Children’s involvement in Physical Education lessons

Differences between children with high grades and children with disabilities

Isabel Clemente Vázquez
Children with disabilities need physical activity in order to promote development and health, and this can be fulfilled in their physical education lessons. However, adapting lessons for children with disabilities can be a very complicated task as there are many factors that affect, both positively and negatively, the child’s general self-efficacy, their self-efficacy in their physical education lesson and their aptitude to participate. In a previous descriptive quantitative study teachers self-rated teacher skill were positively correlated to self-efficacy for students with high grades but negatively correlated to self-efficacy for students with disabilities. Therefore, the aim of the study is to test two hypothesis concerning the relations between teacher’s teaching skills, environmental prerequisites and climate and the student’s general self-efficacy, self-efficacy in physical education and aptitude to participate for with high grades and with disabilities respectively. With the help of a quantitative study with questionnaire data the hypotheses were tested for children with disabilities and children with high grades within PE lessons in regular Swedish mainstream schools. The results show that teaching skills are negatively correlated to general self-efficacy, self-efficacy in physical education and aptitude to participate for children with disabilities. For children with high grades the same relations were positive. Regarding prerequisites for physical education and climate in class both were positively related to general self-efficacy, self-efficacy in physical education and aptitude to participate for both children with high grades and children with disabilities. The importance of having an individually adapted lesson planning and grading criteria are discussed.
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1 Introduction

Children’s wellbeing is positively correlated to their participation in meaningful physical activities (Adolfsson, 2011). Physical activities provide school-age children opportunities for enjoyment, relaxation, recreation, self-enrichment and goal achievement (Coastsworth et al., 2005; Passmore & French, 2003; Shikako-Thomas et al., 2012; Wilkes et al., 2011). It also helps to build children’s competence and self-determination and allows them to develop socially and professionally (Coastworth et al., 2005; Passmore & Frenche, 2003; Shikako-Thomas et al., 2012; Wilkes et al., 2011).

Most of the students with disabilities don’t meet the minimum amount of physical activity in order to obtain health benefits (Ogden et al., 2014). Students with disabilities often show delayed gross motor development, less proficiency in balance and coordination and poor cardiovascular fitness compared to their peers with typical development, this could be improved by participating in physical activity (Horvat et al., 1997). Daily physical activity levels of students with disabilities has been found to be lower than in typical developing students (Fernhall, 2002).

Many children and youth with disabilities do not do enough exercise, get involved in sports, or have access to recreational activities (Foley & McCubbin, 2009; Howie et al., 2012; Pitetti et al., 2009; Rimmer & Rowland 2008; Whitt-Glover et al., 2006). One arena for physical activity is the school subject Physical Education. However, a number of barriers can make inclusive physical education challenging for physical education teachers and students. Research examining the perspectives of physical education teachers (Casebolt & Hodge, 2010) and of students with disabilities (Haegele & Sutherland, 2015) describes how properly implemented inclusion can foster not only physical health but also positive social interactions between students with and without disabilities.

The knowledge and experience that teachers have about how to adapt instruction for the student with disability and for the rest of the students is a prerequisite for students with disabilities to participate in Physical Education (PE). How to adapt tasks, equipment, environmental conditions and game rules probably influence teachers’ attitude about teaching students with disabilities, and probably is one of the foundations of successful inclusion in PE (Kowalski & Rizzo., 1996; Hutzler et al., 2005). If teachers feel that they are not prepared to include students with disabilities, it can lead to them feeling incompetent. Perceptions can cause negative attitudes toward students with disabilities. (Block & Obrusnikova, 2007).

In this study, the inclusion of students with disabilities within PE lessons in regular Swedish mainstream schools will be studied. The research will evaluate the relations between a teacher’s self-rated evaluation of the teaching and the involvement of students with disabilities’ in class.
2 Aim
This study is a follow up of a previous study reporting on student self-efficacy and teacher skills in planning and grading. In the previous study the relationships between PE teaching and student self-efficacy, aptitude to participate in PE and functional skills were analyzed (Bertills et al., 2017). The question investigated the relations between teacher’s self-reported teaching skills, prerequisites and climate and student’s perceived self-efficacy generally and specifically in PE and aptitude to participate. The relations were studied in a sample of Swedish students, aged 13, that compared these relations in three target groups, students with disabilities, students with low grades in PE, and students with high grades in PE. In general, student’s aptitude to participate and self-efficacy were positively related to teachers’ self-ratings of their skills in planning lessons and grading, however for students with disabilities these relations were negative. Concerning prerequisites in physical environment for sports and classroom climate the relationships were positive both for students with and without disabilities. In this follow up study, students aged 15 are investigated and the focus is on children with disabilities with students having high grades as a control group. This study aimed at confirming the previous results by comparing student’s self-efficacy and aptitude to participate in grade 9 with teacher’s self-rated skills to plan and explain grades in grade 7. By investigating the possible impact of teaching skills on students after being exposed to the teacher for three years possible causal indicators can be investigated.

3 Research hypothesis
The following hypotheses are tested.
One hypothesis is that both the general self-efficacy and self-efficacy in PE and the aptitude to participate of students with disabilities in grade 9 have a negative relationship with teachers’ self-rated skills to plan lessons and grade students in grade 7. The same relationships are positive for students with high grades.
A second hypothesis is that the relations between prerequisite and class climate as rated by teachers in grade 7 and general school and PE specific self-efficacy, and aptitude to participate in PE in grade 9 are positive for both students with disability and students with high grades.

4 Background

4.1 Physical education curriculum in Sweden
The curriculum of physical education in Sweden can be divided into four different aspects, which overall concerns providing opportunities to learn. Students should be given the
opportunity to develop knowledge, abilities and have conditions that enhance the student's personal development. Students should be given the opportunity to develop knowledge about what factors that affect their physical capacity, and how they can safeguard their health throughout their lives, how physical activity relates to mental and physical well-being and planning, applying and evaluating different types of activities involving physical movement. Students should also develop knowledge of concepts which describe physical activities and be given the opportunities to determine their standpoint on issues related to sports, health and lifestyle. Teaching should also contribute to students developing knowledge of the risks and safety factors related to physical activities and how to respond to emergency situations (Skolverket, 2011). Students should develop the ability to spend time in outdoor settings and nature during different seasons of the year and acquire an understanding of the value of an active outdoor life and to move without restriction in different physical contexts, plan, implement and evaluate sports and other physical activities based on different views of health, movement and lifestyle, carry out and adapt time recreational and outdoor life to different conditions and environments, and prevent risks during physical activities and manage emergency situations on land and in water (Skolverket, 2011). Teaching should develop the conditions for all students throughout their schooling to regularly take part in physical activities at school (Skolverket, 2011). Students should be given the opportunities to develop a healthy lifestyle as well as their interpersonal skills and respect for others and develop a good physical awareness and a belief in their own physical capacity (Skolverket, 2011).

4.2 Children with disabilities in Sweden

The Swedish educational system is based on the philosophy that all students have the same right to personal and development and learning experiences (Education Act, 1). The inclusion of all students within this principle is crucial and the rights of students in need of special support are not stated separately. The current curriculum for compulsory schools does not use the word or concept of mainstreaming but promotes the given that all students will be educated in general classes. If it is not possible, the school must indicate very clearly why other educational options for students should be considered.

For students in need of special support, an action plan of support provision has to be worked out by their teachers in consultation with the students themselves, their parents and specialist support teachers. This plan identifies needs and provision to meet them is continuously evaluated and changes of progress and solutions are possible. The student's needs are to be assessed and the subsequent action plan shall contain information regarding the student's needs, what measures that will be taken and how these measures will be followed up and evaluated.
All education corresponds as far as possible to national curriculums, but with the emphasis upon meeting individual learning needs. In Sweden, approximately 14 per cent of the students in compulsory mainstream schools have an action plan (2013). The action plan is decided by the principal.

In a few circumstances, this provision is offered in special programmes. The students' needs are assessed by a multi-disciplinary team. Medical, social, psychological and pedagogical tests are carried out. Attending a special programme or a special needs school is voluntary. If the student does not choose to attend a special programme or a special needs school, the student attends the mainstream school with support and an action plan. Sweden has also stated a discrimination plan. It is valid within all areas of society in principle. Functional impairment and lack of accessibility are grounds for discrimination. Students with functional impairments have the same rights as other students to take part in and complete their education.

Within the subject of physical education, all these aspects should be considered, and modifications should be done, as well as the action plan should be adapted. To get students with disabilities included in physical education lessons, barriers should be overcome and children with disabilities should be encouraged to participate by using special aid techniques or simple activities and explanatory vocabulary.

4.3 Physical education for children with disabilities

The importance and benefits of exercise and physical activity and the risk of physical inactivity for students, especially for students with disabilities has been thoroughly reported (Bloomfield, 2005). The implementation of appropriate inclusive physical education has been found beneficial for both students with and without disabilities when evidence-based strategies are used. Casebolt & Hodge (2010) examined the perspectives of physical education teachers and Haegele & Sutherland (2015) of students with disabilities. Research examining the perspectives of physical education teachers (Casebolt & Hodge, 2010) and of students with disabilities (Haegele & Sutherland, 2015) describes how properly implemented inclusion can promote the positive social interactions between students with and without disabilities. In addition, PE teachers have described that a high participation in PE lessons and being able to achieve the goals established can increase the self-esteem of students with disabilities (Hodge et al., 2004). Inclusive PE has also been reported to influence, in a positive way, students without disabilities as it improves their attitudes toward and awareness of students with disabilities. Supportive interactions between students with and without disabilities, such as demonstrations, verbal assistance, physical assistance, and encouragement, are essential for friendship development which is another benefit of inclusive physical education (Sato et al., 2009).
Appropriate implementation is vital in order for inclusion to succeed. This can lead to positive outcomes. However, badly conceptualized inclusive environments produce students with disabilities' isolation or being made fun of (Haegele & Sutherland, 2015). Unfortunately, there are many barriers which can make inclusive physical education defiant for both PE teachers and students. Regardless of the development of research-based practices in inclusive settings and published suggestions on how to include students with disabilities (Brian & Haegele, 2014), PE teachers usually struggle when having to develop an inclusive programme (Lieberman et al., 2002). Set up programmes for inclusive education can take place in noisy and distracting environments and large classes and therefore, do not lead to a correct and efficient learning for students with disabilities. It can also be a problem when environments provide little opportunity for skilled practice. Due to the challenges that could be encountered in inclusive physical education, modified physical education should be considered as a feasible option for students with disabilities (Lieberman et al., 2017). The inclusion of students with disabilities into regular physical education classes has provided a big challenge to physical educators who have strived to meet the needs of the included students without neglecting the needs of the other students (Elliot, 2008).

4.4 Reported teachers’ reasoning towards having children with disabilities in Physical education lessons

Teacher’s attitudes towards having children with disabilities in their lessons is very controversial. Some research has found that teachers are seriously skeptic when it comes to practicing inclusive education (Ring, 2005). Studies have shown neutral, even negative attitudes coming from teacher’s viewpoints (DeBoor et al., 2010). However, in contradiction to this researches, other studies have found a display of positive attitudes from teachers towards inclusion (Kiswarday & Stemberg, 2016). Studies have reported inclusion of students with disabilities as problematic for teacher and is followed by negative teaching attitudes (Cameron & Tankerstey, 2007). Teachers oppose predominantly to the inclusion of students with social, emotional and behavioral disorders (MacFarlane & Woolfson, 2013) despite being more supportive to the inclusion of students with physical and sensory disabilities and those with specific learning difficulties (Lindsay, 2007). Teachers see problems in oversized classes with inappropriate knowledge and teaching aids (Khan, 2012). It has been reported that teachers see the child as a weight on the classroom that decreases the effectiveness of their instruction to students without disabilities. Studies have also reported teachers feeling frustration and guilt because of the time spent accommodating the students in need of special support, as this time is taken away from typically developed students.
The inordinate amount of time needed to attend additional meetings, complete paperwork, and collaborate with specialists is seen as unfair in comparison to the time devoted to the other students in the class (Horne & Farrell, 2009).

Basically teachers have positive attitudes towards the theoretical principle of inclusion but view the practical implementation of this concept as problematic (Avramidis & Norwich, 2002).

4.5 Adaptations that could be done in a PE lesson to engage children with disabilities’ participation

Teachers’ pedagogical practices affect the improvement of learning outcomes for all students (Lingard, 2005). Inclusive practices in PE should avoid discrimination, as well as value and respect diversity, encourage student input and participation (Keddie, 2012) and represent a significant step towards social justice. Inclusion of students with disabilities in PE should involve more than keeping score or watching from the side lines (Spencer-Cavaliere & Watkinson, 2010). Inclusion concerns changes in curriculum and the provision of necessary support to make sure that every student is provided with equal opportunities to succeed (Callcott et al., 2012).

Inclusion of students with disabilities in PE lessons involve an interplay of pedagogical practices and curriculum (Overton et al., 2017). What teachers believe and understands by inclusion of all students is crucial in order to deliver an inclusive programme for students with disabilities (Vickerman & Coates, 2009). The nature and severity of students’ disabilities have been identified as a significant factor affecting teachers’ attitudes towards inclusion of students in PE (Hodge et al., 2009). The way a teacher encourages social inclusion and structure their learning environments have a strong influence on how students with disabilities experience PE lessons (Spencer-Cavaliere & Watkinson, 2010). Opportunities to participate in PE are provided by creating a sense of belonging to the group, encouragement and differentiated learning experiences (Beamish & Saggers, 2014).

4.6 Adapting grading criteria for students with disabilities

Grading students in presents complicated issues for schools (Azwell & Schmar, 1995; Durm, 1993; Guskey & Bailey, 2001; Marzano, 2000). The task of assigning grades is seen as time consuming and not related to actual teaching. Often, teachers apply inconsistent standards and use subjective judgments to reach a grade and that leads to problems arising (Munk, & Bursuck, 2001). Students and parents usually have little knowledge of how the grading system is at their school and might not have a clear understanding of what the purpose of the grades are as usually grades mean differently to each of us.
Grading students with disabilities rise additional problems. The grading systems used classes are ill-equipped in order to meet the necessities of a particular student, and previous research has showed that students with usually obtain low or failing grades (Donohoe & Zigmond, 1990). Both general and special educators do not collaborate effectively to coordinate the general grading system with the accommodations and modifications required under a student's Individualized Education Program (IEP) (Munk & Bursuck, 2001). Often, the teacher lacks of knowledge on how to individualize a grading system for a student in need of special support even if they are keen to do it. With the teacher’s grading, little meaningful information about their achievement is provided (Munk & Bursuck, 2001).

Effective grading adaptations from which teachers, working with parents and students, can choose are the following:

- **Prioritize content and related assignments** (Drucker & Hansen, 1982; Guskey & Bailey, 2001; Zobroski, 1981).
- **Base part of grade on the processes that the student uses to complete work or the effort that the student puts forth** (Carpenter, 1985; Friedman & Truog, 1999; Frierson, 1975; Gersten, Vaughn, & Brengelman, 1996; Guskey & Bailey, 2001; Hendrickson & Gable, 1997; Horowitz, 1982; Munk & Bursuck, 2001a).
- **Incorporate progress on IEP objectives into the student's grade** (Cohen, 1983; Frierson, 1975)
- **Incorporate improvement measures into the student's grade** (Bradley & Calvin, 1998; Frierson, 1975; Munk & Bursuck, 2001a; Slavin, 1980).
- **Change scales or weights** (Drucker & Hansen, 1982; Munk & Bursuck, 2001a).

### 4.7 Prerequisites and climate in PE

Students that are enrolled in mastery-oriented climate physical education programs are effectively engaged in the lessons and self-management (Standage et al., 2003), they express enjoyment (Morgan & Carpenter, 2002) and furthermore, display positive attitudes toward physical activity (Ntoumanis & Biddle, 1999). Aspects of motivational climate, like the need for autonomy have been linked to higher engagement in leisure time physical activity outside of physical education (Hagger et al., 2003) and autonomous motivation for physical education is linked to higher levels of self-reported leisure time physical activity in early adulthood (Haerens et al., 2010). Meaningful learning experiences can occur when the students with disabilities are pro-vided with a positive learning environment. This can be fulfilled by consciously considering the composition of classmates in order to ensure a supportive PE environment (Haegele & Sutherland, 2015).
When it comes to prerequisites, the role of the built environment has been showed to have a high impact on physical activity in terms of access to equipment and the location of the class (Sallis et al., 2001). Children's physical activity has been reported higher when there is a high availability of physical activity-related equipment (Sallis et al., 2001; Hastie et al., 1991; Verstraete et al., 2006). Location and facility of the class setting is also an important predictors of activity. Outdoor lessons are more active and indoor lessons involve more knowledge and sitting time (McKenzie et al., 1995). State and national level policies and guidelines also affect PE as they dictate the frequency and duration of classes as well as class size, requiring specific curricula, teacher certifications and professional development (Lee et al., 2007), and setting standards to what percent of the class time a student should be physically active (U.S. Department of Health and Human Services., 2000).

### 4.8 General self-efficacy and self-efficacy in PE

Self-efficacy is the perceived personal capability to organize and execute actions to attain goals (Bandura, 1986). Specific self-efficacy refers to a personal sense of competence to successfully finish a specified task (Schunk & Pajares, 2010). High self-efficacious students are characterized by choosing more difficult and challenging tasks, investing more effort and being more persistent in accomplishing a specific task (Zimmerman, 2000) which leads to an influence on their learning (Bandura, 1986). Observing peers, role models, verbal persuasion and psychological states are also other sources of self-efficacy (Bandura, 1997). Studies focused on evaluating students with disabilities’ self-efficacy have reported lower levels than students without disabilities (Jungert & Andersson, 2013). Students with high self-efficacy are capable of focusing their attention on the task at hand and expend more effort than those with low efficacy (Multon et al., 1991; Moritz et al., 2000).

In PE, individuals with higher self-efficacy invest more effort than those with lower self-efficacy (Bandura & Cervone, 1983; George, 1994; Weinberg et al., 1979). There is lack of research when it comes to students’ with disabilities self-efficacy in sports and physical activities (Chase et al., 1994; Lee, 1982; Lirgg & Feltz, 1991). Students with disabilities participating in sport learn far more than just the sport-specific techniques. A range of deep, implicit, social, cultural and personal experiences is also gained and therefore their self-efficacy is challenged (Wickman et al., 2018). Through sport, students with disabilities can learn to negotiate with others, establish and keep friendships, solve conflicts and develop leadership qualities and self-esteem (Özdemir & Stattin, 2012).
4.9 Key vocabulary

4.9.1 Inclusion
It is a process that encourages individuals with a wide range of abilities to engage together in meaningful participation in an environment that fosters a sense of belongingness and autonomy (DePauw & Doll-Tepper, 2000; Goodwin, 2003; Grenier, 2011). Inclusion involves a sense of belonging: feeling respected, valued for who you are; feeling a level of supportive energy and commitment from others so that you can do your best. (Miller & Katz, 2002).

4.9.2 Children with disabilities
Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others (CRPD, 2006).

4.9.3 Engagement
Degree of attention, curiosity, interest, optimism, and passion that students show when they are learning or being taught, which extends to the level of motivation they have to learn and progress in their education (Abbott, 2014).

4.9.4 Self-efficacy
A personal judgement of "how well one can execute courses of action required to deal with prospective situations" (Bandura, 1982). Expectations of self-efficacy determine whether an individual will be able to exhibit coping behavior and how long effort will be sustained in the face of obstacles (Stajkovic, & Luthans, 1998). Individuals who have high self-efficacy will exert sufficient effort that, if well executed, leads to successful outcomes, whereas those with low self-efficacy are likely to cease effort early and fail (Stajkovic, & Luthans, 1998).

4.9.5 Self-efficacy in PE
A teacher who promotes high student self-efficacy can have a positive impact on student motivation and behavior (Usher & Pajares, 2008), student persistence in demanding physical challenges (Gao et al., 2008), future health behavior (Feltz & Magyar, 2006), and participation and higher self-efficacy for future success (Chase, 2001). Perceived self-efficacy has primarily been examined in the relation to motor skills (Zimmerman & Kitsantas, 1997) and pro-sociality (Caprara et al., 2012). For students with disabilities, some studies indicate that children prefer not to attend PE lessons because of embarrassment, and therefore turns into a feeling of self-doubt and affects the student’s self-efficacy in the activities they perform (Blinde and McCallister, 1998). Low self-efficacy and unfavorable experiences can result in withdrawal from sport and exercise (Lavalle et al., 2004). Some activities can be perceived as gender specific, how-ever, the reason why students engage in separate, joint, or gender-specific
activities might have a lot to do with the cultural and structural values in a school context and these perceptions can have an effect on the competence of the child in a given activity, reducing self-efficacy (Bandura, 1977).

5 Theoretical Framework

Social cognitive theory (SCT), explains that a part of an individual's knowledge acquisition can be directly related to observing others within the context of social interactions, experiences, and outside media influences. When people observe a model performing a behavior and the consequences of that behavior, they remember the sequence of events and use this information to guide subsequent behaviors. Observing a model can also prompt the viewer to engage in behavior they already learned (Bandura, 2002).

Social cognitive theory is based on the idea that people learn by observing others. These learned behaviors can be central to one's personality. The individual person is as important as the environment when growing up when it comes to behavior. The development of a person is influenced by the observation of others, the environment, behavior, and cognition. Each behavior seen and the environment one is raised in can change a person's way of thinking and influence their behavior.

The core concepts of SCT are the following:

**Personal:** Whether the individual has high or low self-efficacy toward the behavior. For this study, the amount of self-rated self-efficacy would be the personal aspect of the SCT.

**Behavioral:** The response an individual receives after they perform a behavior. The behavioral aspect of this study would be the final result showed when correlating both types of self-efficacy with another aspect.

**Environmental:** Aspects of the environment or setting that influence the individual's ability to successfully complete a behavior. The teacher's self-rated perceived teaching skills, prerequisites and classroom climates are the environmental aspects of this study.

Learning is more likely happen when the observer has a high self-esteem and feels identified with the model. Self-efficacy is defined as the extent to which an individual believes that they can master a particular skill (Bandura, 1989).

Self-efficacy can be developed or increased by:

**Mastery experience,** which is a process that helps an individual achieve simple tasks that lead to more complex objectives.
Social modeling provides an identifiable model that shows the processes that accomplish a behavior.

Improving physical and emotional states refers to ensuring a person is rested and relaxed prior to attempting a new behavior. The less relaxed, the less patient, the more likely they won't attain the goal behavior.

Verbal persuasion is providing encouragement for a person to complete a task or achieve a certain behavior (McAlister et al., 2008)

It is the duty of the teacher to allow student to perceive their efficacy by providing feedback that makes it possible for the student to understand their level of proficiency. Teachers should make sure that the students have the knowledge and strategies needed to complete the tasks. In relation to exercise science, self-efficacy has produced some of the most consistent results revealing an increase in participation in exercise (Weinberg & Gould, 2007).

As said before, this study is a follow up from a previous study. Results in the previous study for students in grade 7 showed a negative correlation between self-efficacy and teaching skills. Students should clearly know the structure of their teacher’s methodology. They should know how the grading will be (criteria used) and the lesson content they will have to go through. However, for children with disabilities, knowing the teacher’s methodology and grading criteria was not helpful, it lowered their self-efficacy in PE. The classroom climate had a very big impact on the students with disabilities’ self-efficacy in PE.

6 Methodology

6.1 Research design

This study is a quantitative study as it will look at the inclusion and engagement of students with disabilities in PE lessons using self-rating scales. It will evaluate the relations between the teacher’s self-rated evaluation of their lessons and the students with disabilities’ self-rated self-efficacy and aptitude to participate in PE classes. Quantitative research aims to quantify variables, being the motivational factors in this study, to generalize results from larger population groups – which are the investors and different demographic characteristics in this case (Saunders et al., 2012). Whilst qualitative research is primarily used in exploratory research to understand underlying reasons, a quantitative method is generally preferred for descriptive or hypothesis testing studies (Bryman & Bell, 2011). Quantitative research, provides intersubjectivity larger sample sizes, hypotheses built on theory as well as statistically based findings – all in line with the chosen philosophy and research approach (Saunders et al., 2012).
In order to test both hypotheses in this study, an evaluation of already existing data (Bertills, in progress) will be done, focusing on students with disabilities using students with high grades as a control group. The data will be analyzed using SPSS and will be presented under results.

6.2 Participants

The participants of the already existing study are 26 PE teachers from 23 different schools around Sweden. Four hundred and thirty nine students of year 7, aged 13 also participated in the study. In order to recruit the students with diagnosed disabilities (n=30), nonrandom purposive sampling was used. In addition, all classmates of these students were given the opportunity to participate and from the ones that gave their consent, some students with high grades (n=55) were asked to participate. The participating students were divided into three groups; those with high grades (A to C), those with low grades (D to F) and those with disabilities. The group of students with disabilities were diagnosed with physical, neuro-developmental, intellectual, or a combination of one or more disabilities. In this only students with disabilities and students with high grades participated.

In this study, 17 students with disabilities were included, characterized by that they all had teachers that were the same from year 7 to year 9. In addition, a group of 35 students with high grades (A to C) taught by the same teachers were included to investigate the correlation between teacher’s self-rated prerequisite and climate.

6.3 Instruments

For this study, two different instrument packages were used to collect the data:

6.3.1 Student questionnaires

A Swedish validated version of the General Self-efficacy (GeneralSE) instruments. This questionnaire is divided into 3 scales that contain 8 items each. These scales measure academic (AcademicSE), social (SocialSE) and emotional self-efficacy (EmotionalSE) (Muris, 2001). Validation on relevant age group showed internal consistency of $\alpha_{886}$. In the Swedish validation, there liability of the translated SEQ-C indicated similar patterns with earlier findings (Bertills et al., 2017).

Another instrument was created, the Self-efficacy in Physical Education and Health (SEinPE). This instrument was based on the Swedish PE curriculum and its 3 components; movement (MovementSE), health and life style (HealthSE) and outdoor life and activities (OutdoorSE). The subscales for each component were the following:
### Table 1: Number of items and subscales for each component

<table>
<thead>
<tr>
<th>Component</th>
<th>Number of items</th>
<th>Subscales</th>
</tr>
</thead>
<tbody>
<tr>
<td>MovementSE</td>
<td>8</td>
<td>Activities, such as dance, games, athletics, obstacle courses, gymnastics, team sports and swimming</td>
</tr>
<tr>
<td>HealthSE</td>
<td>8</td>
<td>Perceived knowledge and skills of physical activities (aim, organization, experiences and effects), injuries, risks and handling emergencies.</td>
</tr>
<tr>
<td>OutdoorSE</td>
<td>8</td>
<td>Outdoor life, handling aquatic emergencies and orienteering.</td>
</tr>
</tbody>
</table>

Validation on relevant age group showed internal consistency of \( \alpha \).946. To enhance better understanding and successful completion an easier version of the questionnaire was created. The aptitude to participate in PE lessons (Participate) was created including the items that had been reported to be vital components to perceive participation (Maxwell et al., 2012) and these components were adapted to a PE context. Motivational aspects for students to participate and perform in PEH include perception of knowledge requirements, teacher support and physical competence (The Swedish Schools Inspectorate 2011). Seven items measuring aptitude to participate in PEH was constructed (Bertills et al., 2017). Validation on relevant age group showed internal consistency of \( \alpha \).849.

To further improve accuracy of ratings, explaining examples were added to the items in SEinPE and Participate. Modifications proved to be effective when analyzing results from the main study (Bertills et al., 2017).

### 6.3.2 Teacher questionnaires

A teacher’s questionnaire containing self-ratings of their PE teaching was developed. This questionnaire includes aspects regarding environment, inclusion, participation and grading. Lesson planning, long-term planning and grading were included into teaching skills. The aspects of the physical environment and the social environment were separated when evaluated. The items in each subscale with their corresponding number of items and the internal consistency is the following:
Despite the low internal consistency, the questionnaire was kept and used as there are many factors that may affect the internal consistency of a questionnaire. The number of items has a profound effect on alpha, especially at low levels of average item intercorrelation (Cortina, 1993). If a scale has enough items, then it can have a high alpha value even when the correlation among items is very small (Cortina, 1993). Recommended final scales should be four to six items long (Hinkin et al., 1997). In the case of this study, the number of items is relatively small (3, 4 and 6) and therefore it affects the alpha value and drops the internal consistency.

The lack of perfect inter-correlations between items’ true scores is another aspect of a test that also causes problems for alpha. Although, few scales (especially those that study personality) are unidimensional, there is always some degree of multidimensionality (Socan, 2000) and therefore perfect inter-correlations of items’ true scores is inhibited. Also, if a test uses multiple response formats across items it is more likely to obtain a low alpha value (Graham, 2006).

As seen in the teacher’s questionnaire (Appendix 1) the questions are multidimensional as they ask about different aspects categorized under a heading that have everyday relevance, e.g. prerequisites, but the single items might not be strongly related, e.g. facilities and social support. Because the heading, e.g. prerequisites is a theoretically interesting component for the subscale studied, it is clinimetrically correct to include it in the study despite low Cronbach alpha.

The number of participants and the complexity of the aspects studied are also aspects to take into account when evaluating Cronbach alpha’s results as they might affect the internal consistency.

<table>
<thead>
<tr>
<th>Subcategory</th>
<th>Internal consistency</th>
<th>Number of items</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom climate</td>
<td>0.736</td>
<td>4</td>
<td>Overall climate, students helpful, PE appropriate clothing and engagement</td>
</tr>
<tr>
<td>Prerequisites</td>
<td>0.293</td>
<td>3</td>
<td>Facilities, equipment and support for inclusion</td>
</tr>
<tr>
<td>Lesson planning</td>
<td>0.334</td>
<td>4</td>
<td>Activity choices, varied instructions, students prepared and actively involved in planning PE activities</td>
</tr>
<tr>
<td>Plan long term</td>
<td>0.163</td>
<td>4</td>
<td>Systematic plan in accordance with curriculum and syllabus</td>
</tr>
<tr>
<td>Grading</td>
<td>0.454</td>
<td>6</td>
<td>Plan what to assess and when, students know what is assessed and when, regard all available information about the student.</td>
</tr>
</tbody>
</table>

Table 2: Internal consistency, number of items and items for subscales in teacher’s questionnaire
6.4 Procedure
The data collected by the questionnaires was used to perform a cross-sectional comparative design including teacher’s self-rated planning and grading at time point 1 (year 7) and student’s self-ratings from time point 2 (year 9). The data was analyzed and inserted into SPSS to generate the results to the research questions and fulfill the aim of the study. Since the study aimed to confirm earlier results, hypothesis testing was used and therefore one-tailed analyses specifying direction of relationships between variables.

6.5 Data analysis
To examine the correlation between teaching skills to plan and grade students in grade 7 with students with disabilities’ general school self-efficacy, PE specific self-efficacy, and aptitude to participate in PE in grade 9, Spearman’s rho was examined for the students with disabilities’ sample and for students with high grades (A to C). The relations between prerequisite and climate as rated by teachers in grade 7 and general school and PE specific self-efficacy, and aptitude to participate in PE in grade 9 for both students with disability and high grades was examined with Spearman’s rho based on students’ individual scores. For all total scales and sub-scales, the mean scores were calculated.

6.6 Validity and reliability
Essentially, any research tool should provide the same information if used by different people (inter-rater reliability), or if it is used at different times, for example, on Friday morning and again on Sunday afternoon (test-retest reliability). The internal consistency of research tools needs to be assessed. Internal consistency is the relationship between all the results obtained from a single test or survey (Roberts et al., 2006).

The sample of participants drawn from the population of interest must be representative of that population at the time of the study. Finally, representative samples should be drawn with reference to relevant variables in the study, such as gender and age (Roberts et al., 2006).

Content validity is the weakest form of validity and is concerned with the relevance and representativeness of items, such as individual questions in a questionnaire, to the intended setting. It is particularly important to measure this if the study is designed to ascertain respondents' knowledge within a specific field, or to measure personal attributes such as attitudes (Eby, 1993). It can be achieved through conducting a pilot study with people who are like the intended study participants. Such relevance can be supported by literature reviews and documentary evidence, where available (Roberts et al., 2006).

There are several ways of demonstrating construct validity, one of which is factor analysis. Factor analysis refers to several statistical procedures used to determine characteristics that re-
late to each other (Bryman & Cramer, 2004). Factor analysis is particularly useful for examining the relationships between large numbers of variables, disentangling them and identifying clusters of variables that are closely linked together (Burns & Grove, 2005).

In this study, the internal consistency was assured because Cronbach’s alpha-values were found satisfactory or acceptable in most scales. Satisfactory or acceptable values of all scales were found in the first study (Bertills et al., 2017). For time point two, the validation on relevant age group showed internal consistency of $\alpha = 0.920$ for the student questionnaire. Results supported that total scales were related to each other. Moderate significant correlations were found in the pilot study between general self-efficacy and specific PE self-efficacy. Aptitude to participate correlated strongly with specific PE self-efficacy, and weakly with the other total scales (Bertills et al., 2017). On the other hand, the internal consistency for the teacher scales are quite low, but as stated earlier the scales were kept for clinimetric reasons.

Attrition varied between questions, so the number of participants varies between analyses. Students in general rated both SEinPE and Aptitude to participate high, therefore the replies are positively skewed. There were few blanks in the questionnaires. The scale with higher attritions was SEinPE. However, General SE also had some questions with attrition. A specific question with higher attrition was "How well do you succeed in satisfying your parents with your school-work?"

7 Ethical Considerations

Respect for person: The adults were asked if they wanted to participate and everything was explained before they accepted. They were told that it was totally fine if they didn’t want to participate in the study.

Beneficence and non-maleficence: The questions asked in the questionnaire were not difficult to answer and they were formulated in order not to hurt the teacher or student and get them to answer about a harmful or stressful topic.

Justice: Everything was done legally and without any hidings. Informed consent to participate was collected from 121 (of 439) students, and their parents. The study was approved by the Ethical Review Board, Linköping, Sweden (2013/508-31).

Integrity: All the information was given to the teachers and students so that they could choose if they wanted to participate or not. The researcher was always there to answer any questions they had and to try and solve any problem that came up.

Fidelity and responsibility: The participants of the study were informed about everything before the study and the researcher was in charge of conducting everything in order to obtain the data.
8 Results

8.1 Maximum and minimum possible scores and average scores in this study
The teacher’s questionnaire has the same number of participants in every subscale. Every sub-
category has a minimum possible answer of 1 and a maximum of 4 apart from teaching
prerequisites which is evaluated from 1 to 3. The overall rating of the category teaching skills
has a minimum of 1 and a maximum of 12 as it is the sum of the subscales (lesson plan, long
term planning and grading). All the answers are above average (See table 2).

<table>
<thead>
<tr>
<th></th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MEAN</td>
</tr>
<tr>
<td>TEACHING SKILLS – index based on the following items</td>
<td>8.6346 1 12 52</td>
</tr>
<tr>
<td>LESSON PLAN – 4 items</td>
<td>2.8846 1 4 52</td>
</tr>
<tr>
<td>LONG-TERM PLANNING – 4 items</td>
<td>2.1538 1 4 52</td>
</tr>
<tr>
<td>GRADING – 6 items</td>
<td>3.5962 1 4 52</td>
</tr>
<tr>
<td>TEACHING PREREQUISITES – 3 items</td>
<td>1.5769 1 3 52</td>
</tr>
<tr>
<td>CLASSROOM CLIMATE – 4 items</td>
<td>2.75 1 4 52</td>
</tr>
</tbody>
</table>

Table 2: mean maximum and minimum scores for teacher’s questionnaires and number of participants.

When it comes to the student’s questionnaire, the number of participants vary between
questions. General SE is evaluated from 1 to 5 and both SEinPE and Participate have a scale
from 1 to 6. Students with disabilities have several missed answers especially when it comes
to GeneralSE questions. The mean answers are all above average (See table 3).

<table>
<thead>
<tr>
<th></th>
<th>IMPAIREDMENT</th>
<th>A-C</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MEAN</td>
<td>MIN</td>
<td>MAX</td>
</tr>
<tr>
<td>GENERAL SELF-EFFICACY</td>
<td>3.8141 1 5 13</td>
<td>3.6863 1 5 34</td>
<td>3.7216 1 5 47</td>
</tr>
<tr>
<td>SELF-EFFICACY IN PE</td>
<td>4.3344 1 6 16</td>
<td>4.8743 1 6 35</td>
<td>4.7049 1 6 51</td>
</tr>
</tbody>
</table>
| APTITUDE TO PARTICI-
PATE                   | 4.6821 1 6 17 | 5.1919 1 6 34 | 5.0219 1 6 51 |

Table 3: mean maximum and minimum scores for children’s questionnaire and number of participants
8.2 Teaching skills and student with disabilities’ perceived general school self-efficacy, PE specific self-efficacy, and aptitude to participate in PE

Among students in the total sample (n=52), there is no statistically significant correlation between teacher’s grading criteria and children’s general school self-efficacy, their PE specific self-efficacy and their aptitude to participate in PE.

For students with high grades A-C (n=35), there is a positive significant correlation between teacher’s overall teaching skills and the student’s self-efficacy in PE (df=34, r=, 299, p=0, 04). This means, the higher the teacher’s self-rated general teaching skills, the higher the student’s self-rated self-efficacy in PE. However, there is no significant correlation between the teacher’s general teaching skills and the student with high grades’ aptitude to participate in PE or their general school self-efficacy. There are also no significant correlations between the subscales of teacher’s lesson plan, long term planning and grading and student’s aptitude to participate in PE, their general school self-efficacy and their self-efficacy in PE.

Concerning patterns of correlations, predominantly positive correlations between teacher’s self-rated skill and student ratings were observed for students with high grades. As teachers scored higher on teaching skills, the students with high grades reported higher general school self-efficacy, aptitude to participate in PE, and PE specific self-efficacy. As teachers scored higher on teaching prerequisites and classroom climate, the students with high grades reported higher general school self-efficacy, aptitude to participate in PE, and PE specific self-efficacy.

For students with disabilities (n=17), there is positive moderate correlation between long-term planning and students with disabilities’ aptitude to participate in PE (df=16, r=0,294, p=0,126) and PE specific self-efficacy (df=15, r=0,356, p=0,088). Although the low n makes the correlations non-significant. On the other hand, there is a strong negative correlation between teacher’s lesson planning and the students with disabilities’ general school self-efficacy (df=12, r=−, 747, p=0,002). The higher the teacher scores in lesson plan, the lower the reported general school self-efficacy. There is a negative correlation between the overall self-rated teaching skills and the students with disabilities’ general school self-efficacy (df=12, r=−0, 46, p=0,057). Students with disabilities displayed predominantly negative correlations (shaded grey) in table 4. As teachers scored higher on lesson plan and grading, students with disabilities reported lower general school self-efficacy, aptitude to participate in PE, and PE specific self-efficacy.
### Table 4: Results for correlations between children’s GeneralSE, SE in PE and Participate and teacher’s teaching skills

<table>
<thead>
<tr>
<th></th>
<th>TEACHING SKILLS</th>
<th>LESSON PLAN</th>
<th>LONG-TERM PLANNING</th>
<th>GRADING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHILDREN WITH HIGH GRADES:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APTITUDE TO PARTICIPATE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correlation Coefficient</td>
<td>0,182</td>
<td>-0,06</td>
<td>0,136</td>
<td>0,151</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>0,151</td>
<td>0,369</td>
<td>0,222</td>
<td>0,197</td>
</tr>
<tr>
<td>N</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>GENERAL SE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correlation Coefficient</td>
<td>0,12</td>
<td>-0,02</td>
<td><strong>0,165</strong></td>
<td>0,231</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>0,25</td>
<td>0,455</td>
<td>0,176</td>
<td>0,095</td>
</tr>
<tr>
<td>N</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>SE IN PE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correlation Coefficient</td>
<td><strong>0,299</strong></td>
<td>0,018</td>
<td>0,107</td>
<td>0,257</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>0,04</td>
<td>0,459</td>
<td>0,271</td>
<td>0,068</td>
</tr>
<tr>
<td>N</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td><strong>CHILDREN WITH DISABILITIES:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APTITUDE TO PARTICIPATE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correlation Coefficient</td>
<td>0,103</td>
<td>-0,16</td>
<td><strong>0,294</strong></td>
<td>-0,114</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>0,347</td>
<td>0,27</td>
<td>0,126</td>
<td>0,331</td>
</tr>
<tr>
<td>N</td>
<td>17</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>GENERAL SE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correlation Coefficient</td>
<td>-0,46</td>
<td><strong>0,747</strong></td>
<td>-0,123</td>
<td>-0,234</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>0,057</td>
<td>0,002</td>
<td>0,344</td>
<td>0,221</td>
</tr>
<tr>
<td>N</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>SE IN PE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correlation Coefficient</td>
<td>0,209</td>
<td>-0,107</td>
<td><strong>0,356</strong></td>
<td>-0,112</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>0,219</td>
<td>0,347</td>
<td>0,088</td>
<td>0,339</td>
</tr>
<tr>
<td>N</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

**p<.1 *p<.5
8.3 Teacher’s self-rated prerequisites and climate and student with disabilities’ and children with high grades’ perceived general school self-efficacy, PE specific self-efficacy, and aptitude to participate in PE

Among students in the total sample (n= 52) teachers’ ratings of their teaching prerequisites and their class climate correlated positively with student general school self-efficacy, aptitude to participate in PE, and PE specific self-efficacy.

For students with high grades A-C (n=35), teacher’s prerequisites showed a weak positive correlation with General SE, self-efficacy in PE and aptitude to participate. However, classroom climate showed a strong positive correlation with the students with high grades’ aptitude to participate in PE (df=33, r=, 328, p=0,029) and their self-efficacy in PE (df=33, r=, 295, p=.0, 043). Therefore, the better the classroom climate is, there is more aptitude to participate in PE and a higher specific self-efficacy in PE.

For students with disabilities (n=17), teaching prerequisites showed a strong positive correlation with self-efficacy in PE (df=15, r=0,293, p=0,135). The better the teaching prerequisites were, the reported self-efficacy in PE of students with disabilities was higher. The classroom climate showed a strong positive correlation with both the students with disabilities’ aptitude to participate in PE (df=16, r=0,412, p=0, 05) and specific self-efficacy in PE (df=15, r=, 662, p=0,003). The better the ratings of the classroom climate were, there was a higher reported aptitude to participate and self-efficacy in PE of students with disabilities. However, both teaching prerequisites and classroom climate showed a weak negative correlation with general school self-efficacy.

Students with disabilities also displayed predominantly positive correlations with teacher ratings of prerequisites and classroom climate. As teachers scored higher on teaching prerequisites and classroom climate, students with disabilities reported higher general school self-efficacy, aptitude to participate in PE, and PE specific self-efficacy.
<table>
<thead>
<tr>
<th></th>
<th>Teaching Prerequisites</th>
<th>Classroom Climate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHILDREN WITH HIGH GRADES:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>APTITUDE TO PARTICIPATE</strong></td>
<td>Correlation Coefficient 0,251</td>
<td>0,328*</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)        0,076</td>
<td>0,029</td>
</tr>
<tr>
<td></td>
<td>N                      34</td>
<td>34</td>
</tr>
<tr>
<td><strong>GENERAL SE</strong></td>
<td>Correlation Coefficient 0,028</td>
<td>0,156</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)        0,436</td>
<td>0,189</td>
</tr>
<tr>
<td></td>
<td>N                      34</td>
<td>34</td>
</tr>
<tr>
<td><strong>SE IN PE</strong></td>
<td>Correlation Coefficient 0,217</td>
<td>0,295*</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)        0,106</td>
<td>0,043</td>
</tr>
<tr>
<td></td>
<td>N                      35</td>
<td>35</td>
</tr>
<tr>
<td><strong>CHILDREN WITH DISABILITIES:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>APTITUDE TO PARTICIPATE</strong></td>
<td>Correlation Coefficient 0,051</td>
<td>0,412</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)        0,423</td>
<td>0,05</td>
</tr>
<tr>
<td></td>
<td>N                      17</td>
<td>17</td>
</tr>
<tr>
<td><strong>GENERAL SE</strong></td>
<td>Correlation Coefficient -0,178</td>
<td>-0,05</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)        0,28</td>
<td>0,436</td>
</tr>
<tr>
<td></td>
<td>N                      13</td>
<td>13</td>
</tr>
<tr>
<td><strong>SE IN PE</strong></td>
<td>Correlation Coefficient 0,293</td>
<td>0,662**</td>
</tr>
<tr>
<td></td>
<td>Sig. (1-tailed)        0,135</td>
<td>0,003</td>
</tr>
<tr>
<td></td>
<td>N                      16</td>
<td>16</td>
</tr>
</tbody>
</table>

**p<.1 *p<.5**

**Table 5:** Results for correlation between children's GeneralSE, SEinPE and Participate and prerequisites and climate
9 Discussion

9.1 Teaching skills and their effects on self-efficacy and aptitude to participate in PE

According to the components of Bandura’s social cognitive theory, the process of knowledge acquisition or learning is directly correlated to the observation of models. The models can be those of an interpersonal imitation or media sources. Effective modeling teaches general rules and strategies for dealing with different situations (Bandura, 1988). Therefore, a positive rated lesson plan, implicitly understood as instructed using models should lead to high self-efficacy and aptitude to participate. In addition, to learn a particular behavior, people must understand what the potential outcome is if they repeat that behavior (explicit criteria for achievement). The observer does not expect the actual rewards or punishments incurred by the model but anticipates similar outcomes when imitating the behavior. These expectancies are heavily influenced by the environment that the observer grows up in (Bandura, 1988). This leads to the following understanding; clearer grading criteria should lead to higher self-efficacy and aptitude to participate. This is confirmed by the results of students with high grades as they displayed predominantly positive correlations. As teachers scored higher on teaching skills, the students with high grades reported higher general school self-efficacy, aptitude to participate in PE, and PE specific self-efficacy.

However, students with disabilities displayed predominantly negative correlations. As teachers scored higher on teaching skills (especially grading and lesson plan), students with disabilities reported lower general school self-efficacy, aptitude to participate in PE, and PE specific self-efficacy. One explanation as to why better teaching skills affect students with disabilities negatively could be that the intended learning outcomes stated in the syllabus are not compatible with inclusive teaching (Bertills et al., 2018). Another explanation might be that school-based PE is affirming traditional norms of a sport culture for fit bodies, at the expense of students with disabilities, who experience a loss of self-efficacy when assessment processes are communicated (Fitzgerald, 2005). With these findings, the hypothesis that both the general self-efficacy and self-efficacy in PE and the aptitude to participate of students with disabilities in grade 9 have a negative relationship with teachers’ self-rated skills to plan and grade students in grade 7 but the same relationship is positive for students with high grades, is at least partly verified. The positive correlation between long term planning and self-efficacy is contradictive. The grading and lesson plan are told to the student with disabilities. Therefore, the child might feel pressured and stressed to fulfil the expectations of the teacher, when it isn’t possible, the student’s perceived self-efficacy becomes lower. However, the long-term planning isn’t
expressed to the student and thus do not lead to student’s negative expectations on achievement. This hypothesis is also supported by the previous study where results show that for students with high grades, teacher’s rated teaching skills correlate positively with GeneralSE, SEinPE and aptitude to participate. For each of the subscales, lesson planning correlated positively with SEinPE but negatively with GeneralSE and aptitude to participate. However, long-term planning and grading correlated positively with GeneralSE, SEinPE and aptitude to participate. However, for children with disabilities, teacher’s rated teaching skills correlate negatively with GeneralSE, SEinPE and aptitude to participate. For each of the subscales, lesson planning and grading correlated negatively with SEinPE, GeneralSE and aptitude to participate. However, long-term planning correlated negatively with GeneralSE but positively with both SEinPE and aptitude to participate (Bertills et al., 2017).

9.2 The importance of a positive classroom climate

According to the components of Bandura’s social cognitive theory, identification allows the observer to feel a one-to-one similarity with the model and can thus lead to a higher chance of the observer following through with the modeled action (Bandura, 1988). People are more likely to follow behaviors modeled by someone with whom they can identify with. The more commonalities or emotional attachments perceived between the observer and the model, the more likely the observer learns and reenact the modeled behavior (Bandura, 1955). Therefore, a positive classroom climate would lead to higher self-efficacy and aptitude to participate. Among students in the total sample teachers’ ratings of their teaching prerequisites and their class climate correlated positively with student general school self-efficacy, aptitude to participate in PE, and PE specific self-efficacy. As teachers scored higher on teaching prerequisites and classroom climate, the students with high grades reported higher general school self-efficacy, aptitude to participate in PE, and PE specific self-efficacy. This is supported by Haegele & Sutherland, (2015) that reported that when it comes to classroom climate, by providing a positive learning environment for students with disabilities, meaningful learning experiences can occur.

As teachers scored higher on teaching prerequisites and classroom climate, students with disabilities reported higher general school self-efficacy, aptitude to participate in PE, and PE specific self-efficacy. The reason behind the strong positive correlation between teacher’s prerequisites and student’s self-efficacy might be that students may associate good prerequisites with having fun, exercising and team work (Goodwin & Watkinson, 2000). However, lower aptitude to participate in students with disabilities can be due to students’ views and
expectations of traditional sports and games with the pressure of high physical performance (Fitzgerald, 2005).

With these findings, the hypothesis that the relations between prerequisite and climate as rated by teachers in grade 7 and general school and PE specific self-efficacy, and aptitude to participate in PE in grade 9 are positive for both students with disability and high grades, is also verified. This hypothesis is partly supported by the previous study where the results show that for children with high grades, classroom climate correlated positively with GeneralSE, SEinPE and aptitude to participate. Prerequisites however, correlated positively with GeneralSE and SEinPE but negatively with aptitude to participate. On the other hand, for children with disabilities, prerequisites correlated negatively with GeneralSE, SEinPE and aptitude to participate and classroom climate correlated positively with SEinPE and aptitude to participate but had a negative correlation with GeneralSE (Bertills et al., 2017).

9.3 Differences between children with disabilities and children without disabilities in PE

As observed in the results, both the general self-efficacy and self-efficacy in PE and the aptitude to participate of students with disabilities have a negative relationship with teachers’ self-rated skills to lesson plan and grade students but the same relationship is positive for students with high grades. Inclusion in PE should lead to changes in curriculum and the provision of necessary support. Some strategies employed by PE teachers may include the following to achieve this inclusion might be to provide the necessary support to students with disabilities when giving assignments in or out of PE class (Klein & Hollingshead, 2015) and access opportunities for professional development (Klein & Hollingshead, 2015). Teachers can also include more nontraditional sports and activities (e.g., Four Square, dancing, or yoga) along with traditional games (Klein & Hollingshead, 2015) and encourage students without disabilities to be leaders or peer partners during activities that may present a challenge for students with disabilities (Lieberman et al., 2004). It is also helpful to encourage students with disabilities to demonstrate their strengths as teacher assistants as appropriate (Adapted Physical Education, 2012) and provide enough trained support staff in the form of peers, volunteers, paraprofessionals, and specialists (Block & Krebs, 1992). Properly designed and implemented programs of sports and physical activities for children with disabilities should target cardiovascular endurance, flexibility, balance, agility, and muscular strength and accessibility, safety, and enjoyment. (Durstine et al., 2000). When it comes to grading, there is a lack of knowledge on some aspects such as the grading system, what and when will students be evaluated and the evaluation goals. On the other hand, the relations between prerequisite and climate as rated by teachers and general school and PE specific self-efficacy, and aptitude to participate in PE are positive for
both students with disability and high grades. For students with disabilities, creating a sense of belonging to the group, encouragement and differentiated learning experiences provide students with opportunities to meaningfully participate in PE can improve their participation (Beamish & Saggers, 2014). It is important that students with disabilities are empowered with an “I can do” attitude rather than discouraged by the message “you can’t do that.” (Wilson, 2002). Careful attention must be directed at proper training, hydration, clothing, and equipment. The student’s current health status, the level of competition, the specific sport and position to be played, availability of protective or adaptive equipment, whether the sport can be modified to allow safer participation, and the ability of student and parent to understand and accept the risks involved must all be addressed before participation (American Academy of Paediatrics, Committee on Sports Medicine and Fitness, 2001).

9.4 Methodological discussion

When discussing the method of this study, a quantitative analysis is ideal when wanting to find the correlation between certain topics. SPSS is a very useful tool to do this in a reliable manner. The research that had been done in this topic is relevant, however, the kind of disability the student’s exhibit can affect the results of the study.

Usually a correlation is considered as interesting if it explains enough variation between subjects. A common rule is that correlations that can explain about 10% of the variance are interesting. Thus, in this study an r value of 0.3 (explaining 9% of the variance) was considered as a strong indicator of clinically interesting relations. Generally, correlation coefficient of 0.3 is considered sizeable (Cohen, 1992).

Only the alpha value for the subscale of classroom climate is consistent (α=0.736). In the teacher self-rating scale. The other subscales were kept since the scales make sense clinimetrically, as clinimetric instruments may also include causal variables and each distinct aspect of measurement should deliver a unique increase in information to qualify for inclusion (Fava et al., 2012), although not psychometrically as psychometric measurement instruments only include indicator variables that are always correlated with the construct under study (De Vet et al., 2003). Cronbach also expressed that alpha is not the best formula for scales that have questions that target different processes or areas (Cronbach & Shavelson, 2004). In practice some questions are relevant to group under one heading, e.g. prerequisites even though the items might be unrelated. Some prerequisites concern physical environment and others concern social environment. These two types of prerequisites are probably not strongly related statistically.
In the process of making questionnaires available for students with special needs different accommodations such as a separated room may be used to stay on task, coloring of responses, and reading the questions aloud and assisting in reporting were used. For the main study purpose of investigating self-efficacy in students attending mainstream schools, it was decided to exclude questionnaires with the most missing values. A simplified version of the questionnaire was used to enhance responding in case of a combination of low understanding and low persistence (Bertills et al., 2017).

Some limitation found in this study was the fact that there were not enough participants to achieve a significant correlation when groups were compared despite relatively strong correlations. When it comes to the results of the questionnaires, the teachers rated their skill themselves (lesson planning, long-term planning and systematic grading) and this could lead to an over estimation of their skills. The teacher’s ratings were from grade 7 and the children’s answers from grade 9. By doing so the effect on student of teacher’s way of working are probably stronger. By using only data that contained the same teachers in grade 7 and in grade 9 it was possible to link teacher and student data. However, changes in teacher’s skill over time are not possible to control for with this design. The difference was tried to lower by using the data that contained the same teachers in grade 7 and in grade 9, however, some differences might appear with the difference of grades.

10 Conclusion

The inclusion of students with disabilities in physical education lessons is a very important aspect to be improved due to the amount of benefits they can obtain if inclusion is properly implemented. The problem relies mostly on the fact that teachers are not fully prepared to do this or are not aware of the effects their teaching skills (lesson plan, long-term planning and grading), the classroom climate and the prerequisites have on the student with disabilities’ general self-efficacy, self-efficacy in PE and their aptitude to participate. After having done this quantitative study, comparing these correlations for both students with disabilities and students with high grades, it is now known that what might be helpful for students with high grades could affect students with disabilities negatively unless planning and grading criteria are individually adapted to the students with impairments. However, it is clear that good prerequisites and classroom climate are necessary to improve both students with high grades and students with disabilities’ general self-efficacy, their self-efficacy in PE and their aptitude to participate.
11 References


12 APPENDIX 1: Teacher’s questionnaires

1. I experience that the education climate (student attitude, attitude) in the class is mainly
   Very good
   Good
   Partly good
   Bad

2. The students are mainly helpful and mainly assist their classmates
   Yes
   No
   Partially

3. Student’s attendance to the lessons in sports and health is
   Very high
   High
   Partially high
   Low

4. During the lessons in Sport and Health, the activity level (involvement) of the students is mainly high
   Yes
   No
   Partially

5. I have worked as a teacher in sports and health
   0-5 years 6-
   10 years 11-
   15 years
   More than 16 years

6. I have a teacher license in Sport and Health for grades 7-9
   Yes
   No

7. I am:
   Basic teacher with a focus on leisure time, grades 1-3, 4-6 or the equivalent Subject
   Teacher Grades 7-9, or equivalent
   Athlete who is qualified to teach at primary and secondary school Not authorized

8. I teach sports and health in:
   Sports hall and always have access to additional rooms adjacent to the sports hall
   Sports hall and sometimes have access to additional rooms adjacent to the sports hall Sports hall (without extra rooms)

9. The sports and health education lessons are near the school
   Yes
   No

If no, enter walking distance in minutes: ____

10. I have access to appropriate teaching materials (solid furnishings: music, bars, plinths, rugs etc., gear, balls, jumpers, wives, rock rings, etc.)
11. The number of students in sport and health lessons is mainly:

- 0-10 students
- 11-20 students
- 21-30 students
- More than 31 students

12. I have a subject planning for a longer period (at least one semester)

- Yes
- No
- Partially

13. I am mainly well prepared and think about how to carry out the lesson on a weekly basis

- Yes
- No
- Partially

14. During a lesson in Sport and Health, there are mainly two parallel activities (one teacher, one class)

- Yes
- No
- Partially

15. In education in sports and health (in class) we are mainly two adults (teacher, assistant, and other staff)

- Yes
- No
- Partially

If yes, we plan the lessons together

- Yes
- No
- Partially

16. I give instructions and explain mainly through

- telling about the activity
- drawing or rewriting the activity
- recreating the activity for the students to view

17. I consciously vary my way of giving instructions:

- Yes
- No
- Partially

18. In my way of assessing and evaluating students, I am mainly

- Intuitive. I have a "sense of humor" about the student's knowledge and ability
- Results Collectors. I record the student's knowledge and ability in (almost) all the activities and moments we do at the lessons
- Systematic planner. I start from the syllabus in Sport and Health and plan the planning, implementation and documentation of assessment
19. I feel that I have relevant knowledge and skills to engage in inclusive education
   Yes
   No
   Partially

20. I feel that I get enough support to be able to conduct inclusive education
   Yes
   No
   Partially

21. I find that I have time to plan lessons systematically so that the students in grades 7, 8 and 9 can train and develop according to the central content: Movement, Health and Lifestyle, Outdoors and Exercise
   Yes
   No
   Partially

22. I experience that I can carry out the lessons systematically so that the students in grades 7, 8 and 9 can train and develop according to the central content: Movement, Health and Lifestyle, Outdoor Life and Exercise
   Yes
   No
   Partially

23. During Lpo-94 I was involved in developing the local educational planning (LPP) in sports and health
   Yes
   No
   Partially

24. The local school document (Local Work Plan, Local Educational Planning (LPP), or similar) is a living document that is actively developed and revised at workplace-based learning
   Yes
   No
   Partially

25. When students attend the lesson in Sport and Health, they are mainly prepared for any activity that is planned
   Yes
   No
   Partially

26. The students are highly involved in the lessons in Sport and Health
   Yes
   No
   Partially

27. The students are highly involved in planning the lessons in Sport and Health
   Yes
   No
   Partially

28. I plan what activities are assessed in sports and health
   Yes
   No
29. I plan the assessment of different activities in sports and health

   Yes
   No
   Partially

30. The students know what activities will be assessed in sports and health

   Yes
   No
   Partially

31. The students know when I will assess different activities in sports and health

   Yes
   No
   Partially

32. When I make a rating, I consider in my assessment all activities, including those performed outside school hours

   Yes
   No
   Partially

33. When I make a rating, I assess in my assessment all the activities the student does in connection with teaching, e.g. helpfulness when picking up and picking up materials, if the student is careful about changing and fitting time, whether the student is sketchy to classmates etc.

   Yes
   No
   Partially

34. In my teaching, it is important to be able to explain to each student what he or she can do to achieve a certain grade in grade 9

   Yes
   No
   Partially

35. I find it hard to explain to each student if he or she is going to be able to achieve a certain grade in grade 9

   Yes
   No
   Partially

36. I feel that I can get support if a student is not expected to reach the knowledge requirements

   Yes
   No
   Partially
13 APPENDIX 2: Children´s questionnaires

13.1 General SE questionnaire

Academic SE

How well can you get teachers to help you when you get stuck on schoolwork?
4. How well can you study when there are other interesting things to do?
7. How well can you study a chapter for a test?
10. How well do you succeed in finishing all your homework every day?
13. How well can you pay attention during every class?
16. How well do you succeed in understanding all subjects in school?
19. How well do you succeed in satisfying your parents with your schoolwork?
22. How well do you succeed in passing a test?

Social SE

How well can you express your opinions when other classmates disagree with you?
6. How well can you become friends with other children?
8. How well can you have a chat with an unfamiliar person?
11. How well can you work in harmony with your classmates?
14. How well can you tell other children that they are doing something that you don’t like?
17. How well can you tell a funny event to a group of children?
20. How well do you succeed in staying friends with other children?
23. How well do you succeed in preventing quarrels with other children?

Emocional SE

How well do you succeed in cheering yourself up when an unpleasant event has happened?
How well do you succeed in becoming calm again when you are very scared?
9. How well can you prevent to become nervous?
12. How well can you control your feelings?
15. How well can you give yourself a pep-talk when you feel low?
18. How well can you tell a friend that you don’t feel well?
21. How well do you succeed in suppressing unpleasant thoughts?
24. How well do you succeed in not worrying about things that might happen?

Scoring: 1-6, 1=not good at all, 6=very good
13.2 SEPE questionnaire

Report how you perceive your skills and abilities to…

MovementSE
(1) …participate in dance
(2) …participate with pace and rhythm in fitness programs
(3) …participate in games
(4) …participate in athletics
(5) …participate in obstacle courses
(6) …participate in gymnastics
(7) …participate in ball games
(8) …swim in various types of strokes

HealthSE
(9) …set up goals with my training and physical activity
(10) …choose, plan, carry out and evaluate my training and physical activity
(11) …talk about my experience of activity and effects on health and physical capacity
(12) …prevent injuries associated with games and sports
(13) …describe risks associated with physical activity
(14) …handle emergencies
(15) …reason about how activities together with dietary and other factors can influence health and physical capacity

OutdoorSE
(16) …plan, organize and carry out outdoor life activities
(17) …act according to the rules of public access to land
(18) …adapt clothing to weather conditions
(19) …handle water emergencies
(20) …orient myself in unfamiliar environments using maps and other aids

Scoring: 1-6, 1=not good at all, 6=very good
13.3 Participate questionnaire

I:

1. usually can participate in sports and health
2. usually strive to "do my best" in sports and health
3. feel safe in the locker room
4. can and have the ability to participate in games in teams where the team competes against other and a team wins (relays, competitions)
5. know the knowledge requirements in sport and health and know what is required of me
6. In my free time I am active in a sports club (or similar association where I am physically active)
7. get encouragement and support from my teacher in sports and health

Scoring: 1 = not at all - 6 = very well