



Exploring teachers' experiences of managing type 1 diabetes in physical education,
within one primary school in the West Midlands.

BA (Hons) Primary with QTS

Jennifer Long

Newman University

Acknowledgements

'Each step may get harder, but don't stop. The view at the top is beautiful'

As I reflect upon the last three years of my teacher training at Newman University, I would like to thank all those closest to me for their constant support and reassurance that I would reach my goal eventually. For that, I owe my deepest gratitude to many people.

Firstly, I would like to thank my children for making me believe that I could do this and being a constant reminder of why I am bettering myself; and, my sisters for pushing me to keep going.

Secondly, I would like to thank my fellow trainee teachers for all their support and guidance throughout this journey, without them I would never have gotten this far.

Lastly, I would like to say a big thank you to the staff here at Newman University. In particular, I would like to express my sincere thank you to Claire Owen and Linda Whitehouse, as they have always been so understanding and supportive; and last but not least, Ian Tinley, who has managed to guide me through this dissertation with his expertise and knowledge.

Abstract

Aim/focus: To explore teachers experiences of managing type 1 diabetes in primary physical education (PE); to assess teachers feelings towards the training provided, inclusion for type 1 diabetic pupils in PE and the level of support available to assist with the management of their pupils needs.

Methods: A qualitative research design was applied, involving three teachers within one primary school located in the West Midlands, UK. Initially, the school was chosen via purposive and convenience sampling, as the school required for the research needed to cater for a pupil(s) with type 1 diabetes, and where the teachers involved have experience of teaching PE themselves. Through the interview process teachers provided their experiences of supporting a pupil with type 1 diabetes in PE to help establish whether these experiences reflect the opinions thought by parents and pupils with type 1 diabetes, which has been reported in previous research.

Results: Results indicate that teachers do have the required knowledge to effectively care for a type 1 diabetic pupil in PE. Inclusion levels were the same as other pupils; the pupils' diabetes did not put them at a disadvantage due to procedures carried out within the school, and whilst it was proved that communication with teachers, pupils and hospital staff was necessary it was clear that communication with the pupils' parent was the most beneficial as this increased the knowledge and ultimately, the confidence in those involved which results in an overall better experience for the pupil.

Table of contents

Acknowledgements	1
Abstract	2
Chapter 1. Introduction	5
1.1. Area of focus	5
1.2. Why is it an important area to focus on?	6
1.3. Aims and objectives	6
Chapter 2. Literature review	7
2.1. What research has already been done linking type 1 diabetes and physical education?	7
2.2. How can physical education affect a child with type 1 diabetes?	8
2.3. Policies and procedures	10
2.4. Barriers to learning in physical education	13
2.5. Summary	15
Chapter 3. Methodology	17
3.1. Research design	17
3.2. Participants and setting	19
3.3. Methods	19
3.4. Trustworthiness	21

3.5. Data analysis	22
3.6. Ethics	23
Chapter 4. Results	25
4.1. Findings	25
4.2. Table of themes	25
4.3. Teacher confidence	25
4.4. Communication	27
4.5. Inclusion for pupils with type 1 diabetes in PE	29
Chapter 5. Discussion	31
5.1. Teacher confidence	31
5.2. Communication	33
5.3. Inclusion for pupils with type 1 diabetes	35
Chapter 6. Conclusion	39
6.1. Summary of main findings	39
6.2. Reflections	40
6.3. Future recommendations	41
Reference list	42

Chapter 1. Introduction

1.1. Area of focus

It is estimated that there are over 29,000 children in England living with type 1 diabetes; a number which is rising by approximately 5% each year (JDRF, 2018; Lorenzi and Trenney, 2015, p.5). Therefore, if these statistics prove to be correct and more primary aged children are diagnosed in the near future it can only be assumed that there is a greater chance of teachers having a child with type 1 diabetes in their class at some point during their career. As a result of this it is important for teachers to have access to the relevant guidance, especially in physical education, as any form of physical activity (PA) can impact the individuals' condition greatly. With this in mind and the fact that there is a focus on physical activity levels in children: for example; children are recommended to be 'physically active for sustained periods of time in a range of sports and activities' (DfE, 2013, p.198); children should engage in moderate to vigorous physical activity for at least 60 minutes each day (Department of Health and Social Care, 2011); and, children should be active for at least 50% - 80% of lesson time in PE (Association for Physical Education [AfPE], 2015) it is becoming more important for teachers to have the relevant knowledge to aid participation for pupils with type 1 diabetes so that these pupils can benefit from the opportunities available within school and to maximise the personal benefits which PA can have on one's health.

1.2. Why is it an important area to focus on?

There is plentiful research which suggests that those teachers who do have a type 1 diabetic pupil in their class do not have the sufficient knowledge to effectively care for or manage this condition within school. Further research implies that some type 1 diabetic pupils do not take part in PE as much as their peers, which goes against the recommendations and guidelines used to increase physical activity levels in children. The research is predominately derived from opinions or accusations of parents of a type 1 diabetic child or the child themselves, however there appears to be limited research available which provides a response to these claims or research which provides the opinions of teachers, hence the reason why it is an important area to focus on.

1.3. Dissertation aims and objectives

This dissertation focuses on three teachers within one primary school in the West Midlands who have all, at some point, provided support to a pupil with type 1 diabetes in PE. The aims and purpose of the study is:

- To explore teachers experiences of managing type 1 diabetes in primary PE;
- To assess teachers feelings towards the training provided;
- To reveal whether inclusion in PE is met for pupils with type 1 diabetes;
- To determine the level of support available (internal and external) for teachers who teach PE to a type 1 diabetic pupil.

Chapter 2. Literature review

2.1. What research has already been done linking type 1 diabetes and physical education?

Current research of diabetes in physical education within the primary school debates whether teachers have sufficient enough knowledge of type 1 diabetes to be able to effectively care for a pupil diagnosed with this chronic disease (Diabetes UK, 2015; Association for Physical Education, [AfPE], 2016), ensuring they are receiving the same entitlement to a high-quality physical education to 'develop competence to excel in a broad range of physical activities' (Department for Education, [DfE], 2013, p.198). Some PE related literature focuses specifically on type 2 diabetes, which 'can be caused by a lack of physical activity (PA) and poor health affecting mainly adults' (Hardman and Stensel, 2003, p.93-113), whereas type 1 diabetes - the health condition used as the focus for this research project, is an 'autoimmune disease unrelated to the causes of type 2, and usually diagnosed in the adolescent years' (Diabetes UK, 2015). As it is a statutory requirement for children to attend school full time there is a need for school staff to have specific training and guidance to ensure the pupil's needs are being met, especially in PE lessons due to the possible implications PA can have on type 1 diabetic pupils when not managed correctly. Research conducted by MacMillan *et al* (2015, p.4) report that primary specialist PE teachers have 'limited knowledge to aid participation for type 1 diabetic pupils in PE lessons'. Similarly, in a survey conducted by the Association for Physical Education (AfPE, 2016) it was claimed that 37% of parents were not confident that their child's teachers knew what to do in an emergency situation, such as a hypoglycaemic episode; 51% of children

with type 1 diabetes were not confident approaching teaching staff about diabetes-related problems; and, only 28% of parents felt that their child's teachers had a good understanding of type 1 diabetes. With over 29,000 children in England living with type 1 diabetes; a number which is rising by 5% each year, there is a greater chance for this generation of teachers to have a child with type 1 diabetes in their class (JDRF, 2018; Lorenzi and Trenney, 2015, p.5); these figures have the potential to impact participation levels in physical education. Consequently, the importance of knowledge in this area of disability is becoming more relevant within the primary school which heightens the need to turn these statistics around so that more parents are satisfied that their child's teacher has the relevant knowledge, which will reflect in positive experiences for teachers, parents and most importantly the pupils.

2.2. How can physical education affect a child with type 1 diabetes?

Type 1 diabetes is an autoimmune disease in which the immune system destroys insulin-producing cells in the pancreas. Once diagnosed individuals need to administer insulin through multiple daily injections or via a pump in order to regulate the blood glucose levels in the body (Diabetes UK, 2015; JDRF, 2018; Lorenzi and Trenney, 2015, p.5). One of the main considerations when managing type 1 diabetes is one's PA levels as exercise of any kind increases the use of energy and therefore children with diabetes are likely to see a drop in their blood glucose level when participating in moderate-to-vigorous physical activity (Birnie, 2014, p.27). The National Curriculum in England (2013, p.198) aims for 'all pupils to be physically active for sustained periods of time in a range of sports and activities', which can prove difficult for type 1 diabetic pupils if the teacher is not

supportive of the pupils needs or alternatively the pupil does not want to participate for health-related reasons. For physical education teachers, this can prove a difficult situation to overcome during lessons as these pupils may be reluctant to participate due to fears of experiencing hypoglycaemia in front of their peers (Sundberg *et al*, 2012, p.1164). These fears could be a result of previous bad experiences; however, with appropriate health care plans in place and a consistent approach, which recognises and adapts to individuals' concerns, alongside sufficient knowledge for physical education teachers this will help to maintain an appropriate and positive climate to support full participation in physical education, school sport and physical activity (PESSPA), as the promotion of life-long physical activity in young people, especially those with type 1 diabetes should be a priority. MacMillan *et al* (2015) emphasise that fears in PE lessons are not only experienced by the pupil, but teachers also have fears themselves; participants in the study felt that diabetes could be used as an excuse to sit out of PE and teachers fears could facilitate this. To overcome these fears, Westwood (2015, p.34) recommends that 'teachers need practical advice on ways in which physical education lessons can be adapted to include all children', so that type 1 diabetic pupils do not sit on the sidelines and further support the inactivity of young people. AfPE (2015) reiterates the importance of children being active and engaged for at least 50%-80% of PE lesson time; the Department of Health and Social Care guidelines (2011) recommends that 'children should engage in moderate to vigorous physical activity for at least 60 minutes each day'. Overall, it is debated that children are struggling to engage with this amount of physical activity each day (Fairclough and Stratton, 2006,

p.239; Public Health England, 2015, p.7); Sundberg *et al* (2012) suggest that these guidelines are not being met for children with type 1 diabetes and that physical activity is significantly reduced in children aged 7 and under. In agreement with this is Quirk *et al* (2014) who claim that young people with diabetes may be less active than those without diabetes. The introduction of these recommendations is proof that physical activity in children is considered an important aspect of the school ethos; regular PA has a positive effect on overall health in individuals with type 1 diabetes (Burr *et al*, 2012, p.533-535) but will also support already established health-conditions and could potentially decrease the likelihood of other conditions occurring.

2.3. Policies and procedures

With the amount of children diagnosed with type 1 diabetes expected to increase over the next five years (JDRF, 2018) current policies and procedures which schools and physical education teachers abide by are a reflection of this, as some legislation is recognising the impact type 1 diabetes can have on pupils and is referred to within the literature, providing supportive information. The Association for Physical Education 'Safe Practice' document (James and Elbourn, 2016, p.238) provides guidelines for teachers to follow during PE lessons, which contribute to the pupils' safe management of their condition. Though there are general precautions stated within each schools individual PE policy, which all PE teachers need to be aware of when planning lessons, so that safe inclusive practice is achieved by all, the Safe Practice document refers specifically to type 1 diabetes in physical education, reiterating the importance of a pupil with type 1 diabetes engaging in regular physical activity as the benefits greatly outweigh the

risks. With the proper preparation and training in place, a type 1 diabetic pupil can 'fully enjoy the same activities as their peers' (Hess-Fischl, 2014). Most importantly, all children and young people are entitled to an appropriate education, one that is appropriate to their needs, where 'all pupils must engage in the activities of the school alongside pupils who do not have SEND' (DfE, 2015, p.92).

Underpinning all policies and procedures within school is The Equality Act (2010) which requires that all schools in England have a duty of care towards children with diabetes, who are legally defined as being disabled and considered SEND (Special Educational Needs and Disability) (even though the disability does not have an immediate effect on their education, as well as other disabilities or special educational needs (Cowne *et al*, 2015, p.14). A school must make reasonable adjustments to ensure that children and young people with a disability are not put at a substantial disadvantage compared with their peers. An example of reasonable adjustments for a type 1 diabetic in PE could be to allow time before and after lessons for the pupil to check blood glucose levels so that their participation in the lesson is not affected.

The Special Educational Needs and Disability Regulations (2014, p.29) requires by law that schools enable pupils with special educational needs to engage in the activities of the school (including physical activities) together with children who do not have special educational needs. Emerging from the Children and Families Act (2014) and SEND Code of Practice (2015) is the need for strategic collaboration between educators and parents (Collett, 2018, p.24; Hellowell, 2019, p.22). This principle is designed to support SEND pupils as 'communication

about the care of a pupil provides the best outcomes in their health and their education' (DfE, 2014, p.9). This collaborative working should allow for sufficient training for teachers, specifically physical education teachers as PE is a compulsory subject across key stage 1 and 2, and is where implications as a result of type 1 diabetes have the most possibility to occur. Physical education can have a huge impact on a pupil with type 1 diabetes, and can unpredictably be positive or negative depending on the management of the pupil's condition and the intensity of PA, therefore the communication between the pupil(s), parents, teachers, SENCO (Special Educational Needs Coordinator) and health agencies is vital. An opportunity for collaboration would be the development of an education healthcare plan (EHCP); the inclusion of all parties involved in the pupils' care can have the opportunity to input their understanding of what is best practice for that pupil. As type 1 diabetes requires provision which is 'additional or different from that that would normally be provided for children or young people of the same age in a mainstream education setting' it is considered SEND (Council for Disabled Children, 2014, p.2). A pupils' personalised EHCP would be developed and agreed by those involved in the pupils care and is an important document for physical education teachers to consider when abiding by their legal duty of care to monitor the pupils' safety and well-being. IPSEA (Independent Provider of Special Education Advice) (2016) claim that some pupils EHCP's have presented issues relating to schools not fully understanding the care a pupil requires. The introduction of an education healthcare plan is essential for teachers to understand the management of a pupils' condition; this being the only procedure within school relating specifically to type 1 diabetes as general

policies and procedures such as the PE policy and medical conditions in school policy would be generic and cover a range of conditions. In Scotland, there is a document called 'Supporting Children and Young People with Type 1 Diabetes in Education' (Managing Connections, 2014) which includes information to support a pupil through all aspects of their education, including support for school trips. For physical education teachers, this could be an important document to refer to during initial diabetes training and understanding the condition as the English alternative 'Supporting Pupils at School with Medical Conditions' (DfE, 2015) does not refer specifically to type 1 diabetes but instead provides an overview of all health-related conditions. Overall, similarities in each document are that pupils should be 'properly supported so that they have full access to education, including school trips and physical education' (DfE, 2015, p.4).

2.4. Barriers to learning in physical education

Despite the introduction of the SEND Code of Practice (2015) which means that all schools across the country have a legal duty to ensure children with type 1 diabetes, amongst other disabilities, get the care they need in school, 14% of parents and carers have reported that their child has been excluded from PE lessons and residential trips because they have type 1 diabetes (Diabetes Research & Wellness Foundation, 2015; Diabetes UK, 2015). Additionally, findings from the 'Evidence on physical education and sport in schools' report (DfE, 2013, p.52) shows that out of the 321 children and young people; who each have a statement of SEND, 57% said they took part in PE as much as other children whilst 33% said they did not and 10% were unsure. The report continues to state that the 33% who claimed they did not take part in PE as

much as other children believe it was because of their disability. However, as the report does not confirm which disabilities were considered in the research these results have the potential to be unreliable for the purpose of this research. On the contrary, Westwood (2015, p.5 and 34) - who includes type 1 diabetes in the list of most common physical disabilities, suggests that 'while applying all common-sense safety procedures, teachers should try not to overprotect students with a disability; students should be encouraged to take part in the same activities enjoyed by other students and lessons should be planned to ensure that there are no barriers to learning or exclusion for any pupil (DfE, 2013, p.8; Glazzard *et al*, 2015, p.123). This suggests that the schools involved in the research have not had sufficient enough training to contribute to the confidence needed to support SEND pupils with inclusion in lessons.

In order for inclusion to become effective, physical educators must believe in the value of physical activity for every pupil regardless of their ability or in this case type 1 diabetes which can have an impact on the pupil's ability (Rouse, 2009, p.4). However, there is a lack of evidence that identifies ways to encourage and support children and young people who are the least active (including those with disabilities) to become more physically active (Public Health England, 2015, p.14). Therefore, for support to overcome barriers to learning for type 1 diabetic pupils in physical education teachers can refer to the Inclusion Spectrum (Stevenson and Black, 2011; cited in Lawrence, 2018, p.103). The model supports pupils with SEND to become more integrated in lessons; each of the five stages of the spectrum can be relevant to inclusion for type 1 diabetics in PE: for example, the 'open' stage which includes a few modifications by the teacher to

allow for pupils to decide on the physical activity level appropriate for them at that time. Alternatively, teachers can adopt a teaching style recommended by Mosston and Ashworth (2002, cited in Griggs, 2015, p.60-61), if this is suitable for their pupil. Within the teaching styles, there is an option for activities such as 'inclusion – where learners can select a task suitable for their motivation or ability within that specific lesson, or 'learner initiated' – where the pupil relies on the support of the teacher when needed. With this collaboration and communication between teacher and pupil, reasonable adjustments can be made to the amount of physical activity undertaken or the intensity the pupil should work at. These possibilities with PE lessons should provide positive experiences for the pupil and teacher. With the possibility for adaptations to be made, participation for pupils with type 1 diabetes should be the same as those without, however only a few schools have adapted PE programmes to suit the individual needs of pupils, or engaged with health agencies, parents and carers to improve the lifestyle of these pupils (Ofsted (Office for Standards in Education), 2013, p.5).

2.5. Summary

Inclusion in PE for pupils with type 1 diabetes is crucial for maintaining a healthy lifestyle, therefore maximising PA within PE lessons by following the legal requirements and policies in schools teachers should have sufficient enough knowledge to effectively care for a pupil with type 1 diabetes in PE. By allocating time to check blood glucose levels before and after lessons will allow for the pupils daily recommendation of PA to be successful and as a result will motivate and engage children to become physically active throughout their adult life, subsequently having a positive impact on the pupils health (Hollis *et al*, 2015,

p.14). While type 1 diabetes is a serious medical condition, with proper education and management for the pupil and teacher, pupils can safely participate in physical education.

Overall, previous research has provided an insight into the experiences of parents and pupils, believing that teachers do not have sufficient enough knowledge of type diabetes to care for a pupil in physical education, therefore the main factor to further investigate are the experiences of those teachers who teach physical education to a pupil with type 1 diabetes to see if the opinions of parents and pupils is similar and if not, the reasons why the experiences differ. As the research intends to explore the experiences of teachers the research sits within the ontological stance to seek truth, which will be explored further in subsequent chapters.

Chapter 3. Methodology

3.1. Research design

Ontology refers to how the world is known, while epistemology refers to how that knowledge of the world is learned (Bartlett and Burton, 2016, p.37; Buckler and Walliman, 2016, p.158; Ormston *et al*, 2014, p.6). Through the consideration of this research aim - to explore teachers' experiences in managing type 1 diabetes in physical education, this dissertation sits within the ontological stance that the purpose of research is to find truth. The epistemological assumptions in which this dissertation sits links to my own experience of a primary school physical education setting. For me, physical education is very much about an inclusive experience, whereby participation levels are maximised to increase the benefits to one's health, alongside the promotion of PA which pupils will continue with into their adult-life. Therefore, my epistemological stance when conducting the research was to draw upon qualitative methods which allowed for the exploration of teachers experiences. As the research required the willingness to understand other people's perspectives and experiences the philosophical paradigm of interpretivism best encapsulated my ontological and epistemological stances (Kara, 2017, p.46). Flick (2015, p.24) suggest that 'we should not assume that rules and meanings are clear for all participants in the same way', hence the importance of an interpretivist paradigm as it argues for the superiority of rich in-depth data collection which 'interprets individual experiences by examining the context of meanings and explanations' (Draper, 2004, p.642). Interpretive researchers also assume that access to reality is only through social constructions such as language and shared meanings' (Myers, 2008, p.38),

therefore, a qualitative research design was used to seek multiple truths from the data collected as it would allow for 'descriptions in variations in a situation' (Kumar, 2014, p.32).

Furthermore, Cresswell and Cresswell (2018, p.14) define the 'in-depth analysis of one or more individuals' as a case study, hence this being the methodological approach employed for this research, as the focus was on a small number of pupils with type 1 diabetes who have attended the school. The research is limited due to the focus being on a small number of pupils, however the experiences spoken about during the interviews can provide an insight into experiences within one school; like other methodological approaches, it is important to understand and openly acknowledge the strengths and limitations of case study research (Yin, 2018). With that in mind, Thomas (2013, p.150) claims that a case study involves the choice of a very restricted sample in order to be able to gain greater detail, but at the expense of being able to make useful generalisations to a broader population. Due to the nature of the research and not being medically trained to make judgement of the management of a long-term health condition any future research undertaken by trained professionals in this field has the potential to include action research as it is an approach that is appropriate in any context where 'a problem involving people, tasks and procedures cries out for a solution, or where some change of feature results in a more desirable outcome' (Cohen et al, 2011, cited in Bell and Waters, 2018, p.27).

3.2. Participants and setting

Three teachers were selected from one primary school, located in Birmingham, England. Initially the school was selected via purposive and convenience sampling. It was convenient because of the professional link made between myself and the participating school prior to this research and it was purposive because the school catered for a pupil(s) with type 1 diabetes; therefore, allowed 'a few individuals to be carefully chosen to be interviewed to gather insights relevant to the research focus' (Menter *et al*, 2011, p.146). Purposive sampling was used because the research required specific data about a particular phenomenon; three teachers were needed who have previously taught physical education to a pupil(s) with type 1 diabetes, as these participants were able to provide relevant data for the research, being the personal experiences of how type 1 diabetes can affect physical education. The selection of specific teachers was important due to ontological view to gain a greater meaning, which could only be sought from these teachers in particular. All participants agreed to be part of the research, each reading and signing the participation guidance provided to them which outlined the reasons for the research and what would be required from them.

3.3. Methods

Interviews were the suitable choice of data collection tool to adopt as the research needed to explore teachers' experiences of their primary PE lessons, in which they have taught a pupil(s) with type 1 diabetes. The interviews took place in a quiet room, free from distraction with only myself and the participant

present, at a time which was convenient for the participant; it was important to conduct the interviews in a safe and confidential environment as there was the possibility for sensitive issues to arise (Silverman, 2014, p.166; O'Leary, 2017, p.246). The questions posed to the teachers were semi-structured, which offered a more flexible approach and thus, enabled emerging issues to be accommodated for.

Punch and Oancea (2014, p.182) consider the use of interviews as 'one of the most powerful ways we have of understanding others', which further supports why interviews were the suitable data collection tool for this research. The interview questions included the use of personal questions relating to how the teacher felt about a certain aspect of type 1 diabetes in physical education; these personal feelings can be hard to quantify, highlighting the advantage of using interviews as a qualitative research tool as emotions can be explored further through this method (Bell and Waters, 2018, p.26).

As mentioned previously, qualitative approaches to research can provide rich data, or a deeper meaning to the questions being asked, which you cannot obtain from using quantitative approaches such as questionnaires. However, it is also important to consider the limitations when using any form of research method. Cohen *et al* (2018, p.1172) stress that 'qualitative data analysis is not straightforward', as it is often heavy on interpretation. With this in mind, the research was conducted using a clear set of questions; which did not influence the participant in any way and as the questions were semi-structured so that any misunderstandings or misinterpretations could be addressed, which would clarify any answers further. The opportunity to elaborate and explore answers deeper

adds to the disadvantage that qualitative research can be time-consuming, as the interview process; conducting the interview, transcribing; and analysing the data, can take time, however for the purpose of this research question the limitations/disadvantages are outweighed by the fact that rich-data is needed.

3.4. Trustworthiness

Merriam and Tisdell (2016, p.191) suggest that qualitative data collection, such as interviews, is an 'interactive process which allows for validity and trustworthy findings'. According to Guba and Lincoln (1994, cited in Trochim and Donnelly, 2007, p.149) trustworthiness in qualitative data is determined by the concepts of: credibility; are the results credible or believable from the perspective of the participant; transferability; can the results be generalised or transferred to other contexts or settings; dependability; would the same results be obtained if the research was conducted again; and confirmability; could the results be confirmed or corroborated by others. Each of the four indicators were considered during the interview process as trustworthy data was important to determine an answer to the research question. Flick (2015, p.237) recommends 'scrutinising interview situations for any signs of strategic communication'. For example, if the participant does not respond to the questions openly but is selective or reluctant to answer questions then this would affect the credibility and dependability as the answers may not be answered truthfully. Bell and Waters (2018, p.156) suggest that researchers should 'deliberately seek contrary evidence to test the truthfulness'; meaning, the ability to change the semi-structured questions to gain a deeper meaning is important as the truth can be exposed through

questioning. As a result, to ensure trustworthy research was obtained all four indicators were considered throughout each step of the research process.

3.5. Data analysis

A thematic approach was adopted throughout the analysis of the data, whereby connections were made between common themes resulting from the three participants' answers. This is also referred to as 'content analysis' (Kumar, 2014, p.318), as the contents of the interviews are analysed to identify the main themes which emerge from the responses given.

Similarly, Menter *et al* (2011) suggest the following step-by-step approach to analyse qualitative data. The first step of the data analysis was to prepare and sort the data. This was achieved by creating a transcript. The next step was to sort and code the data by recognising key words or phrases which emerged and would produce the main themes to discuss further when cross-referencing against existing research to answer the overall research aim either way. Kumar (2014, p.318) recommends 'carefully going through the descriptive responses to understand the meanings they communicate'; this way of working can affect the credibility of the information so careful consideration must be adopted alongside critical thinking, to ensure the correct meaning is understood. Similarly, Bell and Waters (2018, p.210) claim that with interviews 'there is always the danger of bias', therefore to ensure the data collected was free from bias any comments were exposed in the transcript in its true-form with no deviation; the research needed true answers which could only be obtained when explained exactly as the participant wished it to do so.

The final step in analysing the data was to 'group and order the themes'; the common themes which emerged from the transcripts were grouped into high order themes with sub themes to support the generalisation of the findings. Through the use of the main themes and subsequent themes a clearer answer to the experiences of teachers managing type 1 diabetes in physical education within the primary school was determined.

3.6. Ethics

The British Educational Research Association (Wyse *et al*, 2017, p.6) recommend that all 'educational researchers should operate within an ethic of respect for any persons involved in the research they are undertaking'. Miles *et al* (2014, p.59) identify several ethical issues regarding the use of interviews as a qualitative research tool; competence, confidentiality and informed consent are some of these potential issues. To ensure the research was ethical, competence was considered when using purposive sampling; choosing three teachers who had the knowledge and experience relevant to the research.

It is within the interest of the researcher to treat all participants involved anonymously when recording and storing data. All researchers must recognise the participants' entitlement to privacy (Wyse *et al*, 2017, p.6), therefore a participant information leaflet and informed consent was provided to inform the participants of the nature of the research so they could make an autonomous decision whether to participate (Farrimond, 2013, p.26). Consent should be easily understood and clear for all participants so they can evaluate the purpose of the research to provide an accurate and informed decision (Walliman, 2011, p.47).

Furseth and Everett (2013, p.110) state that 'any participant has the right to withdraw from the research at any time and all participants who wish to withdraw from the study is kept confidential'. Every participant involved within the research was notified through the information leaflet that they withhold the right to withdraw at any point in the research. This diminishes any pressure for participants to participate if they wish to do so or not. To conclude, consent was gathered from those participating in the research.

Chapter 4. Results

4.1. Findings

In the qualitative findings three main themes emerged in the data set: teacher confidence (teacher training; use of support staff; and teacher attitudes to PE); communication (between teacher and pupil; between teacher and parent; and between teacher and pupil); and inclusion (procedures; activity levels; and barriers).

4.2. Table of themes

1 st order themes	2 nd order themes
Intrapersonal	
Teacher confidence	<ul style="list-style-type: none">• Teacher training• Use of support staff• Teacher attitudes to PE
Interpersonal	
Communication	<ul style="list-style-type: none">• Between teacher and pupil• Between teacher and parent• Between teacher and hospital
Institutional	
Inclusion	<ul style="list-style-type: none">• Procedures• Activity levels• Barriers

4.3. Teacher confidence

Teacher confidence was a main theme to emerge from the interview transcript; through a variety of different contexts the sub-themes were discussed by the participants, which overall amounted to an increase in confidence for a teacher who has a type 1 diabetic child in their class, especially in physical education.

Training: Firstly, training was mentioned in detail with two out of the three participants stating that the training they received was 'more than adequate' and 'sufficient I think'. This interview ended positively with the participant stating 'I am happy with the training I have received', 'it told me everything I needed to know' however, one participant claimed the training was 'intense' and 'not personal to the pupil'. The training was referred to as insufficient due to the resources used in the training session; 'the blood glucose machine they got us to look at was different to the one the child in my class has'. It was clear that each participant had a different experience in relation to the training they received. From analysing the answers it was evident that the teacher who claimed to be the most confident was the only one to have received training from the pupils' parents and a specialist diabetes nurse, whereas the others only had training from a nurse. When the three teachers were asked directly whether they feel confident assisting a pupil with the management of type 1 diabetes in PE they all said they felt quite confident.

Use of support staff: Another theme which emerged from the transcript which increased confidence for teachers was the use of support staff. A teaching assistant was mentioned as a main support system by all three participants; quotes included, 'my teaching assistant is amazing and very clued up' and 'my TA was also really helpful and knew what to do'. Alternatively, all participants felt supported from other staff within school; 'there is enough knowledge and guidance from members of staff in school that can always help'.

Teachers' attitudes to PE: Teachers' attitudes towards the importance of physical activity/physical education appeared to have an impact on their

experience of assisting a pupil with type 1 diabetes. Two participants spoke clearly about the importance of children being active; 'I like my pupils to be as active as possible' and 'I know that being active is good for pupils with type 1 diabetes, just like it is everyone else', however these participants were the only ones to claim that the pupil being physically active in PE did not worry them. The remaining participant may not consider PE an important part of the curriculum, whereby the pupils are receiving the correct amount of physical activity to match the policy provided by the school and guidelines/recommendations as the participant states 'with so much to teach it is quite hard sometimes to get two lessons in every week'; this participant was the only teacher to claim that the pupils involvement in PE worried them. However, towards the end of the interview with this participant it was made clear that during the training 'there was no mention of PE so perhaps advice in this area would be good for all teachers'.

4.4. Communication

Communication was another theme to emerge from the interview transcript which evidently improved the teachers' experiences, especially the communication between teachers and parent(s).

Between teacher and pupil: From analysing the interview transcripts, there were variations in the participants' responses resulting in no clear answer to whether communication between the teacher and pupil was satisfactory. However, an element of trust emerged from one participants' answers as the teacher stated 'the pupil would let me know' and 'I knew the pupil was sitting out

because they had to'. Throughout the remaining interviews, communication between the teacher and pupil was not referred to specifically as both participants state that the pupil would go to the teaching assistant instead.

Between teacher and parent(s): Communication between the participants and the pupils' parents is referred to positively throughout all three interviews, with clear statements to evidence this, such as 'communication is good'. The examples of communication between the teacher and the pupils' parents has involved: verbal communication, with one participant stating 'we could always speak to the child's mom if we had any worries'; and educational, as the pupil has been supported during a residential trip whereby the teacher 'had training from the pupils' parents'.

Between teacher and hospital staff: Communication between the participants and hospital staff is inconsistent across the three interviews. Two of the three participants claimed that communication with hospital was beneficial, 'the nurse was really helpful' and 'I know that there is support available from hospital staff'. Whereas, the remaining participant did not have a positive experience communicating with hospital staff due to the training session not being personal enough, and being trained using different equipment to what the pupil was currently using. Additionally, the participant claimed that 'there was no mention of PE in the training'.

4.5. Inclusion for pupils with type 1 diabetes in PE

The final theme to emerge from the transcript when exploring teachers' experiences of assisting a pupil with type 1 diabetes in physical education was inclusion. Responses relating to inclusion have been broken down into sub-themes so that each element of inclusion could be understood clearer to make sense of the bigger picture.

Procedures: During the interview all three participants were asked whether there was a support plan devised to support diabetic pupils during PE lessons; in which three different answers transpired from this. One participant claimed that 'plans were put together by the nurse and the pupils' parents'; another participant claimed there was no support plan in action; and the final participant did not mention a plan at all, instead stating 'we had routines which worked'. Considering there was a difference in answers all three participants spoke about the same procedure; whereby they would 'check levels at the beginning and end of the lesson'. This was consistent across all three interviews.

Activity levels: Participation in PE was consistent throughout all three interviews, with all participants claiming that diabetic pupils are active in the same way as their peers; for example: 'I wouldn't say participation levels in PE were very different to the rest of the class' and 'everyone always joins in with PE, no-one really takes time out'. One participant added 'I don't think it is good practice to allow a pupil to just sit there and not do anything if they are able to join in in some way'. To ensure there was an element of physical activity the pupil 'could work in a small group to avoid over exhaustion' or was given an

alternative role in the lesson, to support inclusion for this pupil. Alternative activities were not mentioned by the other participants.

Barriers: Even though activity levels were consistent across each of the interviews, a potential barrier for type 1 diabetic pupils is their participation for PE lessons in its entirety. Two out of the three participants claimed that pupils have not taken time out of PE lessons for any reason relating to their diabetes, whereas one participant mentioned twice that if a diabetic pupil needed to take time out they would be allowed to rest if they needed to. However, this was backed up by the participant saying that from their experience of teaching PE to pupils with type 1 diabetes that these pupils have 'never seemed worried about how PE could affect their levels'.

Inclusion overall: All three participants were consistent when asked about inclusion, each responding with very similar answers, stating that the school is very inclusive and pupils with SEND 'are never treated differently to any other pupil'. On the whole, 'as long as diabetes is monitored regularly there is no reason why the child should not be allowed to continue with normal school life' which sums up the feelings expressed by the participants in terms of inclusion.

Chapter 5. Discussion

The overall research aim was to explore teachers' experiences of assisting a pupil with the management of type 1 diabetes in PE; to establish whether these experiences reflect the experiences expressed by pupils (with type 1 diabetes) and their parents, according to current research. Negative views have been reported from parents and pupils throughout various literature, with limited research from the opposing end of the debate; or more specifically the teachers' experiences, hence the reasoning and importance of this research.

The qualitative results emphasise that the experiences of the teachers involved in this research have been positive overall, with the participants feeling confident towards this duty of care for their pupil. Therefore, the result of this research does not match existing research.

It is important to note that each participant made it clear that pupils are generally good at managing their diabetes themselves; the pupils' age would depend on the level of support required from their teacher or other staff. If the pupil was younger or less-experienced themselves then it could be assumed that the teachers' experiences would differ as they would have a more prominent role in meeting their pupils needs.

5.1. Teacher confidence

One of the main aims for this research was to understand from a teachers' point of view their perspectives on the importance of knowledge surrounding type 1 diabetes; to secure successful PE lessons which are inclusive of a type 1 diabetic pupil. This was due to the fact that current research debates whether teachers have

sufficient enough knowledge of type 1 diabetes to effectively care for a diagnosed pupil in the primary school (Diabetes UK, 2015; AfPE, 2016). For anyone to be knowledgeable in a new area they must be taught by the relevant person(s) which is why participants were asked about their experience with training. Two out of three of the participants stated that the training they received was 'more than adequate' and 'sufficient' as 'it told me everything I needed to know'; however, further analysis of the data confirmed that the teacher who claimed to be the most confident was the only teacher who had training from the pupils' parents and a diabetes nurse. The teachers who had training from a nurse only, were not as confident knowing what to do to assist their pupil in PE. In a study by AfPE (2015) it was claimed that only '28% of parents felt that their child's teacher has a good understanding of type 1 diabetes'; which in support of this research may suggest that the pupils' parents were not involved in the initial training. This reiterates the importance of the parents role in ensuring teachers have personalised training to develop the knowledge to effectively care for the pupil. As a result, this research contradicts the research previously conducted as the input of the parents view and sufficient training to the majority of participants has increased the teachers' knowledge and confidence. Thus, ensuring the pupil has been effectively cared for which is extremely important due to effects which PA can have if not monitored correctly.

A theme which emerged from the qualitative data was teachers attitudes to PE; differing attitudes between the participants concluded in a difference in experiences. Rouse (2009, p.4) advocates that 'teachers must believe in the value of physical activity for every pupil' as it is widely known to benefit one's health. 'Regular PA has a positive effect on overall health in individuals with type 1 diabetes' (Burr et al,

2012, p.533) however, only two of the participants expressed positive opinions on children being active. Interestingly, the participants who agreed that PA is important and beneficial to their type 1 diabetic pupil but also to the rest of the class were the only participants to state that physical activity levels in PE did not worry them. The remaining participant admitted that activity levels in PE did worry them, but it was also established that this participant was the only teacher to state that PE was not mentioned during the initial training session which undoubtedly would affect confidence levels. This participant continued with their opinion that 'perhaps advice in this area would be good for all teachers' which suggests that a more consistent approach would be beneficial especially with the number of children diagnosed with type 1 diabetes expecting to rise by 5% each year.

5.2. Communication

Communication was an important aspect involved in previous research. Within The Children and Families Act 2014 and SEND Code of Practice 2015 is the need for strategic collaboration between educators and parents (Collett, 2018, p.24; Hellawell, 2019, p.22). With this in mind, there were consistent answers across the three interviews confirming that strategic collaboration between educators and parents is successful within the school used for the research. All three participants confirmed that the communication between themselves and the pupils' parents has been positive - 'we could always speak to the child's mom if had any worries'. Considering AfPE (2015) claim that '37% were not confident that their child's teacher knows what to do in an emergency situation', it would be assumed that due to the level of communication between the teacher and parent expressed in the interviews this percentage would be lower. However, as this research is a case study, it can

only be determined that this research opposes the statistic because the parents have an involvement in the child's care within school.

Communication between teachers and parents was also positive when the participants were asked about theirs and the pupils' involvement with residential trips in which the pupil(s) would be physically active. Pupils should be 'properly supported so that they have full access to education, including schools trips and physical education' (DfE, 2015, p.4), however, when looking back on previous research it was claimed that '14% of parents and carers have reported that their child has been excluded from PE lessons and residential trips because they have type 1 diabetes' (Diabetes Research & Wellness Foundation, 2015; Diabetes UK, 2015). This statistic is low but still equally important due to the fact that 'all pupils must engage in the activities of the school alongside pupils who do not have SEND' (DfE, 2015, p.92). All three participants confirmed that pupils with diabetes are not excluded from PE lessons, and when discussing communication between the teacher and parents, one of the participants mentions that they had received training from the pupils' parents to ensure that the pupil could attend a residential trip safely.

AfPE (2015) also reported that '51% of children were not confident approaching their teacher about diabetes related problems', however there were such variations in the participants answers that the result was unclear. In support of this statistic, two of the participants say that pupils would go to the teaching assistant instead, suggesting that they were more confident approaching the teaching assistant than their teacher.

5.3. Inclusion for pupils with type 1 diabetes in PE

Procedures: In previous research, IPSEA (2016) claim that some pupils' plans in school have presented issues relating to schools not fully understanding the care a pupil requires. The data collected is in agreement with this statement in some ways as two participants expressed issues with a plan for their pupil; one of the plans was not personalised to the pupil which affirms that teachers would not fully understand the care their pupil requires as the management of a health-condition is specific to the individual. Only one participant had a plan for PE, which was assembled by the nurse and pupil's mom. However, the data was consistent when asked about any issues in PE lessons; all participants had never experienced any issues, which could suggest that they do fully understand the care a pupil requires or on the other hand this could be a result of the pupil being able to manage their diabetes themselves. All participants followed the same procedure, by allowing their pupil time at the beginning and end of PE lessons to check their blood sugar levels. This enabled inclusion for the pupil but could also suggest that there has been a plan in the past due to the fact that they all followed the same plan.

Activity levels: Activity levels was a main theme to emerge within previous research, which was expected when gathering information about type 1 diabetes in PE. The 'Evidence on physical education and sport in schools' report (DfE, 2013, p.52) showed that out of the 321 children and young people involved in the study - who each have a statement of SEND, 57% said they took part in PE as much as other children and 33% claimed they did not take part in PE as much as the other children, believing it was because of their disability. In contrast to this, the data collected showed consistency as all three participants stated that from their

experience diabetic pupils are as active as the other children in the class. The data supports the guidelines which require children to be active and engaged in PE lessons for at least 50% - 80% of lesson time (AfPE, 2015) as the pupil would be engaged in all PE lessons as the plan addressed allows pupils' to take the required time before and after lesson to ensure they are prepared to face the PA involved.

As the National Curriculum (2013, p.198) aims for 'all pupils to be physically active for sustained periods in a range of sports and activities' it was important to discover how active the participants considered type 1 diabetic pupils to be as research suggests there is a 'lack of evidence that identifies ways to encourage and support children who are least active' (Public Health England, 2015, p.14). All participants reiterated that pupils with diabetes are as active as their peers in PE lessons and are always involved in activities; such as sports day, which supports the National Curriculum's aims. One participant provided an alternative activity which could be completed if the pupil is unable to participate in the full PA; this was, taking the role of the coach and supporting the teacher in the delivery of the lesson. This example is in agreement with the different teaching styles proposed by Mosston and Ashworth (2002, cited in Griggs, 2015, p.60) as the participant has adopted a teaching style which enables the 'learner to select a task suitable for their motivation or ability within that lesson'. This reasonable adjustment within PE has the potential to encourage and support those children who are least active to be interested in some aspect of PE/PA, and therefore agrees with Westwood (2015, p.34), who recommends 'that teachers need practical advice on ways in which physical education lessons can be adapted to include all children, so that type 1 diabetic pupils do not sit on the sidelines'.

Barriers: The National Curriculum (DfE, 2013, p.3) requires 'lessons to be planned to ensure that there are no barriers to learning or exclusion for any pupil. Lesson planning was not addressed by any participant throughout the interviews, instead it was made clear that the pupil did not experience barriers to learning as they were allowed time before and after lesson and were included in PE lessons and other activities in the same way as their peers without being treated any differently, and confirms that pupils do not use their diabetes as an excuse to not participate in PE. One participant expressed that 'as long as diabetes is monitored regularly there is no reason why the child should not be allowed to continue with normal school life'.

Previous research recognised that one of the main considerations when managing type 1 diabetes is PA as exercise of any kind increases the use of energy and can cause a drop in blood sugar levels. As a result, this could be a barrier to learning as 'pupils may not want to participate due to fears of experiencing hypoglycaemia in front of their peers (Sundberg *et al*, 2012). There was no confirmation that the participants had experienced hypoglycaemia in a pupil during PE lessons; on the contrary it was stated that the participants had not had any issues in PE which could certify that PA was not considered a fear by the pupil or teachers. When researching barriers to learning for type 1 diabetic pupils in the primary school, MacMillan *et al* (2015) emphasised that fears in PE are not only experienced by the pupil; teachers have fears themselves. Participants in the study felt that diabetes could be used as an excuse to sit out of PE lessons and teachers' fears could facilitate this. Evidence from the data showed one participant worried about the pupils' involvement in PE/PA, but did not refer to the feeling as a fear. As all three participants confirmed that pupils with diabetes 'always join in with PE'; this suggests that the teachers

involved in this research do not have fears about how PA can affect a pupil with type 1 diabetes, and do not satisfy a fear by facilitating the inactivity of their pupil.

Inclusion overall: All participants agreed that the school is very inclusive; however, when thinking critically I expected this to be the answer which is why further questioning needed to take place to gain a deeper understanding of how they are inclusive. A powerful point-of-view was expressed by one participant who stated 'I feel that it is important for children with type 1 diabetes in school to be treated as normally as possible and allowed to be included in all lessons regardless of physical level'. Inclusion for a pupil with type 1 diabetes in PE was dependable throughout the research as pupils with diabetes are involved in all physically activity, whether this was PE lessons, residential trips or inclusion in sports day. The ways in which the teachers assist their pupils was consistent; all allowing time before and after lessons to manage their diabetes, even though there were conflicting answers relating to health-care plans; and the sufficient training for the majority of the participants increased the essential knowledge needed to effectively care for their pupil. These factors evidenced within the research acknowledge that 'with the proper preparation and training in place, a type 1 diabetic pupil can fully enjoy the same activities as their peers (Hess-Fischl, 2014).

Chapter 6. Conclusion

6.1. Summary of main findings.

The main findings from this research highlight how important the role of the parent is when providing training for the teachers involved in their child's care as this provided a personal level of knowledge for the teachers which was tailored to the individual. This, alongside other responses proved there was an increase in confidence and knowledge for teachers, which together strongly dismissed the accusations portrayed in previous research.

Even though participation levels in PE were equivalent to the other pupils in the class it was evident that the difference in experiences in the initial training need to be more consistent across each year so that every teacher understands the importance in which PE and PA can have on a type 1 diabetic pupil.

As a research study overall, the qualitative data did not match previous research as all participants felt that their knowledge was sufficient; their pupil was included in every opportunity for physical activity in the same way as their peers; and, the planning around PE lessons was effective to ensure the pupil was not put at a disadvantage by allowing for reasoning adjustments for this pupil; this included time before and after lesson to monitor their diabetes so that full participation could be carried out in PE and not act as a barrier to learning.

6.2. Reflections.

Upon reflection, the evidence gathered gave an insight on teachers' experiences of type 1 diabetes in PE; however, as the research was a case-study it could be said that a larger sample size is needed to gain a better understanding, with the focus across a number of schools instead of one. This could have the potential to provide a difference in experiences supporting a pupil(s) across both key stages as the experiences could be extremely different and impact the answer to the original research question. Alternatively, it would have been beneficial to have interviewed pupils with type 1 diabetes to add some legitimacy to the answers provided by their teachers and to deepen the element of truth within the responses across the interviews.

As a practitioner, I have secured additional knowledge in an area which may cross my path at some point during my career; and if so, the information gathered will have secured a basis of understanding which would enable me to understand how type 1 diabetes can be affected by physical activity and how my PE lessons could be adapted to aid/increase participation levels. The inclusion of all pupils in PE and the importance of PA for children is something I am interested in, therefore I will continue to build upon my existing knowledge to provide PA to the children I am lucky enough to teach as I understand the benefits this can bring to each pupil.

6.3. Future recommendations

The number of children being diagnosed with type 1 diabetes is rising by 5% each year (JDRF, 2018); therefore, there is a greater chance of teachers having a child in their class at some point during their career. As a result of this and in relation to the data collected, future recommendations could include general diabetes training for all teachers, irrespective of if the knowledge is a necessity at that time. All three participants expressed that general in this area would be beneficial for all teachers.

References

Association for Physical Education (2015) *Health position paper*. Available at: <http://www.afpe.org.uk/physical-education/importance-of-pe-school-sport-physical-activity-resources/> (Accessed: 30 April 2019).

Association for Physical Education (2016) *Lack of knowledge by teachers on how to deal with type 1 diabetes puts children at risk*. Available at: <http://www.afpe.org.uk/physical-education/lack-of-knowledge-by-teachers-on-how-to-deal-with-type-1-diabetes-puts-children-at-risk/> (Accessed: 12 April 2019).

Barlett, S. and Burton, D. (2016) *Introduction to education studies*. 4th edn. London: SAGE Publications Ltd.

Bell, J. and Waters, S. (2018) *Doing your research project: A guide for first-time researchers*. 7th edn. London: Open University Press.

Birnie, S. (2014) *Supporting children and young people with type 1 diabetes in education*. Available at: <http://www.diabetesinscotland.org.uk/Publications/Paediatric/Supporting%20Children%20and%20Young%20People%20with%20Type1%20Diabetes%20in%20Education%20onscreen.pdf> (Accessed: 11 April 2019).

Buckler, S. and Walliman, N. (2016) *Your dissertation in education*. 2nd edn. London: SAGE Publications Ltd.

Burr, J.F., Shephard, R.J. and Riddell, M.C. (2012) 'Physical activity in type 1 diabetes mellitus: Assessing risks for physical activity clearance and prescription', *Can Fam Physicians*, 58(5), 533–535.

Cohen, L., Manion, L. and Morrison, K. (2018) *Research methods in education*. 8th edn. Oxon: Routledge.

Collett, C. (2018) *Disability and inclusion in early years setting*. Oxon: Routledge.

Council for Disabled Children (2014) *The Children and Families Act 2014. Part 3: Children and young people with special educational needs and disabilities*. Available at:
<https://councilfordisabledchildren.org.uk/sites/default/files/field/attagemnt/ChildrenAndFamiliesActBrief.pdf> (Accessed: 13 April 2019).

Cowne, E., Frankl, C. and Gerschel, L. (2015) *The SENCo handbook*. 6th edn. Oxon: Routledge.

Cresswell, J. W. and Cresswell, D. J. (2018) *Research design: qualitative, quantitative & mixed methods approaches*. 5th edn. London: SAGE Publications Ltd.

Department for Education (2013) *Evidence on physical education and sport in schools*. Available at:
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/226505/Evidence on physical education and sport in schools.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/226505/Evidence_on_physical_education_and_sport_in_schools.pdf)
(Accessed: 12 April 2019).

Department for Education (2015) *Special educational needs and disability code of practice: 0 to 25 years*. Available at:
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/398815/SEND Code of Practice January 2015.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/398815/SEND_Code_of_Practice_January_2015.pdf) (Accessed: 11 April 2019).

Department for Education (2015) *Supporting pupils with medical conditions*. Available at:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/638267/supporting-pupils-at-school-with-medical-conditions.pdf
(Accessed: 18 October 2018).

Department for Education (2011) *Teachers standards*. Available at:
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/665522/Teachers standard information.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/665522/Teachers_standard_information.pdf) (Accessed: 13 April 2019).

Department for Education (2013) *The national curriculum in England: Key stages 1 and 2 framework document*. Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/425601/PRIMARY_national_curriculum.pdf (Accessed: 16 April 2019)

Department of Health and Social Care (2011) *Physical activity guidelines for children and young people (5–18 years)*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/213739/dh_128144.pdf (Accessed: 12 April 2019).

Diabetes Research & Wellness Foundation (2015) *One in three school children with type 1 diabetes not receiving satisfactory care for their condition*. Available at: <https://www.drwf.org.uk/news-and-events/news/one-three-school-children-type-1-diabetes-not-receiving-satisfactory-care-their> (Accessed: 13 April 2019).

Diabetes UK (2015) *Almost a third of children and young people with Type 1 diabetes not getting satisfactory care in schools*. Available at: https://www.diabetes.org.uk/About_us/News/Almost-a-third-of-children-and-young-people-with-Type-1-diabetes-are-not-getting-satisfactory-care-in-schools (Accessed: 13 April 2019).

Doherty, J. and Brennan, P. (2014) *Physical education 5-11: a guide for teachers*. 2nd edn. Oxon: Routledge.

Draper, A. K. (2004) 'The principles and application of qualitative research', *Nutrition Society* [online only], DOI: 10.1079/PNS20044397.

Fairclough, S.J. and Stratton, G. (2006) 'A Review of Physical Activity Levels during Elementary School Physical Education', *Journal of Teaching in Physical Education*, 25, 239-25.

Farrimond, H. (2013) *Doing ethical research*. Basingstoke: Palgrave Macmillan.

Flick, U. (2015) *Introducing research methodology*. London: SAGE Publications Ltd.

Furseth, I. and Everett, E.L. (2013) *Doing your master's dissertation*. London: SAGE Publications Ltd.

Glazzard, J., Stokoe, J., Hughes, A., Netherwood, A. and Neve, L. (2015) *Teaching and supporting children with special education needs & disabilities in primary schools*. 2nd edn. London: SAGE Publications Ltd.

Hardman, A.E. and Stensel, D.J. (2003) *Physical activity and health: the evidence explained*. London: Routledge.

Hellawell, B. (2019) *Understanding & challenging the SEND code of practice*. London: SAGE Publications Ltd.

Hess-Fischl, J. (2014) *Physical activity for children with type 1 diabetes*. Available at: <https://www.endocrineweb.com/guides/type-1-children/physical-activity-children-type-1-diabetes> (Accessed: 12 April 2019).

Hollis J. L., Williams, A. J., Sutherland, R., Campbell, E., Nathan, N., Wolfenden, L., Morgan, P. J., Lubans, D. R. and Wiggers, J. (2015) 'A systematic review and meta-analysis of moderate – to – vigorous physical activity levels in elementary school physical education lessons', *Preventative Medicine*, pp. 1-46.

IPSEA (2016) *Education, health and care plans*. Available at: <https://www.ipsea.org.uk/pages/category/education-health-and-care-plans> (Accessed: 14 April 2019).

James, A. and Elbourn, J. (2016) *Safe practice: in physical education, school sport and physical activity*. 9th edn. Worcester: Association for Physical Education.

JDRF (2018) *Type 1 diabetes facts and figures*. Available at: <https://jdrf.org.uk/information-support/about-type-1-diabetes/facts-and-figures/> (Accessed: 16 October 2018).

Kara, H. (2017) *Research and evaluation for busy students and practitioners*. 2nd edn. Bristol: Policy Press.

Kumar, R. (2014) *Research methodology a step-by-step guide for beginners*. 4th edn. London: SAGE Publications Ltd.

Lawrence, J. (2018) *Teaching primary physical education*. 2nd edn. London: SAGE Publications Ltd.

Lorenzi, D.G. and Trenney, R. (2015) 'Being prepared to teach and coach students with diabetes', *Journal of Physical Education, Recreation & Dance*, 86:4, p.5-6, DOI: 10.1080/07303084.

MacMillan, F., Kirk, A., Mutrie, N., Moola, F. and Robertson, K. (2015) 'Supporting participation in physical education at school in youth with type 1 diabetes', *European Physical Education Review* [online only], DOI: 10.1177/1356336X14534367.

Menter, I., Elliot, D., Hulme, M., Lewin, J. and Lowden, K. (2011) *A guide to practitioner research in education*. London: SAGE Publications Ltd.

Merriam, S. and Tisdell, E. (2016) *Qualitative research: A guide to design and implementation*. 4th edn. San Francisco, CA: Josey-Bass.

Miles, M.B., Huberman, A.M. and Saldana, J. (2014) *Qualitative data analysis*. 3rd edn. California: SAGE Publications Ltd.

O'Donoghue, T. (2007) *Planning your qualitative research project: An introduction to interpretivist research in education*. Abingdon: Routledge.

Ofsted (2013) *Beyond 2012 – outstanding physical education for all*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/413187/Beyond_2012_-_outstanding_physical_education_for_all.pdf (Accessed: 11 April 2019).

O'Leary, Z. (2017) *The essential guide to doing your research project*. London: SAGE Publications Ltd.

Ormston, R., Spencer, L., Barnard, M. and Snape, D. (2014) 'The foundations of qualitative research', in Ritchie, J., Lewis, J., McNaughton Nicholls, C. and Ormston, R. (eds.) *Qualitative research practice: a guide for social science students and researchers*. London: SAGE Publications Ltd.

Public Health England (2015) *What works in schools and colleges to increase physical activity?* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/469703/What_works_in_schools_and_colleges_to_increas_physical_activity.pdf (Accessed: 14 April 2019).

Punch, K. F. and Oancea, A. (2014) *Introduction to research methods in education*. 2nd edn. London: SAGE Publications Ltd.

Quirk, H., Blake, H., Tennyson, R. and Glazebrook, C. (2014) 'Physical activity interventions in children and young people with Type 1 diabetes mellitus: a systematic review with meta-analysis', *Diabet Med* [online only], DOI:10.1111/dme.12531.

Rouse, P. (2009) *Inclusion in physical education: fitness, motor, and social skills for students of all abilities*. United States: Human Kinetics.

Silverman, D. (2014) *Interpreting qualitative data*. 5th edn. London: SAGE Publications Ltd.

Sundberg, F., Forsander, G., Fasth, A. and Ekelund, U. (2012) 'Children younger than 7 years with type 1 diabetes are less physically active than healthy controls', *Acta Paediatr*, (101), pp. 1164–1169.

The Equality Act 2010, c. 15. Available at: <http://www.legislation.gov.uk/ukpga/2010/15/section/20> (Accessed: 12 April 2019).

The Special Educational Needs and Disability Regulations 2014, c. 6. Available at: http://www.legislation.gov.uk/uksi/2014/1530/pdfs/uksi_20141530_en.pdf (Accessed: 14 April 2019).

Thomas, G. (2013) *How to do your research project*. 2nd edn. London: SAGE Publications Ltd.

Trochim, W.M.K. and Donnelly, J. (2007) *The research methods knowledge base*. 3rd edn. Mason, OH: Thomson Custom Publishing.

Walliman, N. (2011) *Research methods*. Oxon: Routledge.

Westwood, P. (2015) *Common-sense methods for children with special educational needs*. 7th edn. Oxon: Routledge.

Wyse, D., Selwyn, N., Smith, E. and Suter, L. E. (2017) *The BERA/SAGE handbook of educational research*. London: SAGE Publications Ltd.

Yin, R. (2018) *Case study research and applications: design and methods*. 6th edn. London: SAGE

