*Original article*

# Attitudes about inclusion by educators and physical educators: Effects of participation in an inclusive adapted physical education program

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**Abstract**—This study assessed the attitudes about the inclusion of students with disability by professionals in education and health, relative to their experience and training. We compared three groups: 20 teachers and trainees who worked in an adapted physical education program (GI); 75 professionals from the municipal education system of Rio Claro subdivided according to their experience—CGyes e CGno, respectively, with and without experience. We used the inventory adapted by Palla (2001) to assess participants' attitudes and self-concepts. Overall, individuals in the group that participated in the intervention maintained their tendency of being favorable toward inclusion. Teachers in regular school settings in the municipal school system of Rio Claro (São Paulo, Brazil), regardless of their experience with inclusive settings, remain mostly indecisive about the benefits of inclusion.

Keywords: inclusion, adapted physical education, attitudes

**Resumo**—"Atitudes de educadores e educadores físicos sobre inclusão. Efeitos da participação em um programa inclusivo de educação física adaptada." O presente estudo avaliou a atitude sobre a aceitação da inclusão de deficientes por profissionais da área de educação e saúde, conforme sua experiência e formação. Para isso, foram comparados três grupos: 20 professores e estagiários que atuaram em programa de educação física adaptada (GI); 75 profissionais da rede municipal de educação de Rio Claro, subdivididos conforme sua experiência—CGyes e CGno, com e sem experiência, respectivamente. Foi utilizado o inventário adaptado por Palla (2001) para avaliar as atitudes e o autoconceito dos participantes. Em geral, os indivíduos que participaram da intervenção mantiveram sua tendência favorável à inclusão. Os professores em contextos escolares regulares na rede municipal de ensino de Rio Claro (São Paulo, Brasil), independentemente da sua experiência com inclusão, continuam indecisos sobre os benefícios da inclusão.

Palavras-chaves: inclusão, educação física adaptada, atitudes

**Resumen**—"Las actitudes de los educadores y educadores físicos acerca de la inclusión . Efectos de la participación en un programa inclusivo de educación física adaptada." El presente estudio evaluó la actitud en relación a la aceptación de la inclusión de discapacitados por profesionales en el área de educación y salud, de acuerdo a su experiencia y titulación. Para ello, se compararon tres grupos: 20 profesores y practicantes que actuaron en el programa de educación física adaptada (GI), 75 profesionales de la educación municipal de Rio Claro, subdivididos de acuerdo a su experiencia—CGno y CGyes, respectivamente con y sin experiencia. Se utilizó el inventario adaptado por Palla (2001) para evaluar las actitudes y el autoconcepto de los participantes. En general, las personas que participaron en la intervención mantuvieron su tendencia favorable hacia la inclusión. Los profesores en entornos escolares regulares en las escuelas municipales de Rio Claro (Sao Paulo, Brasil), independientemente de su experiencia con la inclusión, siguen indecisos acerca de los beneficios de la inclusión.

Palabras claves: inclusión, educación física adaptada, actitudes

## Introduction

In Brazil, in the 1980s and 1990s, federal and state governments took initiatives to modernize laws related to the rights of people with disabilities (e.g., the Brazilian Federal Law, "Directives and Basics in National Education," 1996; LDB, 2000). They published specialized materials so that professionals and educators could update their practices

(Brasil, 1981, 1982), and developed programs to promote health, education, leisure and sport for people with disabilities (Guimarães, 2003; Mauerberg-deCastro, 2011; Mauerberg-deCastro, Palla, Campos, & Cozzani, 1999). The MEC-Multi-Year Plan Assessment Report of 2008-2011 revealed that the efforts had, at least in part, been successful. The report found that in 2009, of those enrolled in schools, "… more than 46% of children and young people with special educational needs were enrolled in regular schools." While these statistics reveal advances in opportunities for students with disabilities in the regular school system, a troubling trend remains: While it seems that school teachers and professionals recognize the positive value of inclusion, they continue to improvise their practices.

In North American schools, pedagogical practices "evolved" from a mixture of concepts from the social sciences, fragmented applications of behavioral psychology, and reductionist views about the intelligence of students under the premise of cognitive information processing and dualistic philosophy (Cunningham, 1992). From these confluences, curricula and teaching methods, tactics, testing and assessment strategies, behavioral management techniques in the classroom, educational research, learning resources, and ways of characterizing students were developed and applied (Mauerberg-deCastro, 2011). However, it wasn't until relatively recently—with the modernization of political views and school policies—that topics such as *diversity*, *freedom*, and *equal opportunities* were recognized as an integral part of a new philosophy, "education for life." This, as with other "rights-based" movements, suggests that successful inclusion of people with disabilities depends not only on knowledge and experience, but on favorable attitudes toward them—students with diverse needs and strengths. However, law enforcement and inclusion campaigns are not enough to change attitudes of people who discriminate against minorities (Mauerberg-deCastro, 2000). Unfavorable attitudes of teachers toward teaching students with disabilities can affect many aspects of school structure, including curricula, pedagogical approach, peer acceptance, and, ultimately, the equity with which knowledge is delivered. Likewise, unfavorable attitudes can negatively affect the learning potential of students with disabilities, and, consequently, limit their overall development (Palla & Mauerberg-deCastro, 2004).

As with family environments, school settings help to transmit values and beliefs. The simple act of referring a student to "special services" can attach the stigma of "difference," and prompts risk of rejection and segregation. While the provision of assistance and special services still predominate in segregated environments (e.g., institutions for individuals with severe disabilities), inclusive approaches in education create environments in which students without disabilities and their peers with disabilities can mutually exchange ideas and experiences (Mauerberg-deCastro, 2001, 2006a, 2006b). Such exchanges can be positive, but if not guided by a professional team, can at times be detrimental to everybody (e.g., bullying, exclusion, etc.). Inclusion requires teacher participation as an active element for effective learning by all students. Therefore, teacher training programs must include the continuing revisiting of concepts about diversity, the deconstruction of stereotypes, and discus-sions about ethical issues (e.g., fair and realistic criteria for academic performance assessment).

Numerous studies have found that attitudes of teachers vary according to the quality of prior contact with students with disabilities (Bines & Lei, 2011; Michailakis & Reich, 2009). For example, physical education teachers who have not had contact with students with disabilities, nor have had teacher training that includes pedagogical practices with heterogeneous groups (e.g., adapted physical education), do not consider themselves able to teach in inclusive environments, and tend to express unfavorable attitudes toward teaching students with disabilities (Aguiar & Duarte, 2005; Gutierres Filho, Monteiro, Silva, & Vargas, 2011; Palla, 2001).

Self-perceived competence is directly related to experiences in teaching students with disabilities and to participation in educational preparation courses in special education or adapted physical education (Block, Taliaferro, Harris, & Kraus, 2010; Gutierres Filho et al., 2011; Palla, 2001; Rizzo, 1984; Rizzo & Kirkendall, 1995; Rizzo & Vispoel, 1991). Block et al. (2010) examined perceived competence relative to a component of Bandura's (1997) social learning theory, *self-efficacy*. *Situational self-efficacy* is a specific form of *self-confidence*. That is, environment (physical, social, and school structure) and curriculum requirements bring together key elements for an individual's self-efficacy (the individual could be a student or a teacher). Self-efficacy increases the chances of successful teaching.

One integrated approach to teaching in inclusive environments is derived from combining *ecological* concepts developed by Gibson (1977) and those with *dynamic systems* theory (Haken, 1983). This approach is a viable option in inclusive adapted physical education classes (Klavinia & Block, 2008; Mauerberg-deCastro, 2001, 2006a, 2006b) because, as Mauerberg-deCastro (2006b) observed, the sources of constraints (organism, environment, and task) that are embedded in an adapted physical education class reflect the complexity, while at the same time the simplicity, of emergent behaviors (i.e., the adaptive phenomena that occur from effective learning). For example, complexity is illustrated by the many sources of constraints surrounding a student with a disability (e.g., his disability condition, personal history, previous experiences, beliefs and expectations about society, and other factors), the environment (e.g., the teacher, peers with and without a disability, the class settings, etc.), while he attempts to solve the task requirements. Given time, cooperative behaviors emerge in simple (behavioral) solutions (e.g., a team of soccer players whose members effectively combine a set of actions into one scoring kick).

An important example of cooperation in inclusive settings, through a dynamic systems perspective, is the

"peer tutor" strategy (matching pairs, with and without disabilities, in order to achieve successful learning by all) (Mauerberg-deCastro et al., 2013; Lieberman, Dunn, van der Mars, & McCubbin, 2000). Peer tutoring is an appropriate strategy for situations in which no specialized services are available, in classes with a large number of students or with a lack of equipment, and where students with disabilities need special attention. However, perhaps the most important justifications were revealed by research on the effects of the peer tutor model: increased speed of learning, motor development gains, improved social acceptance and superior sense of identity, among others (Block, 1995; Peters, 2009).

Experiences in inclusive settings are potentially influential in changing attitudes of teachers and professionals who work with groups with disabilities in regular school environments (Block et al., 2010; Kurniawatia, Minnaert, Mangunsong, & Ahmeda, 2012). However, it is possible that different components of attitudes affect teachers' perceptions of their own intentions from perceptions of self-efficacy. Studies show that having contact with students with disabilities in school alone does not ensure changes in the teachers' attitudes (Monteiro & Manzini, 2008). On the other hand, children who have contact with peers with disabilities during school show greater tolerance and a greater moral obligation toward inclusion than do those without contact (Gasser, Malti, & Buholzer, 2013). However, if such contact is not supervised throughout school routines, exclusion and harassment—which tend to increase in frequency with students' age—usually affect the educational activities, and prove to be especially damaging to students with disabilities (Michailakis & Reich , 2009; Wong, 2008).

In our study, we employed groups with and without disabilities, and the peer tutor model, as a strategy for teachers to improve their attitudes toward inclusion. This inclusion strategy required a teacher to manage the tutors' (without disabilities) performances as they attended to the needs of their peers with disabilities (i.e., learning, physical, and social needs). Our prediction was that, by integrating the experience of peer tutoring with their concepts of self-competence, or self-efficacy, their attitudes toward inclusion would improve.

The literature shows that, in most countries—as supported by campaigns by the UN Convention on the Rights of the Child in 1989, and the U.N. Convention on the Rights of Persons with Disabilities (2006), teachers tend to show favorable attitudes toward the inclusion paradigm, as long it is accompanied by resources and incentives for teacher training (Gerghut, 2010, Peterson, 2006; Gutierres Filho et al., 2011; Monteiro & Manzini, 2008; Kurniawatia et al., 2012). In fact, regardless of teachers' training experiences, students with disabilities at various stages of severity, who are included in regular schools, show better scores on academic tests and can more adaptively solve challenges presented by the community (Jordan, Schwartz, & McGhie-Richmond, 2009). However, with regard to access to education for students with disabilities, moral values and determinants may be more important to teachers' attitudes than logistics about resources and training methods (Michailakis & Reich, 2009).

The key question of this study, then, is based on the belief that the inclusion paradigm plays a positive role in education—on transforming teachers' beliefs about their instruction skills and their sense of self-worth, as well as on the social values expressed in their attitudes. They are measured here via their responses to questions about their experiences in an adapted physical education program that uses a peer tutoring strategy. Additional questions reflect our understanding that components of related attitudes include: a desire to be effective (or, the notion of self-efficacy), our beliefs and convictions expressed through own behaviors, and our recognition of social values attributed to inclusion. Therefore, this study assessed whether or not educators' and physical educators' attitudes toward inclusion—which reflect levels of acceptance by professionals in education and health—would favorably change after participation in an inclusive adapted physical education program. Comparisons were made with "teachers in training," (i.e., university graduate and undergraduate students), and in groups of teachers from the local municipal school system. In order to determine the effects of an intervention model using systematic teacher training on attitudes, all were subdivided into groups with experience with inclusion, and without.

## Method

### *Participants*

In order to assess the effects of participation in the intervention program, we recruited a group (CG) of 20 university students from our physical education program (four graduate and 16 undergraduate students; average age = 21.6 ± 5.9 yrs.), with experience in adapted physical education (males = 3; females = 17). They were invited to participate in an inclusive adapted physical education program for one entire academic year, between 2008 and 2009. Participation included attendance in biweekly, 1 ½-hr. sessions, totaling 60 sessions for the year. A second group of teachers and health professionals, all members of the municipal school system in Rio Claro, was invited to take part in this study. A total of 75 school professionals (average age = 38.4 ± 8.2 yrs.) took part in this study (males = 5; females = 70). Some had experience in teaching in the physical education area (n = 33), and others in other health and pedagogical areas (n = 42). These participants were separated into two groups, one with 47 participants (*with experience* in inclusive education) (CGyes), and a second with 28 participants (*with no experience* in inclusive education) (CGno). Participants in all groups signed a consent form approved by the Institutional Ethics Committee (UNESP/IB/CEP 4944).

### *Intervention*

Background: In 1989, the adapted physical education program (nicknamed "Proefa"), a university outreach program, was initiated at the São Paulo State University, city of Rio Claro, State of São Paulo, Brazil. Students with disabilities from local schools and institutions were invited to help provide learning opportunities for graduate and undergraduate students in the field of physical education and in other health-related areas. Now in its 25th year, Proefa has helped more than three hundred students put into practice the theories and techniques they learned through participation in this adapted physical education program, one of the first of its kind in the country. In 1999, the first experiences with inclusion were initiated, using a peer-tutor model. Proefa has been a laboratory for professional training, research, and service to the community for people with and without disabilities, with the goal of promoting inclusion, learning, teaching, and facilitating development and rehabilitation. In 2008, we expanded the peer tutoring model in order to enhance the sharing of experiences and responsibilities amongst students both with and without disabilities. Additional training was delivered to the tutors without disabilities (private, elementary and middle-school students, 5th- to 9th-graders) during additional 30-minute-sessions each week. Based on Klavina and Block's findings (2008), tutors were instructed to provide peer support in three areas: physical, social, and instructional support. Their participation in these behaviors was supervised by adult support personnel (i.e., teachers, teaching assistants, and project coordinator).

During their contact with peers with disabilities, the tutors' responsibilities were: 1. to learn how to interact with people with various disabilities, 2. to recognize their immediate needs, 3. to develop critical, age-appropriate thinking skills, and 4. to show initiative in establishing friendships and to be able to demonstrate empathy toward others, when appropriate. Physical and motor activities systematically included demands on social competence and cognitive structuring. Social demands included positive interactions with peers, demonstrating leadership, and optimizing the role of helper, among others. Cognitive demands included awareness of the spatial structure that was integrated into the classroom environment and activities (recognition of boundaries in the local school, access and prohibited areas, disciplinary routine, organizing circles, columns, rows, etc.), notions of time, duration of events, memory (notions of how long students will continue to play, what activities took place in earlier classes, and what would occur next), attention (anticipate consequences of behaviors, pay attention to relevant information reported by the teacher and displayed by peers), analytical skills related to concepts of contrast, order, and succession (know verbally how to integrate movement and concepts such as: right/left, up/down, top/bottom, yesterday/today/tomorrow, one, two, three, etc.., half/whole/ parts/separation/union, first/second/last, etc...), as well as recognize opportunities to apply body movements and associated concepts (e.g., force, inertia, acceleration, speed, balance, center of mass) and recognition of biomechanical maneuvers (e.g., use of techniques to rotate body, joint maneuvers, positioning to inhibit primitive reflexes in cerebral palsy, etc.). The tools used in the Proefa program include sports, dances, developmental activities, aquatic activities, activities using natural environment (parks and forest), and using animals (e.g., dogs). During delivery of the program, maximum participation and opposition to sedentary activities were emphasized (Mauerberg-deCastro, 2011; Mauerberg-deCastro et al., 2013).

### *Assessment procedure*

An inventory, adapted from Palla (2001), was used. The instrument consisted of questions that were designed to evaluate the attitudes of teachers in relation to teaching students with disabilities in inclusive settings. The instrument consists of 40 questions, each making a statement about inclusion. Twenty negative and twenty affirmative statements were constructed to test ambiguity of opinions (Lambert & Lambert, 1966). Four components in the formation of attitudes (i.e., attitude dimensions, DIM) were included: *intentions* (predisposition for behavior, i.e., motivation for teaching in inclusive settings) (DIM_I); *perceived self-efficacy* (ease or difficulty of performing the behavior, i.e., confidence of own skills and knowledge about teaching in inclusive settings) (DIM_II); *beliefs* (conviction toward own conceptions or own behavior, i.e., awareness of the importance of teaching in inclusive settings, or convictions about own behavior towards teaching in inclusive settings) (DIM_III); and, *subjective external norms* (social justification about a behavior, i.e., how society manifests cultural beliefs and provides a reality for procrastinating or facilitating teaching in inclusive settings) (DIM_IV) (See Table 1).

To quantify the overall score of attitudes, we employed a 5-point Likert scale: 1-strongly agree, 2- partially agree, 3- I have no opinion, 4- partially disagree, and, 5- strongly disagree. The sum of each point magnitude in this scale was divided into five categories (scores) with constant intervals in the transition from one category to the next.

### *Data analysis*

The total sum of the scores assigned to the 40 questions were subjected to a non-parametric statistical analysis using the Wilcoxon signed ranks test for a 2-tailed pair in order to identify differences between favorability category before (pre-test) and after (post-test) participation in the intervention program. Comparisons between the CGno and CGyes were made using the Mann-Whitney test for independent groups.

Since the scores for each attitude dimension were unequal (see Table 1), their percentage was converted to *z*-scores, and submitted to statistical analysis. The converted *z*-scores of participants of the IG were submitted to a two-

Table 1. Distribution of questions according to class of favorability toward inclusion in four attitude dimensions (adapted from Palla, 2001).

| Dimensions | Number of questions | Scores and respective category of favorability toward inclusion | Examples of questions |
|---|---|---|---|
| DIM_I *intentions* | 8 | 40-33: completely in favor<br>32-25: favorable trend<br>24-17: indecisive toward inclusion<br>16-9: unfavorable trend<br>Less than 9: completely unfavorable | Q. I would like to teach students with disability.<br>Q. I have no desire to teach students with disability. |
| DIM_II *perceived self-efficacy* | 8 | 40-33: completely in favor<br>32-25: favorable trend<br>24-17: indecisive toward inclusion<br>16-9: unfavorable trend<br>Less than 9: completely unfavorable | Q. To me, it would be easy to teach students with disability in inclusive settings.<br>Q. To me, it would be hard to teach students with disability in inclusive settings. |
| DIM_III *beliefs or convictions* | 10 | 50-41: completely in favor<br>40-31: favorable trend<br>30-21: indecisive toward inclusion<br>20-11 unfavorable trend<br>Less than 11: completely unfavorable | Q. I believe that inclusion is a real possibility for regular schools.<br>Q. I believe inclusion is impossible to be developed in regular schools. |
| DIM_IV *subjective external norms* | 14 | 70-57: completely in favor<br>56-43: favorable trend<br>42-29: indecisive toward inclusion<br>28-15 unfavorable trend<br>Less than 15: completely unfavorable | Q. Inclusive settings help to improve self esteem, self acceptance and sense of worth of students with disability.<br>Q. Inclusive settings lead to rejection of students with disability by their peers and make them feel rejected and devalued. |
| Total | 40 | 200-161: completely in favor<br>160-121: favorable trend<br>120-81: indecisive toward inclusion<br>80-41 unfavorable trend<br>Less than 40: completely unfavorable | |

way ANOVA (dimension [4] x intervention [before and after]), with repeated measures for both factors. *Z*-scores of the CG were submitted to a two-way ANOVA (dimension [4] x groups [CGno and CGyes]), with repeated measures for the first factor. When ANOVA identified main effect, we carried out Bonferroni *post-hoc* analysis to identify where the differences resided. Bonferroni *post-hoc* analysis uses *t*-tests for pairwise comparisons, and automatically adjusts the *p*-level for the number of comparisons in order to avoid *type I* error. When main or interaction effects resulted in significant differences, we computed the *effect size* using the *eta* squared ($\eta^2$) parameter. According to Thalheimer and Cook (2002), an *effect size* of 0.8 is large, 0.5 is medium or moderate, and 0.2 is small. The *p*-value was 0.05 for all statistical analyses.

## Results

Among the participants in the IG, twelve reported having experience with inclusion, while eight said they had no prior experience with inclusion. Statistical analysis comparing participants with and without experience in both pre- and post-test did not detect differences in their opinions. Therefore, these participants were integrated as a single intervention group.

In general, the results showed that the pre- and post-test scores of the IG participants remained unchanged, i.e., a favorable trend toward inclusion. During the pre-test, the IG showed a mean score of 156.35 (± 11.8), and in the post-test, a mean score of 156.5 (± 16.22) (Figure 1). The partici-

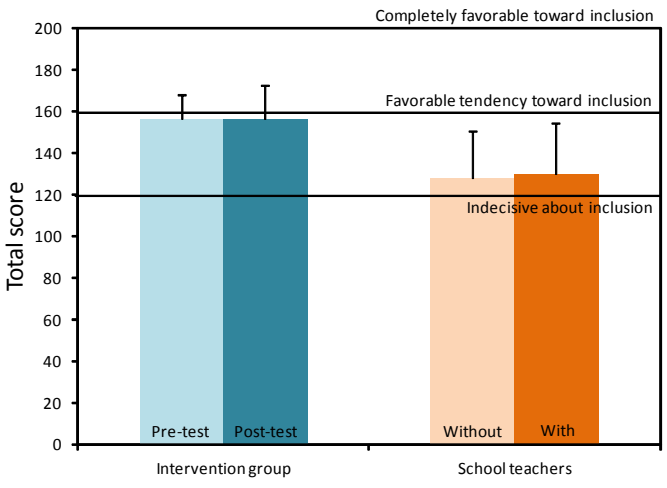


Figure 1. Total score in the attitude questionnaire for the IG group before and after intervention, and the CG without experience in inclusion (CGno) and with experience (CGyes).

pants from CGno and CGyes exhibited mean scores of 127.86 (± 22.6) and 130.13 (± 24.1), respectively.

When comparing the total scores from the pre-test and post-test, the intervention factor showed no significant differences for IG. The Mann-Whitney test for independent samples revealed significant differences between the total score achieved by participants in the IG during pre-test and the participants from CGno ($z$ = -4.006, $p \leq 0.001$), and the IG pre-test compared with CGyes ($z$ = -3.818, $p \leq 0.001$). The comparisons made between IG during post-test with the groups CGno and CGyes, all resulted in significant differences ($p \leq 0.001$) (Figure 1).

When the distribution of the scores of the IG was paired with the upper and lower value in each category, the Wilcoxon signed ranks test showed that the mean score in both pre- and post-test was significantly different from 200 points (i.e., upper value in the category "completely in favor" toward inclusion) ($z$ = -3.922, $p \leq 0.001$ and $z$ = -3.921, $p \leq 0.001$, respectively). These results illustrate a trend in attitudes still far from completely favorable toward inclusion. Indeed, when the total score of the IG group was matched with the score 160 ("favorable trend" toward inclusion), both pre- and post-test were statistically similar ($p \geq 0.001$, each).

The Mann-Whitney test for independent samples did not detect any difference between the CGyes and CGno total scores. When distribution of the scores by CGno was paired with the upper value 120 ("indecisive" toward inclusion), the Wilcoxon signed ranks test revealed no significant differences. This result implies that the CGno has no opinion about the value of inclusion. The CGyes scores deviated significantly above the value 120 ($z$ = -2286, $p$ = 0.022), but leveled with the lower limit of the category representative of "favorable trend" towards inclusion (i.e., 125). This result shows that this group is in transition from "indifference" to a "positive trend toward inclusion."

## *Opinions about inclusion: The Likert scale*

The figures below illustrate the total scores computed from each of the 40 questions, using the Likert scale score (i.e., score assigned equal to 5, 4, 3, 2, or 1) from the IG pre- and post-test. With the exception of the comparison between scores 1 and 2, which differ between pre-and post-test ($p \leq 0.001$), the sum of the scores assigned, with scores 5, 4, 3, and 2, were all similar. The CGno and CGyes scores were similar for all paired comparisons. Analyzed separately for the five possible scores, the CGno had similar frequency rates for values. In other words, scores 5 and 4, and scores 2 and 1 were equally distributed. Differences were observed for scores 4 and 3, and 3 and 2. The CGyes showed significant differences for all comparisons ($p \leq 0.001$), except between scores 2 and 1.

## *Attitude dimensions*

The IG's scores that participants assigned from the Likert

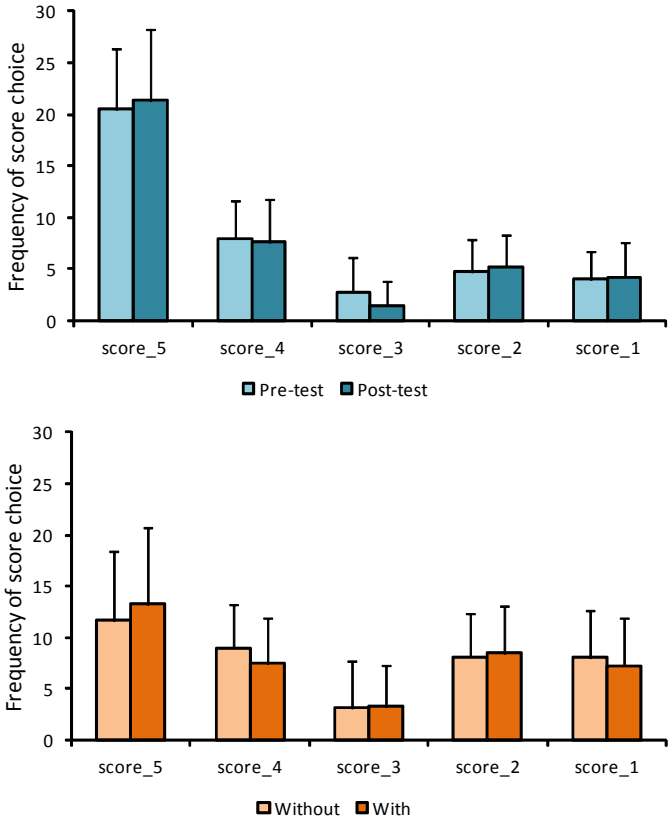


Figure 2. Frequency of the five scores from the Likert scale: IG group before and after intervention (top), and the groups without experience in inclusion (CGno) and with experience (CGyes) (bottom).

scale for each of the four attitude dimensions (i.e., intentions [DIM_I], self-efficacy [DIM_II], beliefs or convictions [DIM_III] and subjective external norms [DIM_IV]), were converted into z scores and then submitted to an ANOVA with intervention (pre- and post-test) and dimensions (4), with repeated measures on both factors. The results showed a significant effect for dimensions ($F_{3, 57}$ = 59.16, $p \leq 0.001$; $\eta^2$ = 0.76). A significant interaction ($F_{3, 57}$ = 2.82, $p$ = 0.047; $\eta^2$= 0.13) indicates the evolution of the DIM II score after intervention when compared to other scores that tended to remain unchanged or regress slightly (Figure 3). In separate comparisons of each DIM between pre- and post-test, the *post-hoc* Bonferroni test failed to detect any differences. A *post-hoc* Bonferroni analysis revealed differences between all comparisons of DIM ($p \leq 0.001$), except between DIM DIM III and IV, both pre- and post-test. It is important to note that, with the exception of DIM II, the other DIM, in both situations—pre- and post-test, scores were closer to the upper value of the category ("favorable trend" toward inclusion).

For the CGno and CGyes groups, the two-way ANOVA with dimensions (4) and groups (CGno x CGyes), with repeated measures for the first factor, showed a significant

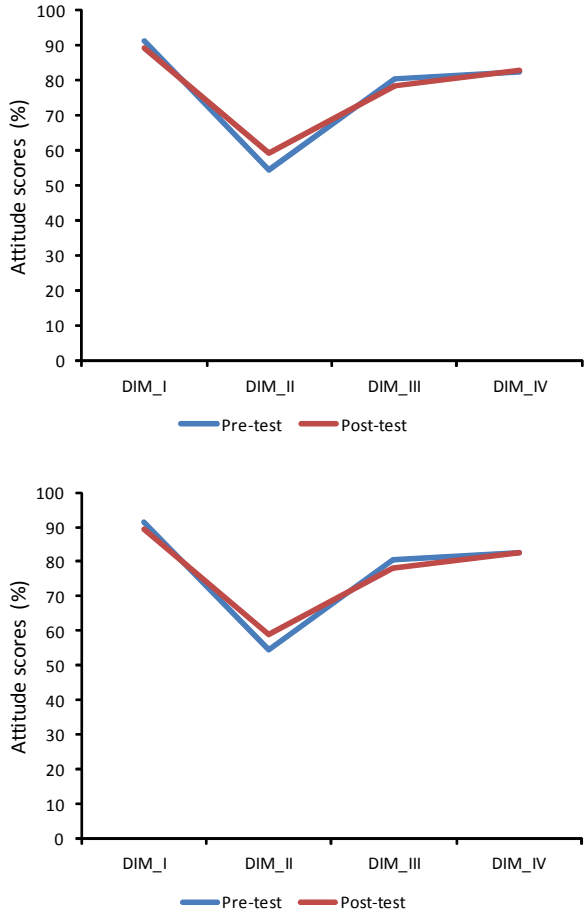


Figure 3. Attitudes scores (%) in each of the four attitude dimensions for the IG group, before and after intervention (top), and CGno and CGyes (bottom).

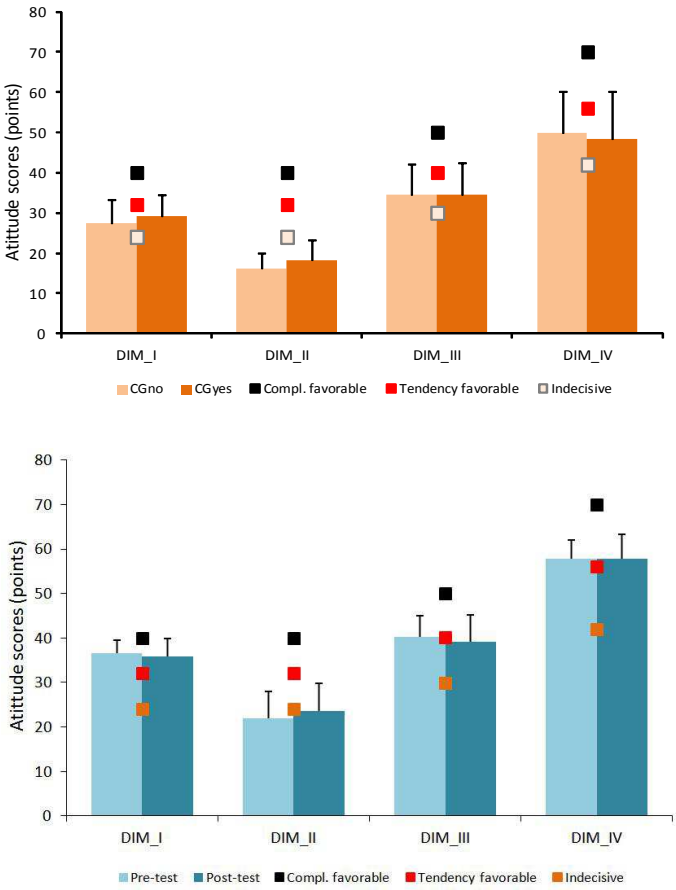


Figure 4. Attitude scores in each of the four attitude dimensions for the IG pre- and post-test (left side), CGno and CGyes groups (top), and respective comparisons with the upper scores predicted in each dimension for "completely favorable toward inclusion," "tendency favorable toward inclusion," and "indecisive toward inclusion."

effect only for the factor dimension ($F_{3, 219} = 111.48$, $p \leq 0.001$; $\eta^2 = 0.60$). A *post-hoc* analysis revealed that for the CGno group, DIM I differed from DIM II, and DIM II differed from the others ($p \leq 0.001$). For CGyes, DIM I differed from DIM II and DIM III ($p \leq 0.005$); DIM II differed from DIM III and IV ($p \leq 0.001$). Figure 4 illustrates these differences and contrasts with the upper values expected in each dimension.

The folowing figures illustrate the distribution of scores along the 5-point Likert scale for each dimension. Figure 5 shows that, for the IG group, DIM I, III, and IV were attributed more often with high scores than was DIM II. For both pre- and post-test, frequency of attributed scores was similar. In DIM II, the frequency of attributed scores varied along the Likert scale.

Figure 6 illustrates the CGno and CGyes groups' attitudes, and displays the distribution of chosen scores along the four dimensions. No clear trend is noted. The frequency of responses for each score on the Likert scale generally remained below 50%. In DIM II, group CGyes chose score 5 more often than other scores, unlike the CGno group. CGno group showed a reverse trend (i.e., with a higher frequency on the 1_score).

## *Relationship between positive and negative questions*

None of the comparisons between positive and corresponding negative questions correlated in either pre-test or post-test for the IG group. Positive responses were highly correlated between pre- and post-test, as well as the negative questions ($r = 0.79$, $p \leq 0.001$, $r = 0.95$, $p \leq 0.001$). This means that each individual in the IG group chose similar scores for each individual question before and after intervention. When scores in individual questions were correlated between positive and negative statements, a high correlation was detected in the pre- ($r = 0.70$, $p \leq 0.001$) and post-test ($r = 0.83$, $p \leq 0.001$). Neither CGno or CGyes showed a correlation between positive and negative questions.

Correlation values for each attitude dimension, with comparisons between positive and negative questions, are shown in Tables 2 for the IG, and Table 3 for the CGno and CGyes groups.

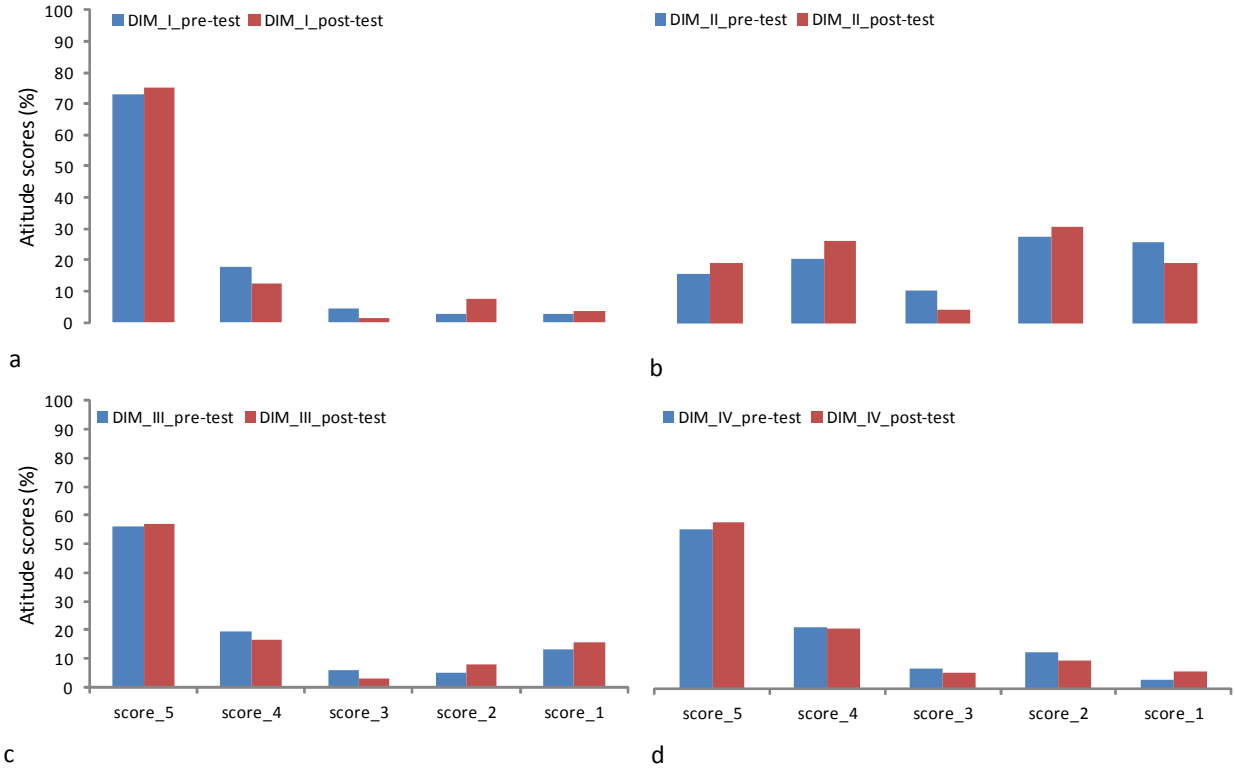


Figure 5. IG frequency of responses (%) for the 5 scores of the Likert scale in each of the four attitudes dimensions: DIM I (a), DIM II (b), DIM III (c) and DIM IV, (d) and for the IG before and after participation.

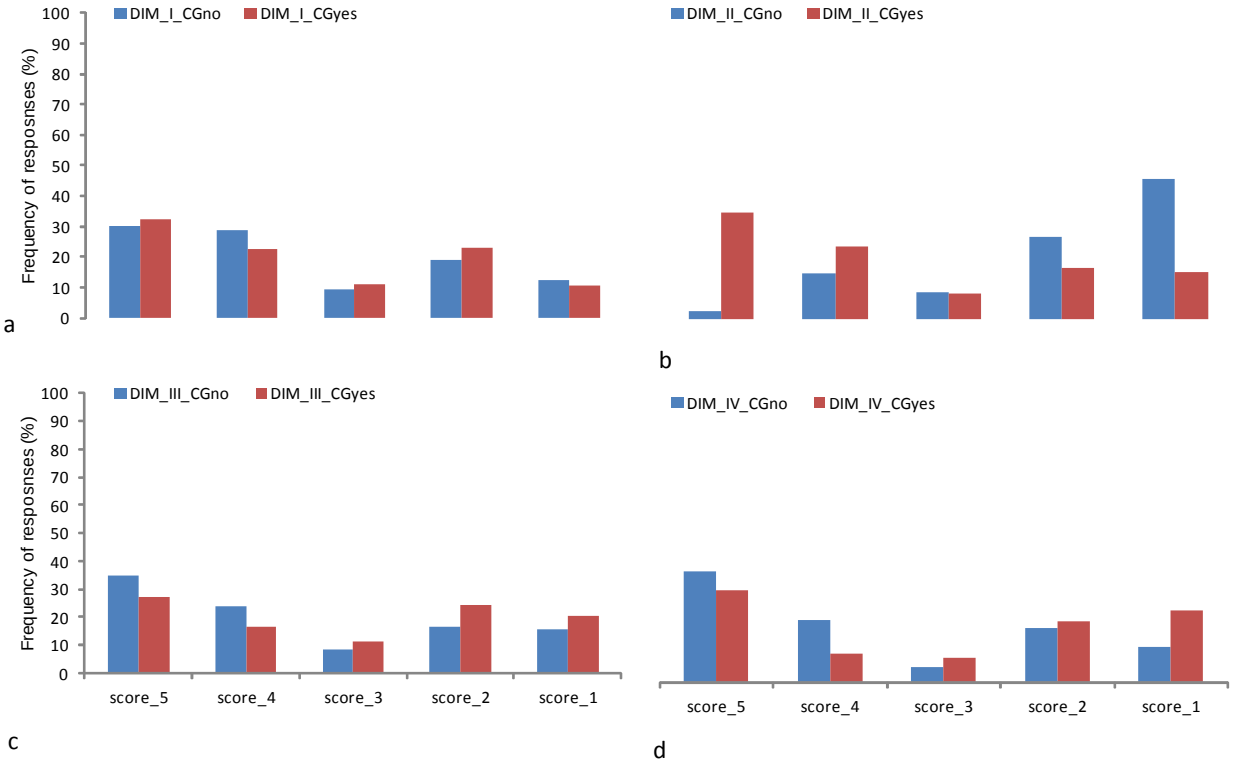


Figure 6. CGno and CGyes frequency of responses (%) for the 5 scores of the Likert scale in each of the four attitude dimensions: DIM I (a), DIM II (b), DIM III (c) and DIM IV, and (d), for the IG before and after participation.

Table 2. IG's Spearman correlation values for positive and negative questions for pre- and post-tests.

| | DIM I pre-test | DIM I post-test | DIM II pre-test | DIM II post-test | DIM III pre-test | DIM III post-test | DIM IV pre-test | DIM IV post-test |
|---|---|---|---|---|---|---|---|---|
| DIM I pre-test | 0.294 | | | | | | | |
| DIM I post-test | | 0.363 | | | | | | |
| DIM II pre-test | | | 0.535** | | | | | |
| DIM II post-test | | | | 0.649** | | | | |
| DIM III pre-test | | | | | 0.642** | | | |
| DIM III post-test | | | | | | 0.749** | | |
| DIM IV pre-test | | | | | | | 0.158 | |
| DIM IV post-test | | | | | | | | 0.492* |

** significance 0.01
* significance 0.05

Table 3.Spearman correlation values for positive and negative questions for the CGno and CGyes.

| | DIM I CGno | DIM I CGyes | DIM II CGno | DIM II CGyes | DIM III CGno | DIM III CGyes | DIM IV CGno | DIM IV CGyes |
|---|---|---|---|---|---|---|---|---|
| DIM I CGno | 0.223 | | | | | | | |
| DIM I CGyes | | 0.324* | | | | | | |
| DIM II CGno | | | 0.250 | | | | | |
| DIM II CGyes | | | | 0.284* | | | | |
| DIM III CGno | | | | | 0.119 | | | |
| DIM III CGyes | | | | | | 0.267 | | |
| DIM IV CGno | | | | | | | 0.016 | |
| DIM IV CGyes | | | | | | | | 0.219 |

** significance 0.01
* significance 0.05

## Discussion

This study attempted to investigate the attitudes of teachers involved in adapted physical education toward the inclusion of students with disabilities in regular settings. Results suggested that the teachers generally held positive attitudes toward inclusion. Prior to participating in the intervention program, they already showed “favorable” levels of acceptance of the benefits of inclusion. Although neither pre- nor post-test responses revealed the highest

level of favorability toward inclusion, in both assessment events participants held similar attitude scores. Their total scores placed them in the highest value, reflecting "favorability toward inclusion." This is not surprising, since many of the participants received previous training in their undergraduate courses or were enrolled in internships (required for physical therapists). However, the IG significantly differed from both the CGno and the CGyes groups in their level of favorability toward inclusion. Both were not statistically different in their attitude scores; however, participants from the CGno were indecisive about inclusion, and their CGyes peers made the transition only from indifference to the lowest score that reflected favorability toward inclusion. This result indicates that the type of experience with inclusive education has limited value for this group. We presume that the control group with experience with inclusion did not necessarily have previous formal training on how to teach groups with disability in inclusive settings, as found in the study by Palla (2001). Indeed, many teachers reported that in the municipal school system they have few opportunities for teacher training in general.

Another notable aspect related to the intervention group with the highest level of favorability toward inclusion is that the inclusive environment offered to them was controlled by experienced coordinators to such an extent that any challenging or negative situation would have been supported by a team, including other teachers who were in training. The teachers in the school system often act alone and have few opportunities to discuss their challenges, as well as their accomplishments, with other colleagues. Jordan et al. (2009) found evidence that effective teaching in inclusive settings is associated with teachers' beliefs about their responsibilities for their students with disabilities and special educational needs. Many studies around the world (Angelides, Stylianou, & Gibbs, 2006; Ghergut, 2010; Block et al., 2010; Kurniawati et al., 2012; Jordan et al., 2009; Emam & Mohamed, 2011; Kurniawati et al., 2012; Minou, 2011; Sentenac et al., 2013) observed that beliefs about effective inclusion might be an important attitude component that influences a teacher's practices, as well as her understanding of disability, ability, the nature of knowledge, knowing, and how learning occurs.

In our study, when we compared the magnitude of the attributed scores to the many questions about inclusion, participants in the intervention group chose more often to give a 5_ score than 4_. The lowest frequency occurred for the 3_score, which represents indecision. The CG, regardless of small differences between the CGno and CGyes, chose a variety of scores, with the exception of the 3_ score—indicative of an indecisive opinion about inclusion, which participants seldom chose. However, for the CGno group, the total score from the pooled questions placed them in the category of indecision toward the benefits of inclusion. The fact that all of the groups seldom chose the 3_ score in individual questions shows evidence that they had already formed an opinion about inclusion, favorable or not.

In fact, the literature is full of contradictory results about teachers' beliefs about inclusion (Hannes, von Arx, Christiaens, Heyvaert, & Petry, 2012; Kurniawati et al., 2012; Michailakis & Reich, 2008; Minou, 2011). In a Swedish study, Michailakis and Reich (2008) raised questions about the double standards of the inclusion policy, particularly for students with intellectual disability. On the one hand, students with disability who are integrated into regular schools, in general reveal successes that favor the paradigm. On the other, the continuous double standard of criteria for academic achievement for students with disability (e.g., pass/fail, transferrable/not transferrable to the next grade, etc.) is associated with a future of exclusion (after school years) in the community itself. This reinforces the notion that the inclusive paradigm is a great dilemma for teachers and society as a whole.

Although limited by a relatively small sample size, our survey detected a trend with regard to one of the four dimensions for all of the groups investigated. The intervention group displayed a clear trend toward having positive intentions with respect to inclusion, more specifically, wanting to teach in inclusive settings. Most of the eight questions were related to this topic. This trend was shared by the CGno and CGyes groups, although to lesser degrees. A particular discrepancy was found for all groups with regard to the second dimension (DIM II), which pertains to the sense of competency about teaching students with disabilities in inclusive settings. The drop in the relative scores was nearly 40% as compared to the other three dimensions. Although we observed an improvement in the IG from pre- to post-test, it did not reach significance.

It seems relevant to mention that the sense of self-efficacy, for each participant in training, resisted change: it remained low. The literature indicates that the initial causes for this low sense of self-efficacy might be due to an individual's sense that she/he lacks sufficient knowledge to teach in inclusive settings (Palla, 2001; Aguiar & Duarte, 2005; Gutierres et al., 2011). The persistence of such feelings might be due to a transition from feeling a lack of knowledge into awareness about the complexity of working with inclusion, as witnessed in the daily routine of the classes. The training context of the adapted physical education sessions was quite unique. While one teacher was in charge of the class session, each student with a disability was paired with a tutor and a teaching assistant. It appeared as though the students with disabilities were optimally stimulated. Goals had been thoroughly discussed with the teacher in charge prior to the classes. Requirements in the teacher's training protocol included management of participants' every behavior, performance, and quality of interaction, not only between the students with disabilities and tutors, but also with the assistant teachers. A dynamic interplay existed among all students, assistant teachers, and an ever changing environment, which had to accommodate numerous tasks and their goals (Mauerberg-deCastro, 2001, 2006b). Such interplay can be quite difficult to manage, and it is possible that, although participants in the IG maintained their high

optimism about inclusion, their own senses of professional competence came under scrutiny, possibly affecting their responses before and after participation. Also, it seems possible that a lack of experience as solo teachers, responsible for an entire group of students, challenged participants' teaching skills and, therefore, their senses of self-efficacy. In scoring dimension II, IG's scores ranged from 5_ to 1_. Their choice of the 3_ score, however, was always low in frequency, and suggests that members of this group were not indecisive about the question's content. This trend was observed, also, in the CGno and CGyes. Members of these groups showed a less clear profile in their scores. While the sum of their scores indicated that their favorability toward inclusion had increased, the distribution of their Likert scores raised the possibility that, either the group was quite heterogeneous, or that there were individual inconsistencies in their attitudes (as illustrated in Figure 6).

Such consistencies or inconsistencies can be partially verified by the relationship between the negative and positive propositions throughout the questionnaire. Indeed, the IG showed high correlation for most of the comparisons (e.g., total score, dimension scores, and pre- and post-test scores, contrary to the CG groups. Low, although significant correlations were detected in some of the comparisons in the CGyes (see Table 3).

In general, the dynamics established among the participants (students with disability, tutors, teachers, and coordinators) during the training period reflected a positive experience for all. However, since the teachers in the intervention group's attitude scores were already favorable toward inclusion, and because, with the exception of dimension II (scores were approximately 55% of the maximum score), their relative scores fell between 78% and 91% of the maximum score (upper score). These proportions placed them on or above the interval representing "completely favorable toward inclusion." The CGno and CGyes showed proportions nearing 68-72% for all, except DIM II (40-45%). Overall, they were in the middle of the interval, between "indecisive toward inclusion" and "favorable tendency toward inclusion."

Dimensions III (conviction) and IV (external/social reference) are likely to have influenced each other. Conviction derives from a cognitive component of attitudes in which beliefs arise from simple notions of what is good or realistic (with respect to an issue—here beliefs about benefits of inclusion). Also, perception of one's own behavior reflects convictions (e.g., discourse). Dimension IV reflects understanding of social trends and notions that emphasize an issue's value or lack of value. Most of the questions in this dimension are cognitively driven and are logically influenced by experiences of success or failure in technical issues (e.g., students with disability have higher academic success in regular schools than in segregated environments; or students with disability slow down the pace of instruction delivery). Too, there is a cultural component to this dimension. For example, in Chinese society, competition is quite obvious among students in regular schools. It is culturally reinforced, and, therefore, if inclusion is not mediated by skilled educators and administrators, students tend to exclude their peers with disability (Wong, 2008). For the IG group, these two dimensions scores were located in similar intervals of the upper score, representing "favorable tendency toward inclusion." The CGno and CGyes displayed a similar relationship, although their scores fell in between the upper and lower scores. Still, this represented a "favorable tendency toward inclusion."

Many questions emerged from these findings. First, "Why do individuals who are in the midst of professional preparation—before they actually immerse themselves in the work place (i.e., schools)—seem to be more aware of social conceptions and influences than the teachers that are in contact with students enrolled in the school system?" Is it possible that they are more fully engaged in current theoretical discussions that argue in favor of inclusion? Have teachers in the schools systems become disenchanted with the prospective reality of inclusion? Do they know that the reality is that school systems are not prepared to adequately provide "education for all"?

According to Jordan et al.'s (2009) review of several studies about inclusion, teachers are skeptical about the potential success of inclusion. Yet, evidence from studies that focus on established contexts for inclusion show that students with special education needs who are included in regular school settings, as compared to students in segregated settings, are more successful, academically speaking. In other words, once teachers effectively and efficiently engage in attending to students with disability in regular settings, learning occurs. Jordan et al. (2009) claimed that specialized skills for teaching students with disability may not be crucial for effective inclusion. Teachers' convictions about the specialized knowledge and skills they think are necessary in order to work with students with disabilities in regular school settings may justify their negative attitudes toward inclusion. However, in reality, individual motivation might be the principal factor. Indeed, in our study, motivation, as measured by Dimension I (intention or predisposition for teaching in inclusive settings), is highly scored, with much lower scores for the dimension that reflects professional competences.

Our study demonstrated that, although teachers and future professionals seem to value the importance of inclusion, the notion of self-efficacy is quite resistant to change, even when these individuals were subjected to long-term training that employed a complex inclusive strategy such as the peer tutoring model. In our municipal school system, teachers are unsure about their competence toward teaching in inclusive settings. Their inconsistent attitudes throughout the questionnaire may reflect contradictory attitudes and heterogeneous experiences in both control groups. Although the intervention did not affect the general attitude score for favorability toward inclusion, the dimension related to self-efficacy (DIM II) did reveal a statistical interaction in the results before and after intervention.

## Conclusion

The intervention paradigm rendered a modest effect in the participants' perceptions of self-efficacy. Exposure to the technical complexities of managing inclusive adapted physical education classes and integrating the peer tutoring model may have qualitatively impacted these opinions. Overall, those in the group that participated in the intervention maintained their tendency of being favorable toward inclusion. Teachers in regular school settings in the municipal school system of Rio Claro (São Paulo, Brazil), regardless of their experience with inclusive settings, are still mostly indecisive about the benefits of inclusion. The absence of differences between teachers with experience with inclusion and those without reinforces the notion that knowledge and experience gained through training does not guarantee positive attitudes toward inclusion.

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