Disability in Physical Education Textbooks: An Analysis of Image Content

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The aim of this paper is to show how images of disability are portrayed in physical education textbooks for secondary schools in Spain. The sample was composed of 3,316 images published in 36 textbooks by 10 publishing houses. A content analysis was carried out using a coding scheme based on categories employed in other similar studies and adapted to the requirements of this study with additional categories. The variables were camera angle, gender, type of physical activity, field of practice, space, and level. Univariate and bivariate descriptive analyses were also carried out. The Pearson chi-square statistic was used to identify associations between the variables. Results showed a noticeable imbalance between people with disabilities and people without disabilities, and women with disabilities were less frequently represented than men with disabilities. People with disabilities were depicted as participating in a very limited variety of segregated, competitive, and elite sports activities.

Keywords: Disability; Images; Physical Education; Textbooks

The social model considers disability more as a social restriction that isolates and excludes a person from full participation in social life than a consequence of the particular conditions of the individual (Abberley, 1987). An important line of research that contributes to the identification of these social restrictions is the analysis of the role of culture in the social representation of disability. People with disabilities are not only disabled by material discrimination but also by prejudice. This prejudice is implicit in cultural representation, language, and the socialization of individuals in a community (Shakespeare, 1994). The textbook is an important socializing agent and communicator of values that can be used by the privileged social classes as a mechanism of social control (Apple, 1986; Martínez, 2002).
images that are published in textbooks become conveyors of the hidden curriculum. Images make it possible to construct powerful messages that unconsciously condition our behavior (Joly, 2003) and the consequent behavior of our schoolchildren. The messages transmitted in the images and text of curricular materials can influence the reinforcement or transformation of traditional roles and stereotypes related with disability (Shaffer & Shevitz, 2001). As a result of this ability stereotyping, students with disabilities are subject to low expectations (Wehmeyer & Schwartz, 2001). Furthermore, personal interactions in daily life and in schools are aimed at “healthy” people without disabilities and promulgate the message that there is no place in our society for people with disabilities or those that are categorized as “unhealthy” (López & Gauli, 2000).

Shakespeare (1994) explains prejudice against people with disabilities with reference to the process of the objectification of people with disabilities as “others,” based on the evident characteristics and limitations of their bodies. The “oblivion” of the body in social model theory has been referred to by Shakespeare and authors such as Ferreira (2009, 2011). Some types of physical activity, such as high-performance sport and instrumentalized physical exercise, can transform the body into a work station aimed at achieving the perfect body and express a logic of the subjection of the body to systematic discipline that is regulated by normalized mechanisms of capitalism that assume the natural insufficiency of people with disabilities, as promoted by medical science (Ferreira, 2009).

In Spain (National Institute of Statistics, INE, 2008), 85.45 people per thousand inhabitants have a disability, a figure that falls to 18.41 for those aged between 6 and 16. In this age group, the most common disabilities are communication (11.02); learning, knowledge application, and task development (10.17); written communication (9.2); self-care (8.04); and basic learning (8.02). The most frequently occurring types of impairment are osteoarticular (affecting 1,486,500 people), while mobility problems are the ninth most common (6.19).

The characteristics of the people with disabilities depicted in the textbook images were studied through photo-based content analysis. This research technique allowed the systematic collection and interpretation of contents in texts and pictures that were necessary to uncover and reveal the hidden meaning concealed in a message (Bardin, 1996; Krippendorff, 2004). The results of content analyses, however, must be understood within the context of their limitations. Content analyses cannot predict the interaction of a text with its audience and cannot uncover the intentions of the producers (Hardin & Hardin, 2005). This type of analysis concentrates on what is obvious and does not consider the possible latent focus (Delgado & del Villar, 1994). Although image content analysis is not able to determine whether people have a disability caused by an impairment that is not clearly visible in a photograph, the analysis is able to identify the inherent messages that are selected by publishers to represent the relationship between people with disabilities and sporting activities. A limitation of this study is that it concentrates on image analysis and only uses the text and paratext to contextualize the photographs and classify them; future research should include an integral classification of the information received by the student through the conjoint analysis of written and visual information. A number of authors (Abberley, 1987; Hardin, 2007; Sutherland, 1981) have commented on the stereotype that associates disability with the wheelchair.
and, consequently, with a type of impairment linked to a dependency that limits the corporal and motor diversity of this collective.

This study is a critical examination of the vision of disability and physical activity presented to our schoolchildren through the images portrayed in physical education textbooks in Spanish secondary schools. The Spanish education reforms of 1990 led to the development of more printed curricular materials for the subject of physical education. Although the full extent to which use is made of textbooks is still largely unknown, the interest of the publishing houses has undoubtedly increased the number of books that are in circulation (Molina, Devís, & Peiró, 2008). Research indicates that physical education textbooks are used by teachers for their own personal preparation (45.2%) or as classroom material (23.2%; Molina, Peiró, & Devís, 2004).

Physical Education and Educational Inclusion

Both international legislation, through the European Union Convention on the Rights of Persons with Disabilities (United Nations, 2006) or the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions European Disability Strategy 2010–2020: A Renewed Commitment to a Barrier-free Europe (European Commission, 2010), and Spanish national legislation, through the Spanish Organic Law on Education (2006), emphasize equity, equality of opportunities, inclusive education and no discrimination as principles that must act as a compensating element for inequalities derived from disability.

In the last years, Inclusive Physical Education has been the subject of considerable attention within the educational system (Block & Obrusnikova, 2007). In Spain, inclusion is a legislative precept that supposes all students share the learning process with the necessary pedagogic and social support that enriches the diversity and cohesion of the group in addition to offering higher learning expectations for all (Ríos, 2009); segregated activities are therefore not considered as inclusive. This policy of inclusion has had limited impact in the physical education classroom. The last few years have seen the instigation of processes aimed at improving attention to classroom diversity that can overcome teacher burnout derived from infrastructure difficulties, social problems, dealing with students with disabilities, the practice of physical education teaching itself (given the low regard in which the subject is held), the lack of training, the complications of interdisciplinary work, and the attitudes of the student group, etc. (Ríos, 2009). The socialization of the student in the physical education classes cannot be analyzed independently of the other educational situations or without recognizing the continuous process of the interiorization of social norms and the construction of personal identity (Ríos, 2012). The attitudes and intentions of students without disabilities play a significant role in the success of the inclusion of students with disabilities in physical education classes (Obrusnikova et al., 2003; Slininger et al., 2000). “Inclusion rejection” is the nonacceptance of adaptations designed by the teachers to facilitate active and effective participation in the physical education class. The removal of this barrier requires the implementation of a process of raising awareness and sensitization (Ríos, 2009) where school textbooks can play an important role.
Textbooks, Minorities, and Disability

Textbooks present apparently indisputable ideas and legitimize a specific version of society. They are not generally interested in alternative viewpoints or visions of the world around us. The neutral presentation concentrates on creating the educational texts with techniques of normalization, homogenization, and classification (Knudsen, 2005). The theory of intersectionality has been defined with the intention of analyzing how different social and cultural categories interact in textbooks. “Intersectionality may make us aware of the complexity, and the ways textbooks reduce, exclude and include categories and identities: curriculum subject or interdisciplinarity, pupilness, nationality, ethnicity, gender, sexuality, dis/ability and class” (Knudsen, 2005, p. 74). Whilst gender and racial stereotypes have often been the subjects of research analysis, questions concerning the portrayal of disability in textbooks have largely been ignored (Sleeter & Grant, 2011). Taub and Fanflik (2000) looked at introductory sociology textbooks published between 1996 and 1998 and found that there was very little attention paid to disability or people with disabilities. A decade later, research by Goldstein, Siegel, and Seaman (2009) that analyzed introductory psychology textbooks and research by Sleeter and Grant (2011) that examined social studies textbooks, reading and language arts textbooks, science textbooks, and mathematics textbooks, concluded that people with disabilities were underrepresented in these textbooks. Other studies for primary school and infant school have indicated that textbooks continue to depict and illustrate a world that is exclusively populated by physically robust individuals and people without disabilities with virtually no references to people with disabilities (Torres, 2008).

Physical Education Textbooks

The use of textbooks in physical education is no longer innovative (Ramírez, Valero, & Claret, 1999), although research on physical education textbooks is still in its infancy. The work of authors such as Devís and Peiró (2003, 2004) and Ramírez, Valero and Claret (1999) would appear to indicate that this situation is changing. Physical education teachers are starting to use textbooks for theoretical orientation and this new context requires the study of the printed curricular material as a legitimate line of research on physical education didactics. When research on physical education textbooks has analyzed the representation of minorities, the conclusions have always concurred, as Sparkes (2002) has commented:

. . . people who are not usually heard because their points of view are defined as unimportant or difficult to access by those in power. For example, the voices of children; women; people with disabilities; members of minority groups; lesbian, gay, and bisexual persons; and lower participants in formal organization often have their voices silenced because they are stigmatized by those operating in the mainstream culture. (p. 20)

Studies that examined physical education textbooks have revealed an asymmetry in the ratio of females to males: Botelho, Silva, Queirós, and Caetano (2008) in Portugal; Hildreth (1979) in United States; Kirk, Land, Patterson, and Thomas (1985) in Canada; Scharagrodsky, Manolakis, and Gosende (2003) in Argentine; or
Táboas-Pais and Rey-Cao (1990); and Sparkes (2002) in England. All these works revealed gender bias and stereotyping in the educational materials.

Hardin (2007) reported that only a handful of studies have focused on the inclusion of people with disabilities in physical education textbooks. Hardin and Hardin (2004) found that around half of school textbooks have no images that refer to disability; furthermore, of the total number of images in the textbooks that they analyzed, just 0.6% were, in some way, related to disability. In the textbooks analyzed by Botelho et al. (2008) there were no references at all to disabilities; people with disabilities are ignored and treated as if they do not exist. On the occasions that they are visible, people with disabilities are seen as receiving help from others and they do not participate in an integrated manner (Hardin & Hardin, 2004; Hardin, 2007). The implication is clear: People with disabilities need help to participate in sports. Moreover, while people without disabilities are photographed participating in all kinds of games, people with disabilities are generally shown in wheelchairs and involved in a very small range of activities.

**Physical Activity and Disability**

While it is true that there are very few studies that have looked at the representation of disability in physical education textbooks, there are some that have analyzed the inclusion of people with disabilities in physical activity and sports. Some of this work has drawn attention to the invisibility and stereotyping of disability that takes place in the mass media (e.g., Schantz & Gilbert, 2001; Schell & Rodríguez, 2001). Research shows that athletes and sportspeople with disabilities are not popular and are not often seen in the press and on television. As evidenced by some of the literature published in Spain, they continue to be sport’s “Forgotten Heroes” (Fernández, Fernández, Mendoza, & Muiña, 1999); a study by López (2005) corroborated this description. An analysis of newspapers from four European countries (Germany, England, Spain, and France) during the Sydney 2000 Paralympic Games, noted that there were almost no advertising images that represented people with disabilities. In the few cases that people with disabilities are shown, the wheelchair is commonly used as the emblem or symbol of disability (De Léséleuc, Pappous, & Marcellini, 2009).

Pappous et al. (2007) studied media representation of Paralympic athletes in images of the Paralympic Games of 1996, 2000, and 2004 in reports published by eight Spanish newspapers; they found an increase in photographic reports from 1996 to 2000, but there was a decrease in 2004. Moreover, the authors concluded that the photographs made no contribution to the destigmatization of disability and simply reproduced stereotyped images. According to Thomas and Smith (2003), coverage of the Paralympics by the British press has also tended to reinforce stereotypes. They analyzed the reporting by six British newspapers of elite athletes with disabilities who competed in the XVII Commonwealth Games that took place in Manchester in 2002. They recognized that the reports reflected the growing inclusion of people with disabilities in society in general but felt that a possible consequence of showing people with disabilities as successful Paralympic athletes is that it could be more difficult for people with disabilities to participate in sports at a recreational level. Disability is only depicted at high level competition sporting events, participation
in general physical and sporting activities is still ignored by the media. It should be pointed out that these results refer to an analysis of the national mass media, and it is possible that a study of the local media could reach different conclusions.

When gender and disability have been jointly studied, results show a strong bias toward male representation (Thomas & Smith, 2003). One qualitative analysis concluded that sportswomen with disabilities exteriorize emotional attributes that are different to men with similar characteristics. Sportswomen with disabilities are portrayed as fragile, dependent, passive, and incapable of controlling their feelings (De Léséleuc et al., 2009; Pappous et al., 2007). This suggests that women with disabilities suffer a double discrimination that is based on disability and sex (Hargreaves & Hardin, 2009).

Although it is not the main interest of this paper, it is worth taking a brief look at studies that have examined the technical characteristics of images as strategies for manipulation of the mass media. From a semiotic perspective, the camera (through focusing, positioning, lighting, etc.) can be used to emphasize, dramatize, or disguise the images that are shown, transmitting messages that are full of subjectivity. Camera angles are derived from the angle of vision adopted by the camera in the representation of the scene or person that is photographed. The height from which the camera offers the observer the image of the subject is one of the factors that defines the point of view from which the observer is invited to contemplate the reality that is being represented (Lomas, 1996). For example, low-angle shots (taken from below, looking up at the subject) give the impression of power and importance; high-angle shots (taken from above the subject) give the impression of weakness and less importance, while eye-level shots (taken from the height of the eyes of the observer) give a more neutral “normal” representation of the subject (Alonso & Matilla, 1990). Research in Spain in this field has shown how the media are biased in their treatment of men and women: Women are more often filmed or photographed from a high-angle perspective, men from a low-angle (López, 2003), thereby depicting men as powerful and women as weak and of lesser importance. The male-female relationship of dominance and submission is evidenced by this abusive use of camera angles (Cantos, 2008). This same manipulation of images with regard to disability can reinforce hegemonic ideas of sport being the exclusive domain of people without disabilities, those considered as “healthy” individuals, compared with the inferior status of people with disabilities. The use of camera angles in the representation of disability in American sports magazines was studied by Marie Hardin and Brent Hardin (2005). Their results showed no significant differences in the camera angles of photographs of people with disabilities, but the authors underlined the importance of this technique: “. . . differences in camera angles in relationship to gender or disability would reflect differing framing of power, with the ‘up’ angle conferring power in the photo subject and the ‘down’ angle conferring it on the viewer” (Hardin & Hardin, 2005). The aforementioned studies lead us to consider the possibility that people with some type of disability, especially if they are women, are only occasionally featured in textbooks because they do not conform to the corporal stereotype that has been legitimized by the physical education culture. Furthermore, treating disability in this way may support a process of normalization of the differentiation of people with and without disabilities.
The objective of this study was the examination of photographic images related to disability in physical education textbooks. The following hypotheses were postulated:

1. People with disabilities are hardly represented in school textbooks.
2. People with disabilities are shown as participating in physical activities in a segregated manner, involved in activities that are exclusive to people with disabilities and separate from people without disabilities.
3. Women with disabilities are less represented than men with disabilities.
4. People with disabilities are generally shown participating in competitive sports, not in artistic physical activities, in the natural environment or playing games.
5. People with disabilities are generally shown participating in elite competitive sports.
6. People with disabilities are generally represented by impairments that require the use of a wheelchair.
7. People with disabilities are photographed from a high-angle, looking down at the subject.

Method

This was an empirical, descriptive, nonexperimental, and synchronic study, based on a series of images that were analyzed at a specific moment in time and with one collection of information phase.

Sample

The sample consisted of a total of 3,316 photographs. These images were taken from 36 textbooks published by 10 Spanish publishing houses. These textbooks were all the textbooks published in Spain between the years 2000 and 2006 (period that corresponds with the validity of one same education law) for physical education, written in Spanish and directed at Obligatory Secondary Education students within the Spanish educational system. The total number of photographs published in these textbooks was of 3,316.

Variables

The analyzed variables were camera angle, gender, kind of physical activity, field of practice, space, and level. Thus, images were coded for camera angle (the relationship between the camera and the object being photographed, e.g., the angle), gender (condition that establishes differences between males, females, and group of males-females), kind of physical activity (name of different physical activities or sport disciplines), field (context or situation where the activity is practiced), space (physical environment where the activity is practiced), and level (level of dedication, seriousness and/or professionalism). Table 1 includes some of the coding scheme definitions used in this study.
### Table 1  Coding Scheme

<table>
<thead>
<tr>
<th>Categories / Indicators</th>
<th>Operational Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. Technical characteristics</td>
<td></td>
</tr>
<tr>
<td>0.1. Type of focus</td>
<td></td>
</tr>
<tr>
<td>0.1.1. High-angle</td>
<td>The shot is taken from above; the camera looks down on the subjects.</td>
</tr>
<tr>
<td>0.1.2. Low-angle</td>
<td>The shot is taken from below; the subjects appear to be above the observer.</td>
</tr>
<tr>
<td>0.1.3. Eye-level</td>
<td>Also known as the “natural” focus. The camera is placed at the eye line.</td>
</tr>
<tr>
<td>2. Physical activity</td>
<td></td>
</tr>
<tr>
<td>2.1. Kind of physical activity</td>
<td></td>
</tr>
<tr>
<td>2.1.1. Team sports</td>
<td>Sports played in teams, in collaboration/opposition. For example, goalball, basketball, handball, football, hockey, rugby, baseball, water polo, polo, and volleyball.</td>
</tr>
<tr>
<td>2.1.2. Individual sports</td>
<td>Sports where participation is individual, without team mates and/or which can be played against an opponent or adversary. For example bocce, swimming, track and field, gymnastics, rowing, cycling, tennis, boxing, judo, golf, motorcycling, or weightlifting.</td>
</tr>
<tr>
<td>2.1.3. Artistic</td>
<td>Activities that use the body as the means for artistic expression. For example, activities related to mime, theater, drama, or dance.</td>
</tr>
<tr>
<td>2.1.4. Fitness and physical conditioning activities</td>
<td>Activities directed toward improving strength, speed, flexibility and/or resistance. For example, running, bodybuilding, stretching, aerobics, step, gap, spinning or aqua fit.</td>
</tr>
<tr>
<td>2.1.5. Physical activities in natural environments</td>
<td>Activities such as paragliding, bungee jumping, cycle touring, trekking, hiking, rock climbing, surfing, or rafting.</td>
</tr>
<tr>
<td>2.1.9. Games</td>
<td>Activities whose basic characteristic is the acceptance of simple rules that are adapted to the group. Some of these activities are known as “Traditional games.”</td>
</tr>
<tr>
<td>2.2. Field of practice</td>
<td></td>
</tr>
<tr>
<td>2.2.1. Competitive</td>
<td>Activities that belong to the field of institutionalized competition. The presence of referees, a playing field with the regulatory dimensions or numbers on shirts can indicate a competitive context.</td>
</tr>
<tr>
<td>2.2.2. Formal education</td>
<td>Activities framed in the context of formal education that take place in an educational center or school. Typical locations are the school gym, the playground, the dinner hall or the classroom.</td>
</tr>
</tbody>
</table>

(continued)
Table 1 (continued)

<table>
<thead>
<tr>
<th>Categories / Indicators</th>
<th>Operational Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2.3. Utilitarian</td>
<td>Activities that are closely related to the daily tasks carried out in a working environment, the home, shops, supermarkets, hospitals or health centers.</td>
</tr>
<tr>
<td>2.2.4. Others</td>
<td></td>
</tr>
<tr>
<td>2.3. Space</td>
<td></td>
</tr>
<tr>
<td>2.3.1. Outdoor sports</td>
<td>Activities that take place outside, “in the open air” in an area specifically devoted to physical activities. For example, playing fields or outdoor athletics tracks.</td>
</tr>
<tr>
<td>2.3.2. Natural environment</td>
<td>Activities that take place in an environment hardly or not at all modified by humans. Indicators are trees, the sea, rivers, mountains, woods, streams, and waterfalls. Images taken at ski resorts or campsites are also included.</td>
</tr>
<tr>
<td>2.3.3. Indoors</td>
<td>Activities that take place in a building that may or may not be designed for sports; activities that take place in a building or area that is specifically designed for physical activity, for example, a sports hall or weights room.</td>
</tr>
<tr>
<td>2.4. Level</td>
<td></td>
</tr>
<tr>
<td>2.4.1. Elite</td>
<td>People famous for the activity they carry out appear (elite sportspeople, famous dancers, actors, etc.) as well as indicators such as the presence of spectators or sponsors who make it possible to locate the action within Olympic Games, a league, a professional championship or any other type of spectacle of general interest.</td>
</tr>
<tr>
<td>2.4.2. Non elite</td>
<td>People who are not famous for the activity they carry out appear and there are no indicators, which make it possible to locate the action within Olympic Games, a league, a professional championship or any other spectacle of general interest.</td>
</tr>
</tbody>
</table>

Procedure

With the intention of optimizing the work and taking advantage of the findings from earlier studies applied to different media, a reconstruction on earlier coding schemes was applied, and it was guided by the literature review (Neuendorf, 2011) to define in an operative manner each of the categories and system indicators. The coding scheme employed for the content analysis was based on a compilation of categories taken from López (2005). Variable categories used in other studies were incorporated, such as “field of practice” and “space.” The development of this coding scheme included five phases: an initial trial test, a second trial test, consultation with experts, a second consultation with experts, and triangulation with observers. The images used during the initial trial test, the second trial test, and
the triangulation with observers were not part of the sample; in fact, these images belonged to physical education textbooks published before 2000.

**Initial trial test.** The compilation of categories used by López (2005) was applied to a set of images taken from physical education textbooks. Themes that emerged during these initial viewings of the images also determined several other categories used in the research (Bardin 1996). In addition to the categories that a priori organized and systemized the test, the procedure was also exploratory; it allowed the researcher to identify new categories and indicators and eliminate others that were shown to be irrelevant with regard to the objectives of the analysis. The modifications carried out to the system of categories were the following: the elimination of categories proposed by López (2005), which proved to be non pertinent for the analysis of textbooks (advertising a product or product brands, among others); the restructuring of the category “kind of physical activity,” adding a greater number of indicators that allowed a more detailed analysis of the activities; and the incorporation of the indicator “indistinguishable” in all the categories.

**Second trial test.** A code and an operative definition were assigned to every dimension and category. Then, a second trial test was carried out to corroborate the validity of the categories. Images coded numbered 168.

**Consultation with experts.** Three experts in content analysis collaborated. Two of them, doctors in physical education, handle the content analysis as the main technique of their research. The third expert is doctor in philosophy and literature and has a BA in library science and documentation. She is the author of a number of studies based on the content analysis of images; she has taught several training courses and has published on the content analysis of documents and image analysis. This process was engaged to validate the coding categories. A questionnaire was prepared where the experts were asked their opinion about 5 items: adequacy of the coding scheme to study, thoroughness and mutual exclusion of the categories, clarity in the definitions writing, and minimization of the observer’s subjectivity. Data were collected through Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) and through complementary qualitative information.

**Second consultation with experts.** After applying the necessary modifications, the new coding scheme, the corrected definitions, and the questionnaire used in the first consultation were sent back to the same experts. All items received a rating of 4 or 5 by three experts.

**Triangulation with observers.** Three coders were trained on the coding system and codebook, using images from textbooks that were not in the final sample. The objective of session training was to familiarize the researchers with the pictures, the coding system, the codebook and the registering task. Training continued until agreement was reached. Once training was finished, the three coders were randomly assigned 74 images from textbooks. Thirty of them were selected by a simple random sampling through a table of random numbers, and forty-four had been selected through a nonrandom sampling. The selection criterion was that all the indicators in the coding scheme had to be codified. Then, intercoder reliability statistics was calculated to assess agreement. Cohen’s kappa resulted were greater than .80. Therefore, kappas reliability was satisfactory for all categories.
Conceptual backing (related theory and previously published data that provided a rationale for each of the coding categories), an initial trial test, a second trial test, consultation with experts, a second consultation with experts, and triangulation with observers were the efforts made to check the reliability and validity of the coding scheme.

Analysis and Data Processing

All images were digitized to facilitate the researcher’s coding work. Next, the registering process was carried out manually, using a chart for each textbook and divided into several sessions to prevent mistakes resulting from the observer’s fatigue. During the coding process, the 3,316 images were classified, based on all the indicators that make up the category system, and were assigned the corresponding code. In the codification process, the images were compared with the texts that they referred to in the books; that is to say, if an image was linked to a text or paratext that indicated that the subjects had a disability, they were put in that category even if the disability was not evident from the observation of the photograph. The statistical analysis was carried out using the software SPSS 15.0 for Windows. The processing of the information involved descriptive univariate analysis and associative measures between the different variables or categories (bivariate analysis). Contingency tables were used to compare the observed frequencies and percentages. The Pearson chi-square statistic significance level was fixed at 5% ($\alpha = .05$) and it was used to identify associations between the variables. This type of chi-square test is used to determine whether two variables (where each variable has two or more categories) are statistically independent (Kirk, 2008). The differences as between the observed and expected frequencies allow this analysis. The expected frequencies were calculated by supposing that the null hypothesis that was tested is true. The model’s expected value is the number of cases that would be expected if there were no relationship between the two variables, that is to say, if the differences could be explained by chance. The corrected normalized residuals were used with the purpose of being able to compare results, because otherwise the marginal values, the sample size, and the number of cases in which each remainder was based would have prevented that comparison (Díaz de Rada, 1999). For the confidence level set for this study (95%), the corrected normalized residuals indicate that the difference between the frequency observed and the expected one is high when its absolute value is above 1.96. In this way a corrected normalized residual absolute value that appears in a box that is above 1.96 indicates that there are more cases if it is positive, or less if it is negative, than there should be in that box if the values were independent. On the other hand, a value between ± 1.96 indicates that the difference between the observed frequency and the expected one is small whereby the variables in that box behave independently.

Results

Hypothesis 1

People with disabilities are hardly represented in physical education textbooks. Of the 3,316 photographs that were analyzed, only 45 showed adapted physical activities and/or people with disabilities: 1.36% of the sample. Two of the ten publishers in the sample had more than 1.5%, while three publishers did not include any images of people with disabilities in their textbooks (see Table 2).
Hypothesis 2

People with disabilities are shown as participating in physical activities in a segregated manner, involved in activities that are exclusive to people with disabilities, separate from people without disabilities. Of the 45 photographs that included people with disabilities, 37 were in chapters dedicated to adapted sports. The three publishers that used the most images of people with disabilities did not integrate these images into the official physical education curriculum but included them in chapters on adapted sports as a separate section; in addition, these sections were not included in the textbooks for each year of secondary school education. There were no photographs that showed people with disabilities participating in an integrated manner with people without disabilities.

Hypothesis 3

Women with disabilities are less represented than men with disabilities. A gender analysis of the people with disabilities that featured in the textbooks produced the following results: 57.9% were of men, 23.7% women, and 18.4% included both men and women. The results showed that the predominant gender was male.

Hypothesis 4

People with disabilities are generally shown participating in competitive sports, not in artistic physical activities, in the natural environment or playing games. The analysis of the participation of people with disabilities in the physical activities depicted in the textbooks revealed significant differences in comparison with people without disabilities in terms of the type, field of practice, space, and the level of activities undertaken. In all these relationships (disability–type of activity; disability–field of

Table 2  Images of Disability in Physical Education Textbooks

<table>
<thead>
<tr>
<th>Publisher</th>
<th>Total Images</th>
<th>Images of Disability</th>
<th>Images of Disability %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almadraba</td>
<td>217</td>
<td>1</td>
<td>0.46</td>
</tr>
<tr>
<td>Anaya</td>
<td>143</td>
<td>2</td>
<td>1.40</td>
</tr>
<tr>
<td>Bruño-Pila Teleña</td>
<td>195</td>
<td>1</td>
<td>0.51</td>
</tr>
<tr>
<td>Edelvives</td>
<td>1001</td>
<td>14</td>
<td>1.40</td>
</tr>
<tr>
<td>Laberinto</td>
<td>268</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Octaedro-Pila Teleña</td>
<td>226</td>
<td>13</td>
<td>5.75</td>
</tr>
<tr>
<td>Paidotribo</td>
<td>100</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Santillana</td>
<td>145</td>
<td>0</td>
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</tr>
<tr>
<td>Serbal</td>
<td>630</td>
<td>1</td>
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</tr>
<tr>
<td>Teide</td>
<td>391</td>
<td>13</td>
<td>3.32</td>
</tr>
<tr>
<td>Sample total</td>
<td>3,316</td>
<td>45</td>
<td>1.36</td>
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practice; disability–space; disability–level), the Pearson Chi-square test ($\chi^2$) gave a p-value less than .001 for a significance level of .05. These findings confirmed that there was a clear difference between people with and without disabilities in relation to the kind of physical activity, the field of practice, space, and level. People with disabilities were not shown as participants in physical education, recreational physical activity, or physical activity in a natural environment, compared with people without disabilities. Of the total number photographs that featured people with disabilities, 20 (44.4%) were involved in a team sport, 20 (44.4%) were playing an individual sport, and 5 (11.1%) they were not participating in a physical activity. Of all the photographs, 57.7% were of athletics or basketball, 16 photographs were of athletics, and 10 photographs were of basketball. There were 7 images of goalball, 3 of volleyball, 1 of boccia, 1 of tennis, and 1 of table-tennis. None of the 36 books in the sample included photographs of people with disabilities participating in any other type of sport or activity; there were no images of physical artistic expression, activities in a natural environment, or physical conditioning exercises or games, despite the fact that all of these are part of the official physical education curriculum.

**Hypothesis 5**

*People with disabilities are generally shown participating in elite competitive sports.* The majority of photographs that included people with disabilities involved competitive activity. Of the 45 photographs, 33 (73.3%) were taken in the context of institutionalized competition. There were no photographs of people with disabilities in educational or utilitarian contexts nor were there photographs of people with disabilities in a natural environment. In the process of the codification of the variable of level, there were 10 lost cases (photographs in which it was impossible to distinguish the level of the activity). The results demonstrate that people with disabilities were depicted as participants in elite competitive sports more often than people without disabilities. Of the 35 photographs that could be codified, 28 (80%) were of elite sporting events, for example, Paralympic Games. Only 7 images showed activities that were not based on the target of maximum sporting achievement but on the simple objective of participation.

**Hypothesis 6**

*People with disabilities are generally represented by impairments that require the use of a wheelchair.* In 9 of the 16 photographs of athletics, people were in wheelchairs. The other 6 featured visually impaired participants. One photograph showed a man with Down’s syndrome. Ten photographs were of basketball; in 9 of these, the participants were in wheelchairs and one photograph was of a woman with Down’s syndrome. Of the 45 photographs that were codified, 24 of these people were in wheelchairs (53.3%).

**Hypothesis 7**

*People with disabilities are usually photographed from a high-angle, looking down at the subject.* Semiotic analysis of the images revealed that the majority (57.8%) were from a midrange perspective, which can be considered as neutral. However,
were from a high-angle, which gives a greater impression of weakness. Only two photographs (4.4%) were taken from a low-angle, giving the adapted physical activities an air of importance and the participants a more powerful and confident appearance. The calculation of corrected typified residues confirmed that this was a statistically significant relationship. The probability that people with disabilities are photographed from a high angle is significantly greater than that which would be expected if the variables were independent (a typified residue of 2.3), while the possibility of being photographed from a low-angle is significantly smaller (a typified residue of -2.3).

Discussion and Conclusions

People With Disabilities: Our Forgotten Citizens

**Hypothesis 1.** *People with disabilities are hardly represented in school textbooks* — was confirmed. People with disabilities and adapted physical activities are only sporadically represented in photographs in physical education textbooks used in obligatory secondary school education. To a certain extent, the textbooks that have been analyzed contribute to the invisibility and exclusion of this group of people and reinforce the inequalities derived from disability. The exclusion of people with disabilities from physical education textbooks has previously been demonstrated and commented on by authors such as Botelho et al. (2008), Hardin and Hardin (2004), Sleeter and Grant (2011), and Torres (2008).

**Hypothesis 2.** *People with disabilities are shown as participating in physical activities in a segregated manner, involved in activities that are exclusive to people with disabilities, separate from people without disabilities* — was confirmed. In the photographs analyzed in this study, the individuals with disabilities that were featured were not shown participating in sports with their people without disabilities peers. Furthermore, and in line with the findings of Hardin and Hardin (2004), the images of disability were very often confined to specific sections and chapters on adapted sports, something that does not favor inclusion but continues to divide people with disabilities from people without disabilities. This makes it more difficult for children and adolescents without disabilities to consider the presence of peers with special educational needs as something habitual and normal. The physical education curriculum must encourage and foster the inclusion of all students, with and without disabilities (Haycock & Smith, 2010). School textbooks could be a channel for transmitting positive and constructive attitudes but at present, they do not reflect classroom diversity. As with other research results (Hardin & Hardin, 2004; Hardin, 2007), the students with disabilities are shown taking part in segregated activities, hindering the development of inclusive attitudes (Ríos, 2012).

**Hypothesis 3.** *Women with disabilities are less represented than men with disabilities* — was confirmed. Textbooks, regardless of their subject, persist in giving greater prominence to men than women. Double discrimination (gender and disability) has been reported in a number of other studies on school materials (Shaffer & Shevitz, 2001) and media representation of sport (Hargreaves & Hardin, 2009; De Léséleuc et al., 2009; Pappous et al., 2007).
Restrictions on People With Disabilities and Physical Activity

**Hypothesis 4.** People with disabilities are generally shown participating in competitive sports, not in artistic physical activities, in the natural environment or playing games — was confirmed. In addition to the generalized exclusion of people with disabilities revealed in this analysis, it was also clear that there were significant differences in terms of the variety of activities. The large range of sports and activities in which people without disabilities were featured was in sharp contrast to the restricted number of activities that involved individuals with disabilities. This finding corroborates the results of the work of Hardin and Hardin (2004). Sports featured time and time again, replicating stereotypes that become ingrained in the minds of the school students. Basically it would appear that people with disabilities are restricted to taking part in sports. There were no references to corporal and artistic expression, activities in the natural environment, or physical conditioning exercises and games, even though all these are included in the contents of the physical education curriculum.

**Hypothesis 5.** People with disabilities are generally shown participating in elite competitive sports — was confirmed. As with the mass media, it seems that the only physical activities in which people with disabilities participate are those of the Paralympic Games (Thomas & Smith, 2003). There were no images of participation in schools or educational centers or simple recreational contexts. The approximation of adapted sport to elite competition overshadows and obscures the participation of people with disabilities in general physical activity, sport for all, or for simple leisure and recreational purposes. People with disabilities are represented in physical activities associated with the need for possession of a productive body for the logic of the sporting system. Competitive sport legitimizes disabled bodies by submitting them to the demands of performance and motor efficiency (Ferreira, 2009). People with disabilities are not shown in contexts that involve other forms of motor expression where they are not submitted to such disciplined practices and criteria inherited from nondisabled bodies.

**A Discriminatory Vision of Disability**

**Hypothesis 6.** People with disabilities are generally represented by impairments that require the use of a wheelchair — was confirmed. As De Léséleuc et al. (2009) noted, in the textbooks analyzed in this work, there was an exaggerated use of the wheelchair as a symbol of disability in sport, masking and disregarding the many other types of disabilities.

**Hypothesis 7.** People with disabilities are usually photographed from a high angle, looking down at the subject — was confirmed. The depiction of people with disability in the textbooks analyzed contrasted with the treatment of people without disabilities. Although the initial percentages did not allow for the establishments of definitive patterns of association, the calculation of typified corrected residues confirmed that there was a statistically significant relationship (a typified residue of 2.3 and −2.3). The use of high-angle shots gives the impression of weakness and insignificance. This observation coincides with the conclusions of López (2003) and Cantos (2008) in their studies of sex discrimination against women. Nevertheless,
in a study on images of disability in sports magazines, Hardin and Hardin (2005) found that people with disabilities were not framed differently by camera angle than people without disabilities; each group was depicted with a down angle in about 4% of images.

Far from contributing to the fight against discrimination and inequality, the textbooks analyzed in this study engender a stigmatized vision of disability with regard to participation in sport and physical activity. People with disabilities, especially women with disabilities, are only sporadically represented in physical education textbooks, and people with disabilities are not shown participating in sports with their people without disabilities peers. People with disability are fundamentally associated with sports, competition context, and elite competitive sports; the presence of people with disability in corporal and artistic expression, activities in the natural environment, or physical conditioning exercises and games is found to be restricted. These findings further highlight the need to increase awareness regarding the image content in physical education textbooks and the necessity to work to overcome stereotypes connected with people with disabilities and adapted physical activity. Images and text can help change this stereotyped view. Textbooks should include more people with disabilities, both in terms of numbers and in the depiction of a greater range of impairments, avoiding the excessive use of the wheelchair as an indicator of disability. There should also be more images of inclusive participation of people with and without disabilities involved and a more diverse variety of physical activities. Teachers, publishing houses, and education authorities must become fully aware of the contents of physical education textbooks to become involved in their improvement.

References


Táboas-Pais and Rey-Cao


