japan. For example, Haycock and Smith (2010b) studied 12 teachers using the same data collection and analysis technique that was applied by Morley et al. (2005). They showed that despite the significant experience of the interviewed teachers, the criteria they used were inadequate and inappropriate for identifying the acquisitions of pupils with disabilities. In reality, according to the teachers, the requirements, which were essentially based on performance, were only reachable by a limited number of pupils (including students without disabilities).

Given these difficulties of teaching PE using traditional physical and sports activities, Grenier, Collins, Wright, and Kearns (2014) suggested integrating units on teaching sports to people with disabilities into PE programmes. To this effect, the authors conducted a qualitative study via multiple sources (focus group, semi-structured interviews, field notes and documents) and conducted a thematic analysis to compare the representations of the pupils and the teachers in 3 primary school classes (n = 41) who practiced a disabled sports unit (wheelchair basketball, goalball, sit-volleyball, and sledge hockey) for 5 weeks compared with 3 primary school classes who practiced games and traditional sports (n = 46) over the same period. The results showed that scheduling a disabled sports unit was an effective strategy for favourably shaping the representations of both typically developing students and teachers. More flexible programmes that are open to adapted and disabled physical activities seemed to be an effective strategy for helping the teachers build favourable representations and offer pupils with and without disabilities a way to practise PE together.

4.2.2. Collaboration and communication with colleagues

Numerous works have studied the influence of the communication and the collaboration among the partners in inclusion and the PE teachers on representations (Aydin, 2014, Fejgin et al., 2005, Heikinaro-Johansson et al., 1995, LaMaster et al., 1998, Lienert et al., 2001, Murata and Jansma, 1997, Pedersen et al., 2014 and Sato et al., 2007). However, most of these studies highlighted numerous concerns regarding the effectiveness and quality of these collaborations. For example, Aydin (2014) surveyed 55 PE teachers and found that their primary concern was the lack of information they had about the special educational needs of students with disabilities before the inclusion began because of a lack of communication. More particularly, the PE teachers seemed worried by their collaborations with paraprofessionals (APE specialists or teacher assistants). For example, Lienert et al. (2001) questioned 30 PE teachers to determine their concerns, and they clearly showed the difficulty of collaborating with the specific members of the support staff. For example, most of the teachers estimated having collaborated with an APE specialist once or twice at the most during the school year and over a short teaching period. This limited cooperation led to professional concerns about the negative consequences for teachers' representations of inclusion. In another study, LaMaster et al. (1998) questioned and observed 6 PE teachers. In this case, the role of the APE specialist was essentially consultative. A thematic analysis revealed the PE teachers' frustration about the lack of availability of the APE specialist because of the significant number of individual cases that they had to address. As a result, the consultations were too short and too far apart to have a positive impact on the PE teachers' representations. However, the frequency and quality of the communications was an essential element in favour of the effectiveness of the inclusion. Heikinaro-Johansson et al. (1995) tested two models of communication between the PE teacher and the APE consultant with two teachers for 2 months. The following models were examined:

a) a model that qualified as intensive (face-to-face meetings every week, observations of the PE sessions every week and regular phone conversations), and

b) a model that qualified as limited (a meeting at the beginning and at the end of the teaching sequence).

The evaluation of these two models of communication (in the form of a case study) clearly showed the positive impact of the intensive model. The PE teacher who benefitted from this intensive model presented positive representations of inclusion, and he was more effective in his teaching (for example, in terms of instruction time, feedback, encouragement). The efficiency of the inclusive practices that arose from the intensive model of communication strengthened the positive representations of the teacher and the pursuit of inclusion.

Along with the frequency of the exchanges between the teacher and the APE specialist, the quality of the collaboration with teacher assistants was also important. Pedersen et al. (2014) questioned 14 teachers about the strategies they used to develop working relationships with the teacher assistants helping the students with disabilities in their everyday life at school. Although the teachers generally had a favourable attitude towards the teacher assistants, the collaboration was often limited by the teacher assistant's lack of knowledge about general PE and about APE in particular. This lack of teacher assistant training in APE was confirmed by Vickerman and Blundell (2012) who showed via a questionnaire that 63.3% of teaching assistants received general information about inclusion, whereas only 5.5% received specific information about APE.

Therefore, for Grenier (2011), one of the solutions is co-teaching. This situational collaboration was the result of his study of two PE teachers and an APE specialist over a period of 16 weeks. During this period, interviews, observation notes and teachers' documents were analysed. Grenier (2011) showed the efficiency of the cooperative model of co-teaching between a PE teacher and an APE specialist on the ground. This cooperation allowed the student to make an efficient transition from special or segregated education to an inclusive setting via a thorough dialogue regarding the preparation of the sessions, a wide range of teaching adaptations during the sessions, and numerous reflections on their teacher's own inclusive practices. The objectives of both teachers in co-teaching were to achieve a certain quality of social relationships among the pupils and to allow motor learning to occur at the best possible level. This type of co-teaching encouraged more favourable representations of inclusion for both the teachers and the pupils with and without disabilities.

4.2.3. Training in APE

Another very important concern that the teachers had regarding inclusion rested on the quality of their professional preparation for inclusion in PE through either initial training or continuing education (Chandler and Greene, 1995, Crawford, 2011, Fitzgerald et al., 2004, Hardin, 2005, Lieberman et al., 2002 and Vickerman and Coates, 2009).

Regarding the initial training, Vickerman and Coates (2009) examined the representations of 19 recently qualified PE teachers and 202 student PE teachers via a survey. They noticed that the teacher judged their representations of their training experiences in a rather negative way. Indeed, 84% of the recently qualified PE teachers and 43% of the student teachers considered that most of their initial training did not allow them to develop a truly inclusive environment for students with disabilities in their classes. These concerns were confirmed by the study by Hardin (2005). He studied five recently qualified teachers using semi-structured interviews that were analysed thematically. The original finding of this study was that teachers consistently considered practical training the most efficient way to acquire inclusive strategies. Another significant aspect inferred from these interviews was that advice and examples about inclusion from experienced teachers would allow new teachers to quickly and efficiently incorporate efficient inclusive adaptations.

Regarding continual training, Fitzgerald et al. (2004) questioned 105 teachers and then selected 8 PE teachers who took continuing education training courses in this particular field to participate in face-to-face interviews. Although the continuing education training significantly helped the teachers improve in terms of inclusion, numerous teachers remained sceptical about the relevance and utility of this training. In reality, despite these continuing education courses, the teachers felt insufficiently informed or experienced to include students with disabilities in their classes. Lieberman et al. (2002) also questioned 148 teacher volunteers who participated in a training on the inclusion of pupils with visual disabilities. The authors noticed that the teachers' most frequently identified obstacle to

inclusion was their lack of professional preparation (66%). In addition to addressing the quantitative lack of training, the authors suggested that the training should focus more on the didactic strategies and pedagogical adaptations necessary to address inclusion problems in a real classroom and reduce the amount of instructional time spent on theoretical aspects of the disability (for example, the physiology of the eye, the causes and consequences of visual diseases). Along similar lines, in Ko and Boswell's (2013) qualitative study of 7 teachers, they suggested that the experience acquired during inclusive practices could be reinvested in a continuous process of collaboration with other teachers during regular professional trainings. An example of inclusive experience was described by Grenier (2006), who conducted a case study over a six-month period with a PE teacher whose class ($n = 16$) included a pupil with severe cerebral palsy and a pupil with visual deficiency. The data resulted from interviews, observations, and lesson plans. The thematic analysis showed that the teacher, who was trained in inclusive strategies and adaptations, focused primarily on the development of social skills among the students. To this end, the teacher first and foremost used cooperative learning in the reduced-sized class to amplify the social interactions between pupils. She also often taught small groups (even pairs, using the format of peer-tutoring between the student with disabilities and a classmate volunteer) to achieve a common motor objective that could only be reached if all group members participated. The objectives shifted toward motor learning and socialization and avoided a climate of competition that could aggravate interpersonal performances. The class climate that the teacher established was clearly directed towards progress and control to amplify amount of time that the students spent cooperating on the same common lessons, which were adapted to everyone's needs.

In summary of the thematic analyses, it seems that the representations that are favourable to inclusion are shaped by the following:

- the quality and the consistency of the professional training,
- the frequency and quality of the exchanges between teachers and colleagues,
- the adequacy of training programmes, and inclusive texts in particular, to provide a curriculum that is open to adapted physical activities and sports participation for people with disabilities.

5. Discussion and practical implications

At this stage, our thematic analysis highlights the following factors:

- that influence the PE teachers' positive or negative attitudes towards the inclusion of students with disabilities (first research question),
- that can positively influence the inclusion of students with disabilities in PE classes, according to teachers' representations (second research question).

The aim now is to highlight the limitations of this work and to structure all of the factors related to PE teachers' attitudes and representations around a central element to help them become more inclusive and accessible in their teaching.

5.1. Limitations and central element determination

The first limitation is based on the focus of this work on a single discipline: PE. As a result, the impact on inclusive education is limited. Indeed, this review showed the need for better exchanges between the inclusion partners (parents, administration, medical staff, etc.) and all teachers (general education teachers of different subjects, specialized teachers and teacher assistants) to collectively develop an individualized plan according to the SEN of the student with disabilities as a starting point for inclusion.

Another limitation concerns the small number of studies on the impact of inclusive practices (peer tutoring, cooperative learning, disabled sports programming, teaching adaptations, sport modifications, etc.) on the attitudes and representations of PE teachers. It is likely that the lack of APE training among PE teachers greatly limits the opportunity for research on the impact of inclusive practices (still undeveloped) on the attitudes and representations of PE teachers.

Therefore, it seems that the central element around which the inclusive practices could be developed and that could positively influence the attitudes and representations of teachers is APE training. APE training is a common factor of the two themes. Thematic analyses have previously shown that PE teachers need regular APE training focused on inclusive didactic strategies and

pedagogical adaptations and the support of teachers with inclusion experience (co-teaching) throughout their careers (starting at the university level). To answer our third research question, we propose 3 types of training content for PE teachers to help them be more inclusive and accessible in their teaching: multidisciplinary training, didactical disciplinary training and pedagogical disciplinary training.

5.2. Multidisciplinary training

An essential part of the thematic analysis is based on collaboration and communication with colleagues and partners of inclusion (section 4.2.2) to collectively identify the SEN of the student with disabilities (Aydin, 2014), to create his individual inclusion plan (Klavina et al., 2007) and to help PE teacher to be effective in his teaching (Heikinaro-Johansson et al., 1995). These results could be structured inside a multidisciplinary training.

Given the singularity of each individual plan of inclusion, the multidisciplinary training could be performed locally in the regular school with the different partners in the educational community (Qi & Ha, 2012b). This training could be conducted in two stages.

The first step involves collecting information about all of the characteristics of the student with disabilities. To do so, it seems crucial to include an administrator (as listed by Sato & Hodge, 2009) who would:

- bring together all of the partners that could help the teachers and the members of the educational community to precisely determine the student's SEN and help the educators understand the consequences of the disability on education (as suggested by Lieberman et al., 2002). The active participation of the student's family and the specialist or medical staff seems decisive.

- bring all of the partners together as a team to define the organization of the individual inclusion plan (adaptation of the schedule, accessibility of the classrooms, support of a teacher assistant, teacher training, etc.). From this perspective, the exchanges between the PE teacher, the parents and the medical staff could be important to ensure that the student can safely perform the class activities.

The second step is to define the pedagogical aspect of the individual plan of inclusion. To do so, it is necessary that all of the teachers (the general teachers of different subjects, specialized teachers and teacher assistants) work together (as supported by the study of Grenier, 2011) to:

- define specific learning objectives (cognitive, motor, social, emotional, etc.) according to the SEN.

- develop a common educational strategy adapted to the class to achieve these specific learning objectives.

- increase exchanges regarding effective teaching practices. Regular exchanges between the teachers are important ensure that the individual plan of inclusion is reviewed on a regular basis. The participation of the PE teacher on the educational team seem to be important for establishing a complete plan, that is, one that addresses motor skills, physical capacities, cooperation with others, and other skills.

Ultimately, this multidisciplinary training is based on the recognition of team work as an essential part of the mission of teachers.

5.3. Didactic disciplinary training

The results of the thematic analysis highlight different effective strategies for successfully including students with disabilities in their PE courses which could be grouped within a didactic disciplinary training, such as:

- the modification of one or more parameters of traditional sports activities (the size of the field, the number of players, the rules of the game, etc.) as reported in the study of Combs, and (2010). For example, in soccer matches, the teacher could reduce the number of players to decrease the cognitive and emotional burden for students with mental retardation. However, Block (2007) cautioned that if the modifications change the nature or the challenge of the game too much, it could cause dissatisfaction among the typically developing students, particularly those with a competitive spirit.

- the programming of disabled sports units to implement reverse inclusion (as showed Grenier et al., 2014). Reverse inclusion allows typically developing students to participate in a sport usually reserved for people with disabilities (Hutzler, Chacham-Guber, & Reiter, 2013). For example, the

teacher may teach wheelchair basketball instead of basketball to successfully include a student with paraplegia.

-the use of an inclusion teaching style (Mosston & Ashworth, 2002) that aims to provide students with the opportunity to engage in an activity at an appropriate skill level (as reported in the study of Elliott, 2008). For example, during an indoor climbing activity, the teacher determines several levels of difficulty among the climbing routes (relative to the distance between holds, the size of the holds or the inclination of the wall). Each student, including a visually impaired student, tests the different routes to determine his/her initial level and works to gradually reach the next level. Moreover, in this example, the belayer (a student without a disability) verbally communicates with the visually impaired student to guide his/her ascent.

5.4. Pedagogical disciplinary training

In the thematic analysis, Ko and Boswell (2013) show that different effective instructional adaptations could be grouped within a pedagogical disciplinary training to help PE teachers to increase the motor skill acquisitions of students with disabilities and to strengthen social relationships among students in the PE course.

The content of this pedagogical training could refer to the use of the following:

-a mastery climate that facilitates students' concentration on their own learning process (Valentini & Rudisill, 2004) rather than on the performance (as suggested by Morley et al., 2005 or Smith & Green, 2004). For example, during performance activities (athletics, swimming races, etc.), the teacher could assess the progress of each student (in terms of motor skill acquisitions or the evolution of his/her performance) rather than comparing performances among students. This could be particularly appropriate for students with locomotor disabilities, such as cerebral palsy.

-Cooperative learning, which is the instructional use of small groups of students (in our case, with and without disabilities) who must work together to achieve a common goal (as developed in the study of Grenier, 2006). This common goal can only be accomplished if each student in the inclusive group works together (Grineski, 1996 and Johnson and Johnson, 1999). This pedagogical strategy is useful for collective activities that amplify social relationships among students. For example, in an orienteering team activity with a student with Down syndrome, the students could discuss the distribution of beacons according to their cognitive complexity in a way that allows them to be more efficient during the team race.

-Peer tutoring (as listed by Grenier, 2006) is an instructional strategy that provides a trained peer tutor to support a student with disabilities in PE courses. For example, in fitness choreography with a hyperactive student, the teacher could train a volunteer classmate to provide unidirectional tutoring. In this case, to increase the hyperactive student's concentration step by step, the peer tutor uses repetitive and rhythmic demonstrations. In fact, peer tutoring can promote equal participation among students with and without disabilities (Murata & Jansma, 1997) by increasing the activity engagement times for all students (Klavina, 2008) and by amplifying the instructional and physical interaction between students with and without disabilities (Klavina & Block, 2008).

6. Implications for further research

Ultimately, this systematic literature review on the inclusion of students with disabilities in PE from a teacher perspective highlighted the following:

-the factors that influence PE teachers' positive or negative attitudes and predispositions toward the inclusion of students with disabilities,

-the factors that can positively influence the inclusion of students with disabilities in PE classes, according to teachers' representations.

From this set of factors, we identified three types of training content to help PE teachers become more inclusive and accessible in their teaching. This training content forms the basis of the following research perspectives.

Regarding multidisciplinary training, it would be interesting to conduct a study to compare the representations and attitudes of PE teachers and those of their colleagues that teach other subjects. A quantitative study in the form of survey could be considered.

Regarding disciplinary didactic training, it would be important to investigate PE teachers' points of view regarding the changes and differentiations in their teaching content and didactic choices (disabled sports programming, modifications of traditional sports, individual goals, etc.) that they find necessary to ensure the participation of children with disabilities in their course. A qualitative approach involving interviews after the teachers are given descriptions of different students with disabilities (for example, their age and the type and severity of their disability) could help the teachers share their points of view and justify their educational choices.

Finally, regarding pedagogical disciplinary training, it would be interesting to observe the different types of instruction (classroom climate, style of intervention, the use of cooperative learning, the use of peer tutoring, etc.) that PE teachers have available to implement. Multiple case studies with observations and postsession interviews could add rich information for analysing teaching practices.

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