The effective characteristics in PE-based interventions on social cohesion

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This is to certify that to the best of my knowledge, the content of this thesis is my own work. This thesis has not been submitted for any degree or other purposes.

I certify that the intellectual content of this thesis is the product of my own work and that all the assistance received in preparing this thesis and sources have been acknowledged.

Signed,

Sonja Maric

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Abbreviations

Term	Definition
PE	Physical Education
CL	Cooperative Learning
MVPA	Moderate to Vigorous Physical Activity
SES	Socio-Economic Status
KLA	Key Learning Area
SEM	Sport Education Model

Abstract

The physiological benefits of physical activity on young people are well established. Despite these well-known benefits, rates of engagement in physical activity have demonstrated a steady decline globally. Anti-social behaviours have partly contributed to this decline with a plethora of studies which have examined social health, demonstrating the direct link between students' engagement rates in physical education classes, and social interactions. Interventions targeting social elements have emerged in literature and targeted Physical Education (PE) classes, in particular. Due to the volume of interventions on this topic, a systematic review of literature was needed to clarify the effective characteristics in intervention design for use in literature in the future. A systematic review is required due to its meticulous nature and as it provides researchers with the ability to find gaps in literature, thereby focusing their work on new and emerging ideas. The current systematic review of literature has found that at present 'effective' characteristics of PE based interventions have presented mixed results due to numerous contributing factors. The results indicate that future interventions should include stakeholders, such as parents, teachers as facilitators, and to include interventions in both primary and secondary school settings. The duration of interventions yielded mixed results and in order to demonstrate long term, transferable benefits, more research in this area is needed.

Introduction

Physical education (PE) has been used as a primary vessel in delivering and trialling interventions aimed at improving the overall student experience in both primary and secondary settings. Noting the steady decline in participation rates in PE, studies are often aimed at improving engagement (Springer, Cuevas Jaramillo, Ortiz Gómez, Case, & Wilkinson, 2016) and factors like movement and exertion rates (Hollis et al., 2017) within these interventions. Whilst this research on physiological benefits has clearly demonstrated impact, emerging literature on social cohesion has yielded particularly interesting findings in PE settings (Smith, et al., 2021). Social cohesion is often used to 'bridge the gap' between individuals and groups in order to promote cooperation and practice vital life skills (Smith, et al., 2021). As academic progression in schools cannot be ignored, one of the advantages of exploring the social impact in schools has been the significant link between students social interactions, emotional wellbeing, and academic performance (Rose-Krasnor, 1997), with studies demonstrating the positive impact of social interactions on individuals as well as academic performance (J. Fernandez-Rio & Casey, 2020). There has been some confusion amongst researchers as to the definition of the many terms falling under the 'social' umbrella (Schüller & Demetriou, 2018). Social competence, social cohesion, socialisation, and social skills are some of the interchangeable terms scattered throughout literature (Vidoni & Ward, 2009b). For the purposes of this study, the term 'social cohesion' will be used to encompass these terms. Social cohesion has been singled out as the desired term due to its prevalence in literature as well as its broad definition. Social cohesion can be defined as an individual's 'membership attitudes' toward a group; their identification, loyalty, attitude or behaviour to/about the group, or its members (Friedkin, 2004). The term 'social competence' can be referred to a student's ability to perform behaviours others find desirable (Vidoni & Ward, 2009a), making it a term that would fall under the umbrella of 'social cohesion'. Therefore, in order for students to develop identity and loyalty to a group (social cohesion), they must exhibit behaviours desirable to the members of that group (social

competence). These behaviours would belong to the subset of 'social skills', or, behaviours that are deemed prosocial or positive in their environment (Cartledge & Milburn, 1978).

Research suggests that the social environment in PE classes promotes education on social cohesion due to its unique structure which fosters social interactions and student relationships (Grimminger-Seidensticker, 2020). PE classes are also useful in promoting and developing interpersonal skills like cooperation and trust which in turn enable students to feel an (Smith, et al., 2021)improved sense of belonging in their school environment (Smith, et al., 2021). This sense of belonging is crucial during adolescence as students transition into adulthood (Allen & Kern, 2017). Students who reported as belonging to a group were more likely to have improved self-efficacy, self-esteem, and greater life satisfaction (Allen & Kern, 2017). Literature in PE interventions have made vital links between Cooperative learning and social cohesion, which has helped develop the significant life skills students carry throughout school and into adulthood (Fernandez-Rio & Casey, 2021).

Cooperative Learning (CL) is categorised by small groups, where the focus is on students helping each other learn content (Slavin, 2014). Teamwork, empathy and care are amongst some of the skills taught within this framework which help develop face-to-face interactions as well as tactics and strategy amongst group members (Javier Fernandez-Rio, Sanz, Fernandez-Cando, & Santos, 2017). The Sport Education Model (SEM) and the Teaching Games for Understanding Model (TGfU) are two prominent frameworks within Cooperative Learning. SEM is based on students working with and learning from their peers (Siedentop, 2002). SEM is performed during PE time and has a strong emphasis on student-centred learning where students gradually feel empowered and autonomous, and therefore become intrinsically motivated to participate in lessons (Bessa, Hastie, Ramos, & Mesquita, 2021). The TGfU Model is based on strategy, tactics, decision making, and problem solving with teammates in order to achieve the desired outcome (O'Leary, 2016). These modified versions of

well-established and popular sports allow students to focus on developing social skills through game play.

As schools are such social environments, the concept of social cohesion becomes essential for many different relationships within the school community, as well as life after school. Social cohesion relies on successful interactions amongst group members in order to achieve the desired outcome, and drives self-identity within the group (Slavin, 2014). Social cohesion and collaboration are vital elements to a successful classroom but have mostly been informal components in education within schools. The impact of the social element of learning is so large that it has even been referred to as a 'hidden curriculum' (Cartledge & Milburn, 1978). As with many student centred approaches like CL, teachers have often used aspects of it their classroom at some capacity and at all levels of learning (Slavin, 2014). While it appears that it may have been an implied concept in the past, it has since been identified as a vital skill not just for use in schools, but in life after formal education, impacting values, attitudes and self-confidence (Bajric, Bajric, Srdic, & Basinac, 2019).

Social cohesion is important for interaction at all stages of life, however due to the social nature of education and the increase in social issues falling within the school environment, there is growing public concern over the detrimental effects of bullying, school refusal, and other such anti-social behaviours which erode social cohesion in the school context (Dobrescu, 2019). There is international interest in potential improvement to social factors within the school system, that has brought about literature on existing theories like CL, which has demonstrated links between the social environment and improvements in various cognitive functions (Derri, Kellis, Vernadakis, Albanidis, & Kioumourtzoglou, 2014; Gulay, Mirzeoglu, & Celebi, 2010; Yücel & Özdayi, 2019). CL and developing social skills through social cohesion has been particularly examined in PE settings (B. P. Dyson, Linehan, & Hastie, 2010; Engels & Freund, 2020; Javier Fernandez-Rio et al., 2017). PE classes provide a unique environment for students to develop social cohesion through group play which has

demonstrated improvements in students' interactions with one another, amongst other important findings.

PE based interventions which feature a social element have demonstrated positive effects, and, due to increased interest amongst researchers, provided a more substantial impact on students in all stages of schooling. . For example, researchers who have utilised the Self-Determination Theory to develop social skills in their students have demonstrated positive results in student interactions, prosocial behaviours and need satisfaction (Cheon, Reeve, & Ntoumanis, 2018). Amongst others, researchers have also used theoretical framework like SEM to promote and develop motivation rates amongst their students in PE lessons (Tendinha, et al., 2021). Literature in this field has used PE as the platform of choice for promoting social development in students (Smith, et al., 2021), and certain characteristics of the said interventions have been more successful than others. In order to reconcile the characteristics that need to be more prominently featured in future studies, research into effective characteristics is paramount.

However, in order for interventions to be deemed 'effective' they need to demonstrate certain outcomes. For example, interventions that have evidence-based outcomes, feature randomised control trials, and demonstrate quantitative outcomes are generally favoured (Davies, 2006). Further, in terms of intervention design, it has been found that self-feedback as well as participants' feedback compared to others has been deemed as a construct of an 'effective' intervention (Williams & French, 2011). Similarly and significant to PE based interventions, self-regulated techniques (goal setting, feedback and self-monitoring) as well as 'active' rather than 'passive' interventions were most effective (Michie, Abraham, Whittington, McAteer, & Gupta, 2009). While there have been many approaches to moderating social cohesion within PE classes through interventions, to date it is unclear what characteristics are most effective at improving social cohesion.

It was therefore the aim of this thesis to identify the effective characteristics of PE- based interventions targeted at improving social cohesion and social skills. A systematic review will be used to source appropriate studies. It is hypothesised that effective characteristics will emerge as a result. As there is so much conjecture in literature on interventions in PE, especially in multicomponent interventions, finding and utilising effective characteristics of intervention design would allow for greater clarity amongst emerging interventions and provide researchers with the ability to compare measures more effectively. It would also provide researchers with a solid foundation for intervention design that would be easily replicated and based on empirical data, therefore increasing intervention validity.

Further, a systematic review has been singled out as the appropriate means to deliver this information due key elements of this type of review which includes a meticulous search of all available articles in the field with clear and concise eligibility criteria (Clarke, 2011). This ensures that a thorough and extensive search of all appropriate PE- based interventions with an emphasis on social development are found. As a result, this increases the validity of the findings and helps define 'effective' characteristics of intervention design after examining the findings. Due to such an extensive and transparent process, this thesis will endeavour to answer one significant question in the field of PE-based instruction:

1. What are the effective characteristics of intervention design in PE-based interventions to improve social cohesion?

In the next section a review of literature will explore the underlying issues associated with social development in schools. Factors including antisocial behaviours which disrupt social harmony in schools, the school setting and how it helps or hinders social cohesion amongst students, the significant role of the teacher, and intervention design will be explored. Literature in this field is scattered, with interchangeable terms that have often delivered varied findings. This further emphasised the significance of this thesis in synthesising the results through a systematic review and

developing a universal design of PE based interventions which has the potential to impact

widespread literature in this field.

Literature Review

In the following section the anti-social behaviours, the environment and benefits of social cohesion on the individual will be explored as well as its impact on PE and other Key Learning Areas (KLAs). What schools do to maximize social cohesion will also be featured, and the advantages and disadvantages of cementing social cohesion further into the curriculum will be discussed. The strengths and weaknesses of using social cohesion will be important in recognising how potentially significant this ideal is in the school environment, and interventions which explicitly feature social cohesion as an element rather than a by-product of other elements, will be justified.

Anti-social behaviour

Student interactions are of particular concern for subjects like PE where there has been a prevalence of anti-social behaviours like bullying. PE as a subject is particularly susceptible to bullying due to the often high competitive nature of the subject and due to varied perceptions of competence during lessons from both the individuals and other students in the class (Benítez-Sillero, Corredor-Corredor, Córdoba-Alcaide, & Calmaestra, 2021). Prevalence of bullying of Australian school aged children is estimated to be between 5-65% (Jadambaa et al., 2019) with incidence seeming to decrease with age. It is well documented that students' social lives change as a result of entering adolescence and the decrease in reported bullying rates for older school-aged children can be as a result of avoidance in reporting due to pressure from social groups (Benitez-Sillero, Corredor-Corredor, Cordoba-Alcaide, & Calmaestra, 2021). Older students perceive reporting as poor social form and are less likely to report being bullied as a result (Brochado, Soares, & Fraga, 2017; Lai & Kao, 2018). It is important to highlight anti-social behaviours like bullying in this thesis because;

A) Victims of bullying experience social anxiety, may suffer from depression and low self-esteem (Benítez-Sillero et al., 2021), all of which may lead to disengagement from subjects like PE

B) Bullying impacts social environments like schools and has an impact on student behaviour and engagement in class (Zhang, Han, & Ba, 2020)

Furthermore, mental health and wellbeing issues such as bullying, can also impact academic progression and students' grades (Arslan, Savaser, & Yazgan, 2011). Students who had experienced bullying had lower grade point averages, experienced school avoidance, performed worse on standardised tests, and had lower Math and reading scores (Lacey & Cornell, 2013). Evidence suggests that students may be experiencing it on a global scale, with research from China suggesting that research in this field, with cyberbullying in particular, becoming an increasing trend in countries like Canada, USA, Germany (Zhang et al., 2020) and the UK (O'Brien, Munn-Giddings, & Moules, 2018). With literature on social cohesion demonstrating positive results in students' interactions with each other, with factors like empathy, reasoning, and problem solving, it may be a key component in the battle against detrimental effects of bullying. Further, developing strong student-to-student relationships, may be a strategy to build empathy skills and decrease anti-social behaviours (Springer, Cuevas Jaramillo, Ortiz Gómez, Case, & Wilkinson, 2016).

Research on bullying prevention has cited that developing social cohesion strategies may be beneficial when dealing with bullying at school level (Springer, Cuevas Jaramillo, Ortiz Gómez, Case, & Wilkinson, 2016).Studies have found that students develop better relationships with their peers and teachers when schools place more emphasis when building and reinforcing social development (Springer, Cuevas Jaramillo, Ortiz Gómez, Case, & Wilkinson, 2016). For this reason, it seems essential that in order to counter anti-social behaviours particularly prevalent during high school, schools need a more social approach.

Anti-social behaviour, like bullying, has only been identified as an issue in schools since the 1970s, with an extension taking place in the modern world of social media and cyberbullying. For the purpose of this paper, the following definition will be used; Bullying occurs when a student is

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repeatedly exposed to bullying by one or more other students (Olweus, 1997). Schools have been

battling various types of bullying with varying degrees of success. This is often the case because this

social issue has often been deemed a 'rite of passage' and has even progressed to phenomena

known as 'hazing' which has received notoriety through American college systems and sororities

(Kowalski et al., 2020). The term 'hazing' is used to describe humiliating younger or 'junior ranked'

members of a group or sports team (Kowalski et al., 2020) and promotes the idea that being bullied

in school is normal.

However, schools and colleges are not the only educational institutes that have an issue with anti-

social behaviours like hazing, with military groups also being susceptible environments to

demonstrate its negative effects (Kowalski et al., 2020). It is particularly difficult to identify acts of

hazing in military situations, because much like schools, they rely on its members to remain

anonymous and committed to the group in order to gain privileges, like friendships, with more

popular members (Keller & et al., 2015). This social phenomenon relies on members' loyalty to

prevent them reporting the humiliating and derogatory behaviour to the authorities. In schools,

students fear reporting due to being labelled negatively (O'Brien et al., 2018). This is further

demonstrated through older students emphasis of friendship groups and perceived negative social

consequences of reporting or 'snitching' (O'Brien et al., 2018).

The impact of bullying and other such anti-social behaviours has been linked to issues like low

academic performance, low self-esteem, self-harm and mental illness (Benitez-Sillero et al., 2021;

Owens, Skrzypiec, & Wadham, 2014), which can have a negative impact on the overall school

experience. In some of the worst reported cases, individuals have committed self-harm and suicide

as a direct result of bullying (Hinduja & Patchin, 2010; Keller & et al., 2015), and national trends in

Australia have shown that in 2018, suicide was the highest cause of death in 5-17 year old children

(Government, 2020). The school environment can become essential in promoting and reinforcing students' pro-social behaviours.

Emphasis on social cohesion in countries like Australia is significant as bullying and anti-social behaviours in school were only recognised in a national inquiry in 1994 (Cross et al., 2011; Owens et al., 2014). Since then, literature in this field has expanded to areas like cyberbullying, aggression and physical violence, and harassment (Owens et al., 2014).This further emphasises the complex and far-reaching issue it is in areas like education as well as its impact on the individuals' wellbeing (Owens et al., 2014). Furthermore, PE lessons can be a particularly tough environment for victims of bullying to develop social skills because of the classroom structure of most Western schools. Australian schools feature class structures which can be both mixed gender and single gender, depending on the school, subject, and organisation with which it falls. Schools have the flexibility of choosing how to structure their classes. For example, a school may have students in single gender classes for practical PE lessons, and mixed classes for theory-based lessons. For this reason, social skills are learnt differently depending on the type of class structure students are exposed to.

There is a link between bullied students and disengagement from PE lessons (Benitez-Sillero et al., 2021). Absenteeism, withdrawal, avoidance behaviours and negative body image are all social consequences of negative experiences during PE lessons caused by bullying (Mierzwinski & Velija, 2020). When factoring in other issues, students, particularly girls, disengage from PE lessons due to competition and a lack of self-confidence, and prefer fitness-based activities that they can participate in socially (Timken, McNamee, & Coste, 2019). As a result of negative experiences with boys, girls prefer same-sex lessons, and their engagement seems to improve as a result. For this reason, a CL approach may be fitting in order to improve classroom culture and a sense of awareness for classmates (Benítez-Sillero et al., 2021).

The concern for subjects like PE is that bullying is particularly prevalent in these classes (Roman & Taylor, 2013). Research on peer victimisation found traditional forms of bullying like physical

aggression have been replaced by social behaviours like verbal bullying instead (Puhl, Peterson, & Luedicke, 2013). For teachers, this means that the issue might be harder to detect as they may not be aware of it or they may underestimate its severity (Bradshaw, Sawyer, & O'Brennan, 2007). Although the incidence of reported anti-social behaviours is present throughout a variety of locations, most of which include the playground, hallways and the classroom, PE features as the only school subject that has been singled out (Vaillancourt et al., 2010). This finding further emphasises the need for an intervention focused on improving social cohesion to be implemented in PE lessons.

School Environment

When seeking compatible environments for individual development to take place, schools stand out as clear front runners. Schools can be deemed as desirable avenues for all kinds of student development to take place. Seen as ideal due to the hours spent at school, access to educated professionals, and the structured and evaluated curriculum. Schools can often be environments which foster positive behavioural changes. They can also be predictors and present insights into less desirable behaviours that may carry on throughout formal schooling and into life after formal education ceases (Owen, 2016). For this reason, teachers and parents may be able to play a role in identifying and remedying undesirable behaviours and promote positive social interactions (Balderson & Sharpe, 2005).

Furthermore, it is well known that the social element of schooling is highly significant for students' overall attitudes about their education, which in turn impacts their engagement (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011). This is more so the case for girls who are more engaged in subjects which allow maximum socialising opportunities (Hills, 2007). The use of PE classes for improving social cohesion and social inclusion has demonstrated positive results in many different

ways (Ekholm, 2019). The benefits of PE and physical activity (PA) are not only beneficial for the individual physically, but it can also have a plethora of academic benefits as well. Students who are physically active are not only more engaged but experience higher test scores and lower rates of stress (D'Anna, Forte, & Paloma, 2019). When considering specific interventions to target social interactions, the PE environment seems most applicable.

Students' perceived competence and performance in class may be affected during PE lessons and can have an impact on their other subjects, as well as their time in school. Further, students who experience low perceived physical competence are less likely to engage in PE classes due to self-conscious tendencies which may further isolate them socially as they miss out on potential bonding situations, typical of game play, with their peers (Huhtiniemi et al., 2021). Adolescent girls (Bracco, Lodewyk, & Morrison, 2019), disabled students (Bertills, Granlund, Dahlström, & Augustine, 2018) and students of disadvantaged backgrounds (Spaaij, 2012) have been affected by the traditional PE climate and may benefit from a cooperative approach. This further highlights the need for PE based lessons to feature social cohesion strategies that strengthen self-confidence and encourage all students to maintain their engagement in PE lessons throughout schooling and into adulthood.

In terms of the academic impact of social cohesion, research suggests that students do not learn in isolation but rather from each other, their teacher, and their learning environment (Joseph, Allison, Rebecca, Roger, & Kriston, 2011). Further, due to high rates of disengagement and problematic behaviour in school, theories of learning and interventions have been put into place in order to improve these issues (Joseph et al., 2011). Social cohesion and the school 'climate' is so significant that not only is the student-to-student relationship important, but the student- to- teacher and student-to-school relationship is vital toward school connectedness and achievement scores, which were positive for students who felt connected to the school and their teachers (Reynolds, Lee, Turner, Bromhead, & Subasic, 2017).

Despite rates of disengagement and issues relating to PE, it is still a well-loved subject at school due to its 'fun' factor and practical nature. However, to combat concerns that practical and popular subjects like PDHPE and PE-based interventions deter students' time spent on other subjects and may interfere or negatively impact academic competence (Kahn et al., 2002), one particular study noted that PA does not negatively impact other subjects or academic competence (Trudeau & Shephard, 2005). On the contrary, cognitive functioning and aspects like working memory and overall classroom achievement have been identified as indications of success in physical activity-based interventions in schools (Alvarez-Bueno et al., 2017; Haapala. H, 2017). This concept was further emphasised through improvements in mathematics-related skills, reading and composite scores, as well as improvement in classroom behaviour (Alvarez-Bueno et al., 2017). Furthermore, stress reduction, improvements in focus, mood, verbal and mathematical skills, have all demonstrated positive effects when students participated in physical activity (Bilgin, Bulca, & Demirhan, 2020).

Similarly, students' emotional state has shown a high potential to impact their engagement and participation in all Key Learning Areas (KLAs). Students' self-esteem and self-concept pose interesting issues when addressing engagement in the classroom and can have an impact on social cohesion. There is a call to change the PE curriculum to be more student centred, less directed, and individualised, promoting creativity (Meghan et al., 2013). This call to create less competitive and more social environments for students veers away from traditional models where the teacher dictated the lesson and now resembles a hybrid-style learning, taking inspiration from some elements of the SEM (Hastie, 2000). Perhaps successful interventions are ones that need to take elements of theories of learning and behaviour and emotional state in order to comprehensively cover important elements of student development. Further research in this domain is required.

As mentioned previously, schools are an important venue for promotion of PE and PA, especially for phenomena like social cohesion. The PE setting is recognised as ideal due to the competencies learnt in this environment; leadership, cooperation, teamwork and empathy play a large role in overall achievement of individuals and are significant in adult life (Pan, Huang, Lee, & Hsu, 2019). Further, governing bodies are pushing for an overhaul in the school curriculum worldwide to include higher hours of mandatory PE time due to the obvious physical and academic benefits (D'Anna et al., 2019). Schools then become essential in helping mould young people into rudimental versions of what they will become as adults (Pangrazi, 2003). Literature has suggested that students who perform well in school become more successful adults whereas students who exhibit consistent negative behaviour struggle to cope with societal norms (Fry, Tan, McNeill, & Wright, 2010) . It can be argued that growing and fostering (Fry et al., 2010) positive social behaviours, perhaps through PE interventions, could be the defining factor in an individual's life and should therefore be at the forefront of educational reform.

Lastly, studies on PE interventions have focused on many different components like mood and self-esteem (Andrade, da Cruz, Correia, Santos, & Bevilacqua, 2020), decreasing obesity rates, physical fitness (Allafi, 2020), coordination and attention (Dios, Recuero, Calvo, & Zhang, 2019), mental health (Kim, Lee, & Riesche, 2020), and anti-bullying (Benitez-Sillero et al., 2021). Studies have not, as yet, explored what constitutes an effective PE based intervention focused on social cohesion as a stand-alone component. While many studies feature social cohesion as a by-product or show that there has been some level of change to social cohesion throughout (Hastie, 2000; Liu, 2015; Pan et al., 2019; Snyder et al., 2009), a comprehensive study of this kind does not exist.

While it is clear that school-based interventions are ideal, there are a plethora of barriers faced by students when considering participation in PE classes. For this reason, the significance of this study is further highlighted, especially with engagement and participation rates at their current levels.

Benefits of Social Cohesion on the Individual

Adolescence is a significant time where young people build social affiliations with one another, and a time of social navigation and exploration (Eek-Karlsson, 2019). Research on the impact social cohesion has on individuals and education is recognising the positive academic effects of social cohesion more, particularly due to the positive correlation found in literature between social cohesion and academic improvements (Dhurup & Reddy, 2013; Trudeau & Shephard, 2008). As individuals progress through formal schooling, it is important for schools to not only prepare students for life after school, but to ensure that they are able to collaborate and interact in harmony whilst at school and beyond. This can be as simple as learning to provide direction and feedback to others, processing stress, processing emotion and fear as well as solving problems (Akemi et al., 2019). All these factors may impact an individual development and academic performance significantly.

In order for students to function optimally in the classroom with their peers as well as their teachers, the right environment needs to be fostered. For this reason, CL theory is an approach which has been successful in demonstrating the benefits of working together in groups and creating positive classroom 'climate' (Alcala, Garijo, Perez-Pueyo, & Fernandez-Rio, 2019). Of significance for schools is the difference in how social cohesion, social interactions and social competence is perceived differently by students of different ages. For example, high school students exhibit significant improvements in their interactions with each other compared to their primary school counterparts when being exposed to interventions featuring an emphasis on student-centred learning, like CL (Hortigüela Alcalá, Hernando Garijo, Pérez-Pueyo, & Fernández-Río, 2019). This is noteworthy as deliberate theories like this may show more positive results for high school students due to the psychosocial changes they go through where peer groups become more significant and more emphasis is placed on how they may be perceived by others (Hortigüela Alcalá et al., 2019).

Further, positive social relationships and the characteristics they foster are important for overall well-being for students. When students get along with their peers and their teachers, the school environment can become pleasant and student-to-school bonding occurs, with low level social anxiety and performance issues (Springer, Cuevas Jaramillo, Ortiz Gómez, Case, & Wilkinson, 2016). Research also found that prosocial behaviours were met with more positive peer relationships and positive school experiences whereas antisocial behaviour had the opposite effect (Mooij, 2011). In terms of motivation, engagement, and overall sense of belonging in school, social cohesion has demonstrated positive outcomes.

Benefits of Social Cohesion on PE

The benefits of physical activity on young people are well documented in literature (Gulay et al., 2010; Yoon & Leem, 2021). Some of these benefits include overall improvements in general health, reduction in premature mortality, reduced body fat, and lowering the risk of conditions like cardiovascular disease and strokes (Braun, Kay, Cheung, Weiss, & Gazmararian, 2017; P. Cheung et al., 2019; Dios et al., 2019; Resaland et al., 2018). Physical education in schools has been identified as one of the subjects most compatible with exhibiting positive physical and social changes due to its unique structure and perceived relevance (Nathan et al., 2010) . It provides students with opportunities to develop knowledge and understanding of their bodies during theory lessons, and allows for physical play where students can develop social interactions through bonding opportunities provided through games (Hills, 2007). Due to the dropout rates experienced in out of school sport, constraints like time, and the financial burden, the PE setting may become one of the only avenues for students to be active during their day (Säfvenbom, Haugen, & Bulie, 2015)

It is worth noting that boys and girls experience PE differently, with dropout and disengagement rates in PE being significantly higher in girls compared to boys (Cairney et al., 2012; Nelli, Pilvikki, & Mikko, 2017). When students (most often girls) encounter negative social experiences in PE due to

previous embarrassment, clothing, and appearance (Hills, 2007), they can form negative associations with movement that may be debilitating and unhealthy (Säfvenbom et al., 2015). Their lack of engagement may be due to experiencing and reporting being judged and perceived as incompetent in games and skill development (Säfvenbom et al., 2015). Research in gender socialisation also notes that the traditional activities performed in PE lessons is also perceived as 'inappropriate' or 'masculine' by girls and they opt for more 'feminine' activities (Collins, Kay, & Collins, 2014). As the negative consequence of lowered levels of physical activity are well documented with girls being more likely experience detrimental effects of inactivity if more isn't done to improve their time in PE lessons.

To counter these negative findings, governments and organisations have invested in improving girls' engagement in PE lessons using social and environmental means. For example, the Trial of Activity for Adolescent Girls (TAAG) initiative targets inactivity of middle school-aged girls using a social and physical approach, with the hope of improving participation in class by 50% (Moe et al., 2006). Moreover, research suggests that a single sex approach toward PE lessons may not be an appropriate solution either as female peers can be seen as both socially 'supportive and scrutinising' (Mitchell, Gray, & Inchley, 2015). For that reason, interventions like the Fit for Girls program offers solutions based on giving students choice and autonomy, which has shown positive results (Mitchell et al., 2015). Some European nations have even suggested increasing hours of physical activity to before/after school and during break times to attempt to build positive perceptions between PE and individuals due to the known benefits associated with activity (D'Anna et al., 2019).

Furthermore, many interventions have targeted PE lessons and identified it as the perfect time in which to demonstrate positive changes in a number of social domains (Smith et al., 2021). For example, in a study on Fair Play Instruction in the US, the authors applied the SEM to an intervention targeting development of social skills and social competence in a PE setting (Vidoni & Ward, 2009a). The study was successful in improving participation rates, whilst decreasing waiting time (Vidoni &

Ward, 2009a). In another study, the 'Z game' was created in order to improve cooperation and academic improvements using a PE intervention with favourable results (Jordi Balaguer, 2017). The Sport Education model was also used in a study in the US based on improving fair play by incorporating sport seasons and utilising Flag Football and Soccer (Perlman & Goc Karp, 2010). The study demonstrated the positive social link with PE time by students investment in the 'Winning as a team' mantra and positive associations students built with factors like student roles, and participation throughout the study (Perlman & Goc Karp, 2010).

With many PE based interventions currently in circulation, one of the assumed beliefs is that most, if not all students, will participate in lessons. However, literature suggests that is in fact not always the case and that many students use high avoidance strategies in order to disengage (Ntoumanis, Pensgaard, Martin, & Pipe, 2004). Literature on motivation demonstrates that in order for students to be engaged in PE, or any other subject, they need to feel a sense of competence (Ntoumanis et al., 2004). When students feel a sense of competence through activity they are more likely to engage, especially if their teachers introduce and reinforce intrinsic motivational strategies (Ntoumanis & Standage, 2009). This competence may become less of a point of contention if there is more emphasis on social development where students participate with their friends in more enjoyable and fun settings (Mitchell et al., 2015). Thus far, the aim of many interventions has been to simply improve participation rates or to measure secondary study variables like rewards (Allafi, 2020), motor competence (Gu, Chen, & Zhang, 2019), cardiorespiratory fitness (Guijarro-Romero, Mayorga-Vega, Casado-Robles, & Viciana, 2020) and many others. Perhaps more emphasis needs to be placed on enjoyment in order to engage students who typically withdraw.

The positive impact of well-developed social cohesion and social skills on students and PE time has shown encouraging results. Social cohesion and student-centred teaching approaches like CL and many others, have demonstrated particularly promising findings when administered in PE lessons (B. Dyson & Strachan, 2017). These approaches have demonstrated improvements in fitness and social

interactions, social reasoning, social participation, general interactions, motor skills and teamwork (B. Dyson & Strachan, 2017). Moreover, research in CL and PE have demonstrated that students develop higher empathy skills amongst each other which in turn limits disruptive behaviours (B. Dyson & Casey, 2016). It shows that more time is spent on developing each individual student and moving toward a common goal rather than emphasising individual accomplishments. In that way, all students are invested in learning which improves engagement (B. Dyson & Casey, 2016).

Moreover, research suggests that student-based strategies incorporating social elements also develop students' verbal skills in PE settings, allowing for tactical skills to be utilised amongst team members (Darnis & Lafont, 2015). The TGfU Model, another student-based approach aimed at developing social skills, has been shown to have a positive impact on PE lessons due to the tactical nature and skill execution at appropriate times during game play (Darnis & Lafont, 2015). This is further reiterated by research that suggests group success may be impacted by the strength of the relationships existing within the group of students, making social skills and team talk essential in developing strong cohesion during practical activities (Alina-Gabriela, Vasilica, & Mirela, 2019).

Impact of the teacher

The significance of the teacher is quite important when considering the impact of a socially cohesive classroom. More experienced, specialist PE teachers delivered lessons with more moderate to vigorous physical activity (MVPA) spent less time in management (Sutherland et al., 2016). The type of employment teachers were under was also significant, showing that permanent staff were more effective than casual and non-specialist staff (Sutherland et al., 2016). This may be because specialist teachers who are more experienced also value factors like teacher training as important. Research suggests that teachers who do are more trained in factors like autonomy and are far more effective in components like engagement, motivation and achievement (S. H. Cheon, Reeve, Yu, & Jang,

2014). Specialist PE teachers are also seen as more knowledgeable compared to generalist or primary school teachers, especially when considering motor skills (Tsangaridou, 2008).

The role of the teacher is important for development of physical skills as well as important life skills. PE lessons allow students to develop a plethora of social skills like leadership, conflict minimisation, making friends, and negotiation (Sung Hyeon Cheon, Reeve, & Song, 2019). For that reason, a PE teachers' role in developing and maintaining social cohesion in the classroom is important in order to prevent anti-social issues like name calling, criticism and bullying (Sung Hyeon Cheon et al., 2019). Some of the ways literature suggests teachers promote positive social behaviours is through modelling, creating clear expectations, and promoting motivation (Sung Hyeon Cheon, Reeve, & Ntoumanis, 2018) as has been done utilising components like 'autonomy' from Self Determination Theory (S. H. Cheon et al., 2014).

Further, learning is impacted based on the physical characteristics of the of the teacher, like age, and of particular interest is that this phenomenon seems to be socially constructed and emerges as students age and change their perceptions of 'experience' (Pennington, Curtner-Smith, & Wind, 2019). Literature suggests that younger students are less biased toward older PE teachers and older students, of high school age, are less bias towards a younger teacher (Pennington et al., 2019). Research also revealed that appearance was important and noted that students were less likely to learn from obese or disabled teachers and responded more effectively to 'seemingly fit' educators (Bryant & Curtner-Smith, 2009). According to some research, a teacher's physical appearance has an impact on students' learning and their engagement with the content (McKown, Brusseau, Burns, & Galli, 2019). Research stipulates that PE teachers model healthy practices to their students through the way they look and their behaviours, which in turn has an impact on students attitudes and behaviours (McKown et al., 2019).

The student- teacher relationships also has a significant impact on how students feel and self-evaluate (McFarland, Murray, & Phillipson, 2016). Research on student-teacher relationships

suggests that when teachers provide supportive and nurturing relationships, students internalise more positively (McFarland et al., 2016). This has been found to be especially important when analysing students of a low socio-economic status (SES) (Roorda, Koomen, Spilt, & Oort, 2011). When students perceived their teachers as 'safe', they were more likely engaged in activities (Roorda et al., 2011), further emphasising the essential role the teacher has on the learning of their students. However, it has also been found that the degree of conflict in the student-teacher relationship can impact factors such as grades, behaviour, and work habits (Roorda et al., 2011), further demonstrating the idea that positive student- teacher relationships are significant.

Design Features

This section will discuss the advantages and disadvantages of intervention design and make references to interventions already studying social cohesion. The impact of gender, the school, impact on physiological benefits of interventions and the significance of the facilitator will be reviewed. It is important to establish the existing advantages and disadvantages of intervention design as this information will be relevant for future intervention design. Summarising these characteristics provides a starting point in evaluating effective characteristics of existing interventions. As the aim of this paper is to evaluate current practices for future use, the following information will be invaluable.

Disadvantages

Literature on interventions is vast and features mixed findings. For instance, in certain countries around the world, where PE education is not as highly regarded as elsewhere, interventions have been impacted by the facilitator. For instance, research has found that specialist teachers as facilitators in interventions were as essential part of the success of the intervention (Sacchetti et al., 2013) . Teachers as facilitators are significant as research suggests that students tend to build strong relationships with their PE teachers, often using them as role models and relating to them more so

than teachers of other KLAs (McFarland et al., 2016). In that regard, if students do not feel a sense of connection to their teacher, they are less likely to engage appropriately with the intervention, therefore potentially impacting the effectiveness (Roorda et al., 2011; Schneider et al., 2020). A possible solution suggested by many studies is that specialist teachers facilitate interventions (Coppens et al., 2014; Schneider et al., 2020).

Further, evidence suggests that primary school teachers being under trained when it comes to practical lessons, can be a possible hinderance for interventions in PE (Alcala et al., 2019). As primary school presents a foundation for students to learn fundamental movement skills, if teachers do not teach these skills using appropriate means, students may fall behind and disengagement is likely later in life (Hardy, King, Farrell, Macniven, & Howlett, 2009). Literature suggests that disengagement rates increase with age (Schneider et al., 2020), emphasising the essential role primary schools have on building good habits. It is the role of the teacher to foster these skills and to create lessons that include game play, social complexities and cooperation (Alcala, Garijo et al. 2019). The payoff from designing such lessons means that students may be more motivated and engaged in lessons later on (Schneider et al., 2020)

Studies also found that girls were less likely to be physically active, choosing instead to be sedentary and to socialise with friends (Säfvenbom et al., 2015). This may be due to the nature of the intervention itself, however literature is clear on the declining rates of PA in girls (Cairney et al., 2012). It may be that the parameters of the intervention do not meet a social element to the extent that would entice girls to engage consistently. This social component may be one that has been overlooked by researchers when designing their interventions, thereby what may have been a promising study had been hindered by the lack of parameters enabling girls to engage willingly. Research suggests that a possible solution to this is to create interventions which are autonomy-supportive (Schneider et al., 2020).

Due to the nature of interventions and the difference between cultural and demographic

populations worldwide, one of the disadvantages of social cohesion-based interventions is that

application of one intervention may work well in one setting but be incompatible in another. This is

particularly important internationally, as one country may face certain barriers that are not

applicable to others, in this way interventions may be invalid depending on the setting (Alcala et al.,

2019). Research also suggests that while students may learn these prosocial behaviours and apply

them into PE lessons as per the intervention, they do not maintain these skills (Akemi et al., 2019).

These findings suggest that the intent of the interventions may be applicable in theory, however

they may not work universally and may have a short lifespan (Gil-Madrona, Samalot Rivera, & Kozub,

2016). One of the possible solutions to this issue is to ground interventions in universal theory that

has been 'tried and tested' in order to ensure transfer.

Advantages

Physiological responses to exercise have been discussed throughout this chapter. The benefit of

incorporating practical elements to interventions have found a plethora of benefits. For example, in

an intervention on prepubertal boys, the authors found that incorporating jumping, weight training,

and high impact running in interventions, had a positive effect on bone mineral response (Mackelvie,

McKay, Petit, Moran, & Khan, 2002). This is further reinforced through an Australian study about the

Preventing Osteoporosis With Exercise Regimes in Physical Activity (POWER PE) program, which last

for eight months and targets prepubertal children. They found that young children benefit from

interventions with weight bearing exercises, like jumping, aged as young as 7 (Weeks, Young, &

Beck, 2008). They note that interventions on older children may not yield such positive results,

however more study in this domain needs to be done.

When considering the repetitive nature of interventions, it can be stipulated that through practice and exposure, student's progression in terms of skill development will improve as well as in social cohesion (Aljadeff-Abergel, Ayvazo, & Eldar, 2012). This, of course, also depends on the length of the intervention and the specific components put in place. Ideally social situations should increase in complexity allowing students to build from what was previously learnt (Aljadeff-Abergel et al., 2012). This is a highly significant aspect of social skill development especially for students who suffer from social conditions, such as anxiety, and gives all students the opportunity to develop throughout the intervention, however small that development may be.

Social cohesion interventions are also beneficial for the overall personal development of students. Research suggests that student empowerment, self-awareness and communication skills are developed through these interventions as well as a sense of autonomy through opportunities to take the initiative outside of school hours and become responsible for their own health (Haapala. H, 2017). Research also suggests that that developing students behavioural skills, including social skills, improves motivation (Coimbra, Cody, Kreppke, & Gerber, 2021). This in turn has the potential to develop their sense of autonomy and gives them confidence to design and carry through self-set goals. Students learn these behaviours throughout the intervention and as a result, become lifelong participants in PA with a holistic approach that encompasses physical, mental and social elements of their lives.

One of the important study design elements to social cohesion interventions, and interventions in general, is this multicomponent element. In a study on academic performance, for example, there were noted benefits of physical activity and academics however they also saw improvements in behavioural changes in the classroom (Alvarez-Bueno et al., 2017). Similarly, studies also identified multidimensional constructs within research on behaviour, cognition and emotions that demonstrate positive effect on student engagement (Owen, 2016). So too did studies focusing on

improving social cohesion and social skills in other PE based interventions, noting the need to include other variables in other to develop a higher quality analysis of behaviour (PÉRez-OrdÁS, Pozo, & Grao-Cruces, 2020; Ruiz-Ariza, Suárez-Manzano, López-Serrano, & Martínez-López, 2019).

Equally advantageous has been the use of two of more theories of development when designing an intervention on social cohesion. Often two schools of thought can be integrated to produce favourable results, as has been the case in previously mentioned Burn 2 Learn Intervention (Mavilidi et al., 2020), as well as Fuch's Motivational Model (MoVo). It combines elements from Social Cognitive Theory, Self Determination Theory, Goal Achievement Theory and Theory of Planned Behaviour (Coimbra et al., 2021).

Summary

Literature on interventions targeting social cohesions and social skills in PE are significant and offer numerous benefits (Akelaitis & Malinauskas, 2016; Bessa, Hastie, Rosado, & Mesquita, 2020). Important factors have to be considered including the role of facilitators (Sacchetti et al., 2013), physical benefits (Allafi, 2020), academic implications (Trudeau & Shephard, 2008), and many others. In order to find effective characteristics of PE-based interventions, more research in some of these elements needs to be completed. Whilst many interventions have been highlighted thus far in this review, the consensus is that many of the elements featured in interventions are ineffective or redundant. Future research should focus on intervention design, like appropriate length of interventions, applying appropriate theoretical framework for specific subjects, and emphasise transfer between school and real life.

Methods and Results

The proposed research project is quantitative in nature and will use a systematic literature review. A systematic review is most applicable to this study as it will provide answers to the research question whilst having the additional benefit of being replicable and exhaustive in nature (Mulrow, 1994).

With a rigorous and meticulous assessment of research, systematic reviews aim to answer a focused research question (Mallett, Hagen-Zanker, Slater, & Duvendack, 2012; Vrabel, 2015). They are highly prevalent within a number of fields and aid authors in developing a clear path forward in their research (Panic, Leoncini, de Belvis, Ricciardi, & Boccia, 2013). This type of review is replicable and reliable, increasing validity and reducing bias (Cope, 2014). Due to high volumes of data in a specific field, the careful and rigorous review of literature allows researchers the ability to justify further research or fill existing gaps in literature (Gopalakrishnan & Ganeshkumar, 2013). Further, systematic reviews allow researchers the ability to monitor primary literature in a given field, which can be especially important in fields like medicine, and to remain informed of general trends in their field (Mulrow, 1994).

Systematic reviews include "…the selection of predefined objectives and eligibility criteria for studies, a reproducible methodology, a systematic search targeting all studies that meet the eligibility criteria, an evaluation of the validity of the study findings, and a synthesis and presentation of the findings of the included studies" (Cope, 2014, p. 208). Due to the unmanageable amount of literature in PE-based interventions, a systematic review was the appropriate means of reviewing the studies in this paper without bias. Further, the clear structure of the systematic review allows other researchers to replicate the search strategy in order to build on their own work. This process is time effective as it allows researchers to avoid limitations of previous work and to avoid repeating existing research (Mulrow, 1994).

Systemic reviews also assess consistency within interventions (Mulrow, 1994). Systematic reviews can highlight consistencies within interventions as well as explain inconsistencies in data (Mulrow, 1994), this is particularly important when explaining populations and intervention design. Systematic reviews may also include meta-analysis, which helps improve precision by analysing a large collection of studies and summarising data (Gopalakrishnan & Ganeshkumar, 2013). Not only is consistency important for the study design, it is also important for the reporting phase (Vrabel, 2015). In order to maintain consistency within research reporting, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) is one of the most prevalent guidelines. PRISMA guidelines encourage researchers to improve accuracy through describing the steps taken in studies included in the search, thus eliminating bias and allowing others to replicate the same results (Vrabel, 2015). The PRISMA checklist entails 27 items included in completing a systematic review which allows readers to evaluate its effectiveness (Vrabel, 2015). PRISMA guidelines encourage authors to describe steps taken within their studies in order to minimise bias and maximise accuracy (Kearney, 2014).

The PRISMA statement was designed to improve the quality of systematic reviews and meta-analysis by providing the most important elements of a review in their search (Moher, Liberati, Tetzlaff, & Altman, 2009). The PRIMSA statement is accompanied by a flow diagram which provides information on the exact data collected throughout the systematic review of literature, like the amount of records in a specific database, included/ excluded articles and duplicates (Liberati et al., 2009). PRISMA guidelines are common for use in interventions due to consistency in reporting as well as its ability to pool large amount of data in cohesive analysis (Moher et al., 2009). A meta-analysis was not done in this paper, however a systematic review featuring adherence to PRISMA guidelines was completed.

Inclusion/ Exclusion Criteria

Inclusion Criteria

The aim of this systematic review of literature was to examine existing literature on PE-based interventions aimed at improving social cohesion. Studies were included if they:

- Were published in English

- Delivered during PE lessons to school aged children

- Delivered by a specialist PE teacher

- Focused on evaluating the interventions as opposed to how it affected specific population groups

- Examined effects of social cohesion, and/or:

- Reported outcomes using independent group difference values

Exclusion Criteria

Studies were excluded from this systematic review of literature if they:

- Were not published as journal articles

- Published outside the specified date (January 1st 2000- December 31st 2020)

- Did not include experimental groups

- Did not feature a practical element of intervention

- Included subjects with physical, mental or intellectual disabilities

Data

A total of 254 articles were identified as a result of a search completed in the following databases; PsychInfo, ProQuest, ERIC and SportsDiscus with the search period being from 2000 to 2020. These databases have been chosen as they feature documents on educational theory and practise. They are broad databases that provide access to Australian as well as international literature which is valid and up to date. Group 1 was identified as critical as the setting of the interventions took place within a formal education system. It was essential to include studies with interventions that were conducted in schools. Group 2 was used as the subject area, in this study it was physical education. Group 3 was included as the instructional design of the interventions required teachers or educators to be facilitators of the interventions. Group 4 was chosen as the nature of the study was an intervention and therefore databases needed to pick up alternative terms. Group 5 included the social element of the interventions and a comprehensive analysis of key terms revealed the included terms as most applicable to the current study. Due to the broad nature of the term 'social cohesion' it was discounted as a search term, instead focusing on more generalised terminology in this instance.

Articles were only chosen if they were written in English.

The search strategy that was employed included the following categories (i) School based, (ii) physical education, (iii) teacher delivered, and (iv) study design. Specifically, the title and abstract fields were searched using the following terms:

1. School* OR ''secondary college'' OR ''secondary education'' OR primary education'' OR ''elementary education''

2. ''physical education'' OR "phys ed" OR " pe "

3. Teach* OR Educat* OR Lead* OR Instruct*

4. Test or RCT or randomi* or control or trial or evaluat* or quasi-exper* or cluster or intervention*

5. Social competenc*" OR Cooperat* OR "Social skill*"

Reference lists of revealed five studies which were manually hand-searched. These five studies were included in the review because they had a social element. They did not appear in the initial search but were still relevant for this paper.

Data Extraction

The author searched all databases with the aforementioned terms with consultation from reviewers and the University of Sydney School of Education Librarian. An online database search was completed from January 1st 2000 to December 31st 2020. All data was exported using EndNote and analysed from that referencing system. Duplicates were searched and journal articles were the only form of publication that was considered for selection. Titles and abstracts were screened for inclusion/exclusion criteria by two authors and after any inconsistencies between texts were resolved, a full text review occurred. Data analysis was performed through a Microsoft Word table with information on the author, type of study, description, notes and quantitative data.

The study was outlined by a systematic review which initially found 254 studies using four electronic databases: ERIC, PsycInfo, SportsDiscus and Web of Science. A star rating system was completed on EndNote with the following categories:

5 stars	Articles in this category will be included in the study
4 stars	Key concepts may be missing, consult with reviewers
3 stars	Some valid points, may use as reference
2 stars	Articles are irrelevant to current study
1 star	Articles are irrelevant to current study

After conducting full text review 16 studies were considered in the five star category based on reviews by two reviewers. The star rating system was merely used by the author and reviewers in order to prioritise study review.

Results

The following section will be presented as a standalone article and will be published separately to this thesis.

Abstract

Title: Effective characteristics of PE based interventions on social cohesion

Background: Social cohesion and social skills have emerged as vital elements of effective schools. Students learning and maintaining social skills has proven to be highly important for successful classrooms and schools have been tasked with helping student develop these highly sought skills. Physical education (PE) classes have become the vessel in which to do this, even though social cohesion in all subjects is highly desirable. PE classes offer students highly unique social benefits and the opportunity to work on developing in many different areas, including social cohesion, which is perhaps why literature is littered with PE based interventions.

Methods: Sixteen studies featuring interventions that take place in PE classes were selected through a systematic review. The characteristics of these studies was evaluated in order to find 'effective' characteristics in PE- based intervention design. For this systematic review, we searched ERIC, PsychInfo, Web of Science and SportsDiscus. All PE-based interventions were included in the study if they were written in English, between January 1st 2000-31st December 2020, were peer reviewed. Studies were included if they featured PE-specialists as facilitators and had to be conducted in PE lessons.

Findings: The findings show that there are a multitude of characteristics based on theoretical pedagogy including the SEM, cooperative learning theory and the Teaching Personal and Social Responsibility Model. Further, due to the multicultural and environmental factors that exist in

literature worldwide, it can be difficult to gauge whether one approach can is more effective compared to another, if the intervention design is vastly different.

The educational and academic implications of identifying such characteristics would be global. It is well accepted that social issues are peppered throughout the school environment regardless of age, location and income, therefore this study can potentially have widespread implications on student achievement and performance. However, findings suggests that in order for interventions to be successful, they need to feature teachers as facilitators, they also need to continue long term, ideally years, not months, and, due to the complex nature of studies in the social 'domain', they need to feature a multitude of study variables.

Keywords
Social cohesion, social skills, social competence, PE, interventions, school, characteristics, social

Background

Physical education (PE) has been used as a primary vessel in delivering and trialling interventions aimed at improving the overall student experience in school. Noting the steady decline in participation rates in PE, literature is often aimed at improving engagement (Peggy Cheung, 2019) and factors like movement and exertion rates (Hollis et al., 2017). Understanding the social nature of students' school experience may, however, yield improvements in PE-based research. One of the advantages of exploring the social impact in schools has been the significant link between students social, emotional and academic wellbeing (Rose-Krasnor, 1997), with studies demonstrating the positive impact of social interactions on academic performance (J. Fernandez-Rio & Casey, 2020).

There has been some confusion amongst researchers as to the definition of the many terms falling under the 'social' umbrella (Schüller & Demetriou, 2018). Social Competence, social cohesion, socialisation, and social skills are some of the interchangeable terms scattered through literature. For the purposes of this study, the term 'social cohesion' will be used to encompass these terms. Social cohesion has been singled out as the desired term due to its prevalence in literature as well as

its broad definition. Social cohesion can be defined as an individual's 'membership attitudes' toward a group; their identification, loyalty, attitude or behaviour to/about the group, or its members (Friedkin, 2004). The term 'social competence' can be referred to a student's ability to perform behaviours others find desirable (Vidoni & Ward, 2009a), making it a term that would fall under the umbrella of 'social cohesion'. Therefore, in order for students to develop identity and loyalty to a group (social cohesion), they must exhibit behaviours desirable to the members of that group (social competence). These behaviours would belong to the subset of 'social skills', or, behaviours that are deemed prosocial or positive in their environment, like a school (Cartledge & Milburn, 1978).

With the rise in interventions targeting the social aspect, there has been renewed interest in student-centred approaches like Cooperative Learning (CL). Cooperative Learning is categorised by small groups, where the focus is on students helping each other learn content (Slavin, 2014). Teamwork, empathy and care are amongst some of the skills taught within this framework which helps develop face-to-face interactions as well as tactics and strategy amongst group members (Javier Fernandez-Rio et al., 2017). The Sport Education Model and the Teaching Games for Understanding Model, are two prominent frameworks within Cooperative Learning. The Sport Education Model is based on students working with and learning from their peers (Siedentop, 2002). It is done during PE time and has a strong emphasis on student-centred learning where students gradually feel empowered and autonomous, and therefore become intrinsically motivated to participate in lessons (Bessa et al., 2020). The Teaching Games for Understanding Model is based on strategy, tactics, decision making, and problem solving with teammates in order to achieve the desired outcome (O'Leary, 2016). These modified versions of well-established and popular sports allow students to focus on developing social skills through game play.

As schools are such social environments, the concept of social cohesion becomes essential for many different relationships within the school community. Social cohesion relies on successful interactions amongst group members in order to achieve the desired outcome, and drives self-identity within the

group (Slavin, 2014). Social cohesion and collaboration are vital elements to a successful classroom but have been informal components in education within schools. The impact of the social element of learning is so large that it has even been referred to as a 'hidden curriculum' (Cartledge & Milburn, 1978). As with many student centred approaches like CL, teachers have often used aspects of it their classroom at some capacity and at all levels of learning (Slavin, 2014). While it appears that it may have been an implied concept in the past, it has since been identified as a vital skill not just for use in schools, but in life after formal education, impacting values, attitudes and self-confidence (Bajric et al., 2019).

Social cohesion is important for interaction at all stages of life, however due to the social nature of education and the increase in social issues falling within the school environment, there is growing public concern over the detrimental effects of bullying, school refusal, and other such anti-social behaviours (Dobrescu, 2019). There is international interest (Derri et al., 2014; Gulay et al., 2010; Yücel & Özdayi, 2019) in potential improvement to social factors within the school system, that has brought about literature on existing theories like CL, which has demonstrated links between the social environment and improvements in various cognitive functions. Cooperative learning and developing social skills through social cohesion has been particularly examined in PE settings in the form of interventions (B. P. Dyson et al., 2010; Engels & Freund, 2020; Javier Fernandez-Rio et al., 2017). PE classes provide a unique environment for students to develop social cohesion through group play which has demonstrated improvements in students' interactions with one another, amongst other important findings.

As PE based interventions with an emphasis on social health have been so effective in literature, one of the advantages has been the volume of interventions highlighted in existing studies. However, in order for interventions to be deemed 'effective' they need to demonstrate certain outcomes. For example, interventions that have evidence-based outcomes, feature randomised control trials and demonstrate quantitative outcomes are generally favoured (Davies, 2006). Further, in terms of

intervention design, it has been found that self-feedback as well as participants' feedback compared to others has been deemed as a construct of an 'effective' intervention (Williams & French, 2011). Similarly and significant to PE based interventions, self-regulated techniques derived from control theory (goal setting, feedback and self-monitoring) as well as 'active' rather than 'passive' interventions were most effective (Michie et al., 2009).

The aim of this paper is to identify the effective characteristics of PE-based interventions aimed at improving social cohesion and social skills. A systematic review will be used to source appropriate studies and it can be hypothesised that a host of 'effective' measures will emerge as a result. A literature review will follow highlighting the gaps in literature, strengths and weaknesses of existing interventions, and the significance of the current study on empirical research.

Methods

A systematic literature review was chosen because they include quantitative pooling of data called meta-analyses (Mallett et al., 2012) and was used in this study due to the volume of literature in this field. In the hierarchy of research evidence, systematic reviews and meta-analyses that feature RCT's are the most effective and successful forms of investigation (Mallett et al., 2012). As RCT's allow for comparison of control groups during, and, at the conclusion of studies, an evaluation and analysis against set criteria is possible. Due to the broad and thorough design of systematic reviews, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines are important in order to maintain consistency in research reporting (Vrabel, 2015) and have been used in this study.

Eligibility criteria

The aim of this systematic review of literature was to examine existing literature on PE-based

interventions aimed at improving social cohesion. Studies were included if they:

- Were published in English

- Delivered during PE lessons to school aged children

- Delivered by a specialist PE teacher

- Focused on evaluating the interventions as opposed to how it affected specific population

  groups

- Examined effects of social cohesion, and/or:

- Report outcomes using independent group difference values

Exclusion Criteria

Studies were excluded from this systematic review of literature if they:

- Were not published as journal articles

- Published outside the specified date (January 1st 2000- December 31st 2020)

- Did not include experimental groups

- Did not feature a practical element of intervention

- Included subjects with physical, mental or intellectual disabilities

Information Sources/ Search Strategy

A systematic review was conducted across three databases; ERIC, PsycInfo, SportsDiscus and Web of Science with the following search terms being examined:

The search strategy that has been employed included the following categories (i) School based, (ii) physical education, (iii) teacher delivered, and (iv) study design. Specifically, the title and abstract field will be searched using the following terms:

6. School* OR ''secondary college'' OR ''secondary education'' OR primary education'' OR ''elementary education''

7. ''physical education'' OR "phys ed" OR " pe "

8. Teach* OR Educat* OR Lead* OR Instruct*

9.   Test or RCT or randomi* or control or trial or evaluat* or quasi-exper* or cluster or intervention*

10. Social competenc*" OR Cooperat* OR "Social skill*"

Selection Process and Data Collection

In consultation with the university Librarian, the first author (SM) collated a variety of search terms which were then discussed and agreed upon with the second (WC) and third reviewer (JC). All three individuals were involved in selecting databases, under the advice of the university Librarian. All articles were collated on EndNote and duplicates were removed. The first author (SM) manually scanned the remaining articles for additional duplicates or discrepancies, such as incomplete or blank references.

Following that, SM and (JC) were then involved in selection process, firstly by screening title/abstract independently, then resolving any conflicts through the third reviewer (WC). All reviewers used the

inclusion/exclusion criteria when screening. When articles required further discussion, notes were added to the articles on EndNote and discussed afterwards. A full text review was completed by the same two initial authors SM and JC independently, and if necessary the second reviewer WC was consulted in any discrepancies emerged.

Data Items

We collected data on:

- the journal article: author year, source of publication
- the study: characteristics, key terms and definitions, methods, limitations
- the participants: age and school level, gender
- the research design: length/ duration, follow up
- the intervention: type, duration, sample size, delivery, results, method of analysis, teacher training

One author evaluated each study using an assessment scale derived from van Sluijs and colleagues (van Sluijs, McMinn, & Griffin, 2007). The results of this process can be seen in Table 1.

Table 1. Methodology quality assessment criteria (van Sluijs et al., 2007)

Author/Year	Methodological Quality Assessment Items										No. of criteria met
	A	B	C	D	E	F	G	H	I	J	
(Akelaitis & Malinauskas, 2016)	X	X			X	X			X	X	6
(Akemi et al., 2019)	X	X		X		X			X	X	6
(Balderson & Sharpe, 2005)	X	X				X			X		4
(Bessa et al., 2020)	X	X				X			X		4
(Derri et al., 2014)	X	X		X		X			X		5
(Engels & Freund, 2020)	X	X		X					X	X	5
(J. Fernandez-Rio, Mendez-Gimenez, & Mendez-Alonso, 2017)	X	X		X		X			X	X	6
(Javier Fernandez-Rio et al., 2017)	X	X		X		X			X	X	6
(Filiz & Demirhan, 2019)	X	X		X		X			X	X	6
(Gil-Madrona et al., 2016)	X	X		X		X			X	X	6
(Gulay et al., 2010)	X	X		X		X			X	X	6
(Guzman & Paya, 2020)	X	X		X		X			X	X	6
(PÉRez-OrdÁS et al., 2020)	X	X		X		X		X	X	X	7
(Ruiz-Ariza et al., 2019)	X	X		X		X			X	X	6
(Sohrabi, 2019)	X	X		X		X			X	X	6

(Viciana, Casado-Robles, Perez-Macias, & Mayorga-Vega, 2020)	X	X		X		X			X	X	6

Table 2: Criteria for assessment of methodological quality

Item	Description
A	Groups comparable at baseline on key characteristics (positive if stratified baseline characteristics were presented for age, sex, and at least one relevant outcome measure; for cluster randomised controlled trials and controlled trials, positive if this was statistically tested; and for all studies only positive when differences observed were controlled for in analyses)
B	Randomisation procedure clearly described and adequately carried out
C	Unit of analysis was individual (negative if unit of analysis was school level or school level randomisation not accounted for in individual level analyses)
D	Validated measures used
E	Dropout described and not more than 20% for studies with follow-up of six months or shorter and 30% for studies with follow-up of more than six months
F	Timing of measurements comparable between intervention and control groups
G	Blinding outcome assessment (positive if those responsible for assessing were blinded to group allocation of individual participants)
H	Participants followed up for a minimum of six months
I	Intention to treat analysis used
J	Potential confounders accounted for in analyses

Reporting bias assessment

Of the 16 included studies, 14 met five or more of the assessment criteria. The remaining two studies (Balderson & Sharpe, 2005; Bessa et al., 2020) met four of the assessment criteria. Only one study had a followed participants for longer than 6 months (PÉRez-OrdÁS et al., 2020)

Synthesis methods

A meta-analysis could not be undertaken due to the heterogeneity of interventions.

Study Selection/ Results

254 articles were identified through database screening (ERIC: 41, PsychInfo: 50, Web of Science: 101, SportsDiscus: 62). After removing 66 duplicates, 188 articles titles and abstracts were screened by two authors (SM) and (JC). Screening for titles and abstracts returned 36 studies which were

reviewed in full. The same two authors reviewed 36 full text articles for inclusion in the study. Five

additional articles were also added to the review through handsearching (Derri et al., 2014;

Fernandez-Rio et al., 2017; Filiz & Demirhan, 2019; Guzman & Paya, 2020; Sohrabi, 2019). This

resulted in 11 articles being identified through the systematic review process.

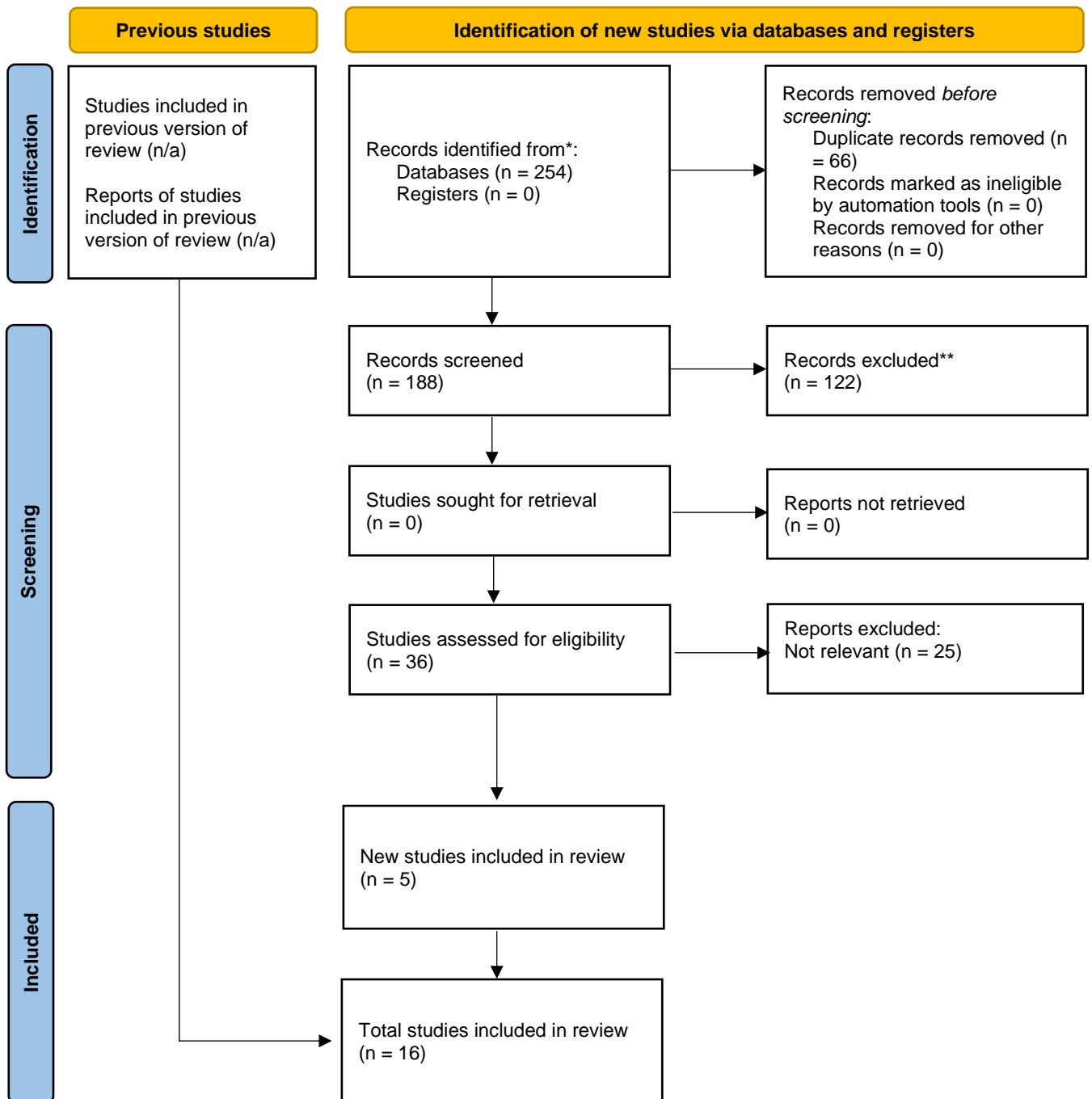 The process is summarised in the PRISMA flowchart in Figure 1.

Previous studies

Identification of new studies via databases and registers

Identification

Studies included in previous version of review (n/a)

Reports of studies included in previous version of review (n/a)

Records identified from*:
Databases (n = 254)
Registers (n = 0)

Records removed *before screening*:
Duplicate records removed (n = 66)
Records marked as ineligible by automation tools (n = 0)
Records removed for other reasons (n = 0)

Screening

Records screened
(n = 188)

Records excluded**
(n = 122)

Studies sought for retrieval
(n = 0)

Reports not retrieved
(n = 0)

Studies assessed for eligibility
(n = 36)

Reports excluded:
Not relevant (n = 25)

Included

New studies included in review
(n = 5)

Total studies included in review
(n = 16)

Figure 1. Review of studies as per PRISMA guidelines

Study Characteristics/ Results of Synthesis

After careful analysis and a meticulous review of literature, 16 articles were chosen, see Table 1. It is worth noting that whilst some studies featured additional variables like physical and psychological outcomes, they were predominantly chosen as they featured a strong social element and were therefore included in the review.

Of the 16 interventions, nine studies went for at least 12 weeks, with the shortest being 6 weeks in length (Sohrabi, 2019), and eight studies featuring two sessions per week. Out of the 16 studies the most occurring model was the Sport Education model with three articles using this approach (Bessa et al., 2020; J. Fernandez-Rio et al., 2017; Viciana et al., 2020). The length of study ranged from six weeks to eight months and the locations ranged internationally; one study took place in Lithuania (Akelaitis & Malinauskas, 2016), and one each from Japan (Akemi et al., 2019) the US (Balderson & Sharpe, 2005), Portugal (Bessa et al., 2020), Greece (Derri et al., 2014), Germany (Engels & Freund, 2020), and Iran (Sohrabi, 2019). Two studies came from Turkey (Filiz & Demirhan, 2019; Gulay et al., 2010), and seven studies came from Spain (J. Fernandez-Rio et al., 2017; Javier Fernandez-Rio et al., 2017; Gil-Madrona et al., 2016; Guzman & Paya, 2020; PÉRez-OrdÁS et al., 2020; Ruiz-Ariza et al., 2019; Viciana et al., 2020).

Participants' ages also ranged from elementary to high school aged students. Most studies had mixed gender participant groups, however, three studies featured same-gender groups (Akemi et al., 2019; Gulay et al., 2010; Sohrabi, 2019). Out of the 16 studies, only five took place in primary schools (Balderson & Sharpe, 2005; Derri et al., 2014; Guzman & Paya, 2020; PÉRez-OrdÁS et al., 2020; Sohrabi, 2019). To the authors knowledge, all studies featured pre-test questionnaires of some variety. All studies took place in the school setting and were led by PE specialists.

Interestingly, seven of the 16 studies featured teacher training in preparation for the intervention (Bessa et al., 2020; Engels & Freund, 2020; J. Fernandez-Rio et al., 2017; Javier Fernandez-Rio et al., 2017; Gil-Madrona et al., 2016; PÉRez-OrdÁS et al., 2020; Ruiz-Ariza et al., 2019) which was either in

the form of seminars or workshops. One intervention distributed homework (Akelaitis &

Malinauskas, 2016), and another featured a reward system (Derri et al., 2014). Two studies gave

their teachers some kind of visual support, either with the use of visual aids (Derri et al., 2014) or

through Skype with researchers (Javier Fernandez-Rio et al., 2017). Only one study used a pair

system with students rotating between partners (Ruiz-Ariza et al., 2019), all other studies featured

group work.

All studies featured improving social cohesion or social skills. When conducting pre and post testing,

the Perceived Locus of Causality Scale was the most common, used by three studies (J. Fernandez-

Rio et al., 2017; Javier Fernandez-Rio et al., 2017; Viciana et al., 2020), two of which also model their

approach on the Sport Education model. Two of the chosen studies used a version of the Likert Scale

Questionnaire (Gil-Madrona et al., 2016; Viciana et al., 2020), and the rest of the studies used other

questionnaire measures.

Interesting results were observed when analysing the limitations of each study. Out of the 16

studies, five identified their study setting as a limitation (Akelaitis & Malinauskas, 2016; Balderson &

Sharpe, 2005; Engels & Freund, 2020; J. Fernandez-Rio et al., 2017; Gulay et al., 2010), citing that

future studies should focus on a more diverse age bracket, perhaps including primary school

students too. Similarly, the length of study was also a cause of concern for authors of five studies

(Derri et al., 2014; Engels & Freund, 2020; Filiz & Demirhan, 2019; Gulay et al., 2010; Ruiz-Ariza et al.,

2019) who argued that longer study would yield better result. This ranged from studies who went on

for periods of 7 – 12 weeks, often citing that year-long studies would yield the best results.

Furthermore, five studies identified the sample size as a limitation (Derri et al., 2014; Javier

Fernandez-Rio et al., 2017; Filiz & Demirhan, 2019; Gulay et al., 2010; Ruiz-Ariza et al., 2019). These

studies identified that a larger sample size would yield more positive results of their study. In

addition, transfer of positive measures was a limitation in five studies (Balderson & Sharpe, 2005;

Derri et al., 2014; Gil-Madrona et al., 2016; PÉRez-OrdÁS et al., 2020; Viciana et al., 2020) whose

authors found that whilst they produced favourable results in PE time, these improved qualities did

not extend to after school or home time. Similarly, two studies (Derri et al., 2014; Filiz & Demirhan,

2019) identified inclusion of other stakeholders in the studies, like parents, teachers, and friends, would be significant in students' ability to transfer their learnt skills into the real-life context.

A limitation that was quite prominent in most school systems was that by the time researchers are able to enter schools for testing, students' classes are already set based upon whatever system schools are using in that region. This would impact randomisation of groups. Whilst only two schools (Bessa et al., 2020; Engels & Freund, 2020) identified this as problematic, it would be a cause of concern if an intervention was to take place during PE time where classes are well established ahead of time. Furthermore, in terms of study design six studies would have expanded their research to include a broader range of elements; like social responsibility and aggression, (Engels & Freund, 2020; Javier Fernandez-Rio et al., 2017; Filiz & Demirhan, 2019; Guzman & Paya, 2020; PÉRez-OrdÁS et al., 2020; Ruiz-Ariza et al., 2019) and three studies (Gulay et al., 2010; PÉRez-OrdÁS et al., 2020; Viciana et al., 2020) would have included both qualitative and quantitative measure variables.

When observing the results of the effectiveness of the abovementioned studies, a few consistencies emerged. For example, when only three studies identified 'social responsibility' as having experienced a notable increase (Bessa et al., 2020; J. Fernandez-Rio et al., 2017; Filiz & Demirhan, 2019), three studies observed positive increased for 'emotional control' (Gil-Madrona et al., 2016; Gulay et al., 2010; Ruiz-Ariza et al., 2019), and a further three studies (Engels & Freund, 2020; Gil-Madrona et al., 2016; Viciana et al., 2020) observed notable increased in either 'pleasure' or 'enjoyment' as a result of the interventions. As so few trends emerged in the 16 selected studies, more research in this area is essential in order to discover the best approach toward conducting PE-based interventions. Furthermore, these results suggest that the perimeters or measures of interventions are not fully established in literature which causes confusion when researchers conduct studies.

Table 2. Study characteristics

Author/ Country/ Year	Number of Participants	Model	Length of intervention	Results	Outcome Variable (S)
(Akelaitis & Malinauskas, 2016) Lithuania	51 students	Social emotional learning- no clear model	8.75 hrs	Experimental group students demonstrated better communication (a medium effect, ηp 2= .13), cooperation (a medium effect, ηp 2= .09), assertiveness (a medium effect, ηp 2= .14) and social adaptation (a large effect, ηp 2 = .25)	Social skills
(Akemi et al., 2019) Japan	33 male students	Acquisition of Social Knowledge in Sport (ASKS) Model	24 hours over a year	All teams showed significantly higher average scores of KiSS-18 after the unit compared to before the unit (A; t (5)＝－4.79, p＜.01, B; t (8) ＝－2.41, p ＜.05, C; t (6)＝－2.53, p＜.05)	Social skills, team organisation
(Balderson & Sharpe, 2005) USA	100* 4x classes with average of 25 students	Responsibility based youth program	8.5 weeks	Passive off-task, disruptive off-task, and positive social behaviours, show the percentage of class time spent in passive off-task behaviours to substantially decrease as a function of initial treatment in Classes 1–3	Personal responsibility
(Bessa et al., 2020) Portugal	430 students	Sport Education Model	8 weeks	Improvements on social responsibility (p< .001, r = .40). Alight improvements on personal responsibility (p< .001, r = .23), dedication (p = .021, r =	Social skills, student responsibility

				.18), vigor ($p < .001$, $r = .26$), and enthusiasm ($p = .002$, $r = .22$) in SE context.	
(Derri et al., 2014) **Greece**	79 students	Intercultural physical education program (IPEP)	16 – 8 weeks?	Group X nationality X measure interaction was significant, $F(8, 108) = 2.05$, $p < .05$, $\eta2 = 0.14$	Social skills
(Engels & Freund, 2020) **Germany**	285 students	Self determination theory	7-14 weeks	Highest scale means for pleasure ($M = 2.18$; $SD = 0.69$) for the intervention group at t2 and the lowest value for social relatedness ($M = 1.38$; $SD = 0.67$) for the control group at t2	Social relatedness
(J. Fernandez-Rio et al., 2017) **Spain**	217 students	Sport Education Model	12 lesson unit (2x per week)	DI group had final higher scores only in one variable: Autonomy ($p < .05$)	Social relationships, social responsibility
(Javier Fernandez-Rio et al., 2017) **Spain**	249 students	Cooperative Learning Theory	16 weeks	Intrinsic motivation significantly increased only in the experimental group from 3.96 + 0.75 to 4.20 + 0.70 (p ¼ .006). Identified regulation also increased significantly only in the experimental group from 4.03 + 0.74 to 4.26 + 0.69 (p ¼ .004).	Social factors

(Filiz & Demirhan, 2019) Turkey	55 students	Social Responsibility Model	8 weeks	Responsibility scores of the experimental group who were taught by the PSR-S were higher than the control group scores which were not taught	Social responsibility
(Gil-Madrona et al., 2016) Spain	204 students	Social skills and values	3 months	Significant scores in the intervention group in relation to the values of enjoyment (t =-7.10; p < .01), fair play (t = -8.09; p < .01), social relation (t = -6.48; p < .01), good habits (t = -7.43; p < .01) y emotional control (t = -6.03; p < .01)	Social skills
(Gulay et al., 2010) Turkey	44 female students	Cooperative Games Model	12 weeks	Significant differences in emotional expressivity (F1,42=5.94, p <.05; n2=0.13, power=0.66); emotional control (F1,42=4.33, p<.05; n2=0.94, power=0.530); social sensitivity (F1,42=17.08, p<.01; n2=0.29, power=0.981); social control (F1,42=7.44, p<.01; n2=0.15, power=0.760) between pre-test and post-test measurements	Social skills
(Guzman & Paya, 2020) Spain	75 students	Cooperative Learning Theory	7 weeks	In both the exam and the reminder, the scores obtained by CL students were higher than those of their DI peers	Cooperative behaviours

(PÉRez-OrdÁS et al., 2020) **Spain**	210 students	Teaching Personal and Social Responsibility (TPSR)	8 months	Lower-middle socioeconomic context schools that, in comparison to upper-middle socioeconomic context schools, showed a significant decline in the variable physical and verbal aggression total score ($p = .028$, $\eta 2 = .045$), and in the subscale verbal aggression ($p < .005$, $\eta 2 = .082$).	Social responsibility
(Ruiz-Ariza et al., 2019) **Spain**	184 students	Emotional Intelligence Model	12 weeks	The EG increased well-being after 12 weeks (post: 4.75 + 0.71 vs. pre: 4.34 + 0.77, $p < 0.001$, Cohen's d ¼ 0.553) in inactive students.	Pro-social behaviours
(Sohrabi, 2019) **Iran**	66 students	Vygotsky's theory of social development	6 weeks*	Significant differences were found between pre-test and post-test for the experimental group, and between post-tests for control and experimental groups	Social skills
(Viciana et al., 2020) **Spain**	123 students	Sport Education	12 sessions	The goodness-of-fit results ranged: - 2LL = 190.031-422.695 and AIC = 200.031-432.695.The MLM analyses showed that the EG participants had a statistically significant increase in the scores of all positive measured dimensions	Interpersonal variables

Discussion

The present study was aimed at systematically reviewing literature on PE-based interventions at school level, designed to improve social cohesion and social skills of its students. The purpose was to evaluate and develop the positive characteristics which, when included in the design of the study, were effective. The systematic review indicates many inconsistencies in PE-based interventions. For example, the wide range of theoretical models used in the 16 studies varied greatly, as well as factors such as measurement tools, sample size and secondary components indicate that at present, what is considered as 'effective' in interventions is unclear. The results indicate that in most cases, when students are exposed to PE-based interventions, there was general improvement in participation rates and engagement.

It was found that there was some contention in literature over several of the study characteristics. For example, the duration of the studies, the multicomponent nature of study design and the age of subject sample was identified as needing further clarity. The findings have also shown that certain characteristics were effective across all similar studies, like the need for a theoretical framework to feature in the study design and including stakeholders in order to improve transfer. Included studies clearly focused on some type of social development in the PE setting however, this paper demonstrates the need for these terms to be reconciled within literature on social development in order to obtain more valid and replicable results in future studies.

When evaluating the limitations of the study, one of the most prominent issues of this paper has been the lack of studies in this field, making comparisons difficult. Due to the interchangeable terms in literature on the 'social' aspect of students' development, it was difficult to source a wide range of studies in this field. Further, due to the scope of the research on social cohesion, it was eliminated from the study's research terms. In order to have obtained the most authentic assessment of social determinants, the other three search terms were used. Social cohesion was too limited to focus on in this study.

Further, many studies noted the sample size as problematic which impacts results and has an impact on a study like this where 'effectiveness' is measured according to the study results. Lastly, many studies identified the age of the students as having an impact on results. A wider variety of age groups would need be to represented in future studies in order to obtain a better understanding of the effect of social elements on students and class groups.

Conclusions

The findings of the current systematic review on the effective characteristics in PE interventions on social cohesion and social skills have shown that effective characteristics of interventions are still unclear. It has, however, yielded positive results in establishing a 'effective' intervention design in the future. The findings suggest that a Cooperative Learning approach may play an essential role in improving the way students interact with each other and their teachers. Further, it shows that improvements in student social skills are not the sole responsibility of schools and would be far more effective if they involved parents and other stakeholders. The systematic review also demonstrated that for future research to yield more concrete results, they must include bigger sample sizes and include students from both primary and secondary settings. The length of the interventions has also shown to be a point of contention and further research in this area is essential in developing a strong and effective intervention.

Discussion

The purpose of this thesis was to conduct a systematic review of literature targeting PE based interventions aimed at improving the 'social' element of schooling. This paper focused on social cohesion in PE based environments and the goal was to find 'effective' characteristics of intervention design. The results indicated that there were some consistencies within interventions which could be deemed 'effective'. For example, two studies (Engels & Freund, 2020; Javier Fernandez-Rio et al., 2017) especially noted that post -study, students' results often regressed and that a 'novelty effect' existed, whereby results were impacted by the unique environment presented by the intervention itself. A possible solution to this issue may be utilising a long-term approach (Filiz & Demirhan, 2019; Gulay et al., 2010) of perhaps a full year or more (Balderson & Sharpe, 2005; Derri et al., 2014).This is echoed by Seidentop who suggests that in order for interventions to demonstrate long term benefits, they need to last up to 12 weeks (Siedentop, 2002).This was further reinforced in a systematic review which found that successful interventions continued throughout the school year (Kriemler et al., 2011).

Engagement rates may have improved due to the 'student centred' models with multicomponent interventions. Whilst all of the studies relied on one or more theoretical model, they may have tested for more than one component which some studies (Filiz & Demirhan, 2019; PÉRez-OrdÁS et al., 2020; Ruiz-Ariza et al., 2019) found as restrictive, prompting further research. However, some research has found that having a multicomponent study can improve a wide variety of student behaviours which may have benefits both in school as well as post- school life (Kriemler et al., 2011). Therefore, it appears that there needs to be further research in this characteristic with the need for researchers to take caution when designing interventions with multiple elements, and whether they improve or impede the result of the intervention studied.

Further, interventions took place in variety of school settings. A plethora of research supports the school environment as being an ideal venue for PE-based interventions (Hynynen et al., 2016;

Kriemler et al., 2011), however the current study found that the type of school environment may have impacted results. One of the interesting findings of the systematic review included factoring in both primary and high school aged students in future research (Akelaitis & Malinauskas, 2016; Balderson & Sharpe, 2005; Engels & Freund, 2020; J. Fernandez-Rio et al., 2017; Javier Fernandez-Rio et al., 2017; Filiz & Demirhan, 2019) in order to understand the diverse social needs of more diverse age groups. Not just including a wider range or age but also factoring in other stakeholders like parents, friends and teachers (Derri et al., 2014; Filiz & Demirhan, 2019; Viciana et al., 2020). These researchers believe that by including a variety of stakeholders in the development process, individuals are more likely to adapt social behaviours taught in the intervention, long term.

This was further reinforced in a systematic review on the effectiveness of PE based interventions on physical activity levels of adolescents and children, which found strong evidence between family and community involvement and effectiveness of interventions (van Sluijs et al., 2007). The same researchers also found that 'homework' tasks with family members may also have contributed to intervention success. The significance of outside stakeholders on the intervention success has been grossly underrepresented in the 16 articles selected in this study, with only one reportedly using any type of additional student stimulus, like homework (Akelaitis & Malinauskas, 2016). Further emphasising this shortcoming, only two studies recognised the need for stakeholders to be included in interventions to achieve greater success (Derri et al., 2014; Filiz & Demirhan, 2019).

Limitations

Future studies should attempt to reconcile the confusion amongst researchers in terms of duration as it seems to be a significant aspect of intervention design. They should also focus on attempting to provide more quantitative data and perhaps a system that can be used in all studies which factor social elements. The 16 studies chosen for this paper had inconsistencies in this regard, making comparisons difficult. This may be due to the existing confusing amongst social terms, which is also an area of further study focus. The difficulty in collating search terms of this study was made difficult

by the interchangeable terms littered throughout literature. This limitation may have impacted the validity of the results due to the different definitions authors may have utilised within their own research. As this is an emerging theme in PE-based literature, the findings presented in this thesis are rudimental and it is clear that research is in this particular field is sparse. Future studies should aim to utilise the same search terms in order to strengthen the research in this field.

Conclusion

This thesis has discovered some key findings in intervention design. Effective characteristics are difficult to pinpoint due to the uncertainties in social-based studies in PE and their intervention methodologies. It is clear that more research is needed in order to reconcile the important findings of these studies which would in turn yield positive results in the classroom for both teachers and students. This paper has also demonstrated the essential link between PE based interventions and potential impact on students' academic performance. Interventions targeting social cohesion are not common especially considering the positive findings of many previous studies. CL approaches have demonstrated invaluable benefits for students in a number of different KLAs which has a multitude of positive impacts on students interactions with each other, their teachers and the school as a whole. It has been shown to be an approach that reconciles several important and potentially detrimental social issues in the school environment and the classroom.

For this reason, an intervention exhibiting social cohesion and cooperative approaches in schools are necessary especially in the current climate where PA seems to be trending negatively in overall society, and countries are facing high levels of diversity in engagement within their populations. There is no doubt that increases in PA would yield beneficial results for students both physically and in terms of academic performance. In order for schools to become more cohesive environments and to eradicate issues associated with antisocial behaviours in the past, it is important to develop strong literature in this field. The concern for individuals post school is particularly important especially as adolescence is a time where behaviours regarding activity are set and replicated during adulthood. In order to develop individuals who value PA for life, positive movement practises need to be established and reinforced from primary school to high school.

Lastly, just as physical habits are established during adolescence, so too are social habits. This paper has demonstrated the vast array of benefits associated with improvements in social development of young people. There is no doubt that these behaviours would need to continue into adulthood in

order to promote social harmony throughout life. Social cohesion is one such approach that has the

capacity to develop strong, transferable life skills to students of all ages. It is imperative that more

research into this field is done in order to discover effective characteristics for PE interventions for

future generations.

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