

Engage to Compete 3
Independent Evaluation Report
November 2017

Summary

Engage to Compete has been further developed from the first two iterations of the programme to provide insight into a child's behaviour change and how their parents/family, the school, and wider community engagement can support this, with a particular focus on a child's 'Journey to Sport'.

Questionnaires to understand 1) how a child's self-reported physical activity and self-efficacy are correlated, 2) if parents have differing opinions of their child's activity, and 3) how teachers are able to overcome barriers, were completed by the children (before and after the Challenge) and by parents and teachers (at one time point). These were accompanied by focus groups with the same audience, as well as the Engage to Compete Challenge. Data was collected across 15 schools over the 2015/2016 and 2016/2017 academic years.

Overall, the results from this research indicate that the Engage to Compete Challenge can support a child to improve specific skills related to an active lifestyle. Questionnaire and focus group findings support the correlation between self-reported physical activity and self-efficacy; an increase in one, will lead to an increase in the other. The benefits of regular physical activity are needed at an earlier age, with the support from both teachers and family members. Combining these elements may help a child's 'Journey to Sport' through wider participation, increased self-efficacy, skills, and knowledge.

Introduction

In 2013 Fit For Sport successfully delivered a pilot of Engage to Compete in Manchester and Somerset. As a result, Sport England then commissioned the delivery of Engage to Compete across the 2014/2015 academic year in selected primary schools in the Sandwell and Tower Hamlets area. Following the successful delivery of these projects, Sport England further commissioned Fit For Sport to deliver Engage to Compete during the 2015/2016 academic year, with an additional extension for the 2016/2017 academic year, across schools within Tower Hamlets.

The Engage to Compete Activity Challenge is made up of three tasks designed to measure progress in the skills of the children. The three skill challenges are: 1) a hand-eye coordination throwing and catching challenge (throwing); 2) a body coordination jumping challenge (jumping); and 3) an agility running challenge (running). The Engage to Compete Activity Challenge can be set at different levels of difficulty to suit physical development by age group. The Challenge is used as a means of setting personal and collective goals for children, in order to encourage improvement and competition, both against their previous personal bests and against other children in their own and other schools.

Building on the previous success of the programme (engagement, increased activity levels and competition rates), Engage to Compete has been further developed to provide insight on a child's

behaviour change and how the parents/family, school, and wider community engagement can support this, looking specifically at:

- › Engaging children in physical activity in and out of school (60 minutes of moderate-vigorous intensity physical activity each day)
- › Sustaining children in physical activity in and out of school (working with community partners to support)
- › A child's 'Journey to Sport' and competition
- › The role of the school and community engagement
- › The role of parent/family engagement in achieving the Chief Medical Officer's (CMO) guidelines for physical activity

The project utilises knowledge and theory from behaviour change models that can be related to the 'Journey to Sport' for both children and adults. To achieve this Fit For Sport, experts in the delivery of children's activity, partnered with the ukactive Research Institute, specialists in the fields of behaviour change, children's activity, and real-world research design. The ukactive Research Institute were engaged to provide independent research and evaluation support, and to design and develop a longitudinal, repeated measures investigation, incorporating both qualitative and quantitative data collection into service delivery.

Behaviour Change and Sustaining Participation Theory

Fit For Sport's Engage to Compete Challenge utilises current theories of behaviour change including the Transtheoretical Model (TTM),^{1,2} to identify a child's 'Journey to Sport' through engagement in activity with particular focus on the timelines, trigger points, interventions and sustainability. At the core of this behaviour change model is building children's confidence and competence in a fun motivational environment while engaging with teachers, support staff and parents as role models to increase their respective activity levels.

There are six sequential stages to the behaviour change model – pre-contemplation, contemplation, preparation, action, maintenance, and relapse. The exception, relapse, can occur at any stage, although it is often commonly spotted, or has the greatest impact, following either the maintenance or action stages. While the TTM has been applied to children, the study of its constructs and predictability in this population is limited,³ with little research examining the stages of change, and the impact of relapse within this. While relapse remains a prominent area of research for adult and adolescent populations because of its tendency to occur³, it has only been proposed that children might follow the same pattern of behaviour,⁴ and remains understudied.

Initial thoughts around the stages of behaviour change for children include monitoring timelines, and identifying the impact of the activities and strategies in each phase. Following the findings of previous Engage to Compete projects it was proposed that the first three stages (pre-contemplation, contemplation and preparation) would be significantly faster for children than adults due to less concerns around self-confidence and physical capability. As a result, this project aimed to understand behaviour change specifically at the action or maintenance stages of the TTM, which is assessed and quantified through the data collection strategies.

Research Questions

The research and evaluation of Engage to Compete was measured using four key research questions related to the outputs of the programme and specifics of the TTM of behaviour change. These research questions were:

1. Is children's self-efficacy linked to their physical activity levels?
2. Does teachers' self-efficacy allow them to overcome barriers to teaching physical activity?
3. Do parents have a realistic perception of their child's physical activity levels?
4. How do children perform in the Engage to Compete Activity Challenge?

Method

Population

Fifteen schools within the London Borough of Tower Hamlets that were previously engaged in the Engage to Compete project, were recruited to take part in Engage to Compete 3. The engaged schools had a varying demographic, percentage of children eligible for free school meals, and levels of physical activity and competition. The total number of children, parents, or teachers that responded to each questionnaire and completed the Engage to Compete Challenge is detailed below in the relevant sub-sections of the results.

Ethics

Headteachers of the participating schools agreed for Fit For Sport to deliver their Engage to Compete programme, and provided consent for the relevant data to be collected from the children. Parents were then written to, explaining Engage to Compete and the research data collection methods, and were provided with a two-week window in which to opt-out of the programme. Parents and teachers completed their own consent form prior to completing the relevant questionnaire. Additional consent was gained for the focus groups/semi-structured interviews.

Data Collection

To answer the four research questions, the ukactive Research Institute adopted a triangulation approach to data collection to increase the accuracy of the outcomes and to reduce bias. The triangulation included questionnaires, focus groups/semi-structured interviews, and data from the Engage to Compete Challenge, which, as a mixed methods approach, allowed for a multifaceted approach to data analysis and interpretation.

Questionnaires

In total four questionnaires were used, two designed for the children and one for the parents and teachers respectively. The questionnaires included items relating to current engagement in activity and/or sport (frequency, types of activity, locations), current motivations to participate in physical activity, what may motivate participation in physical activity, and current understanding of why being active is important.

The physical activity levels of the children were collected using the Physical Activity Questionnaire for Children (PAQ-C). This is a self-administered, 7-day recall questionnaire designed to assess general levels of physical activity.⁵ The reliability and validity of this questionnaire was demonstrated in two studies. First, the test-retest reliability was stable over the one-week assessment (males, $r = 0.75$ and females, $r = 0.82$), with an internal consistency of ($\alpha = 0.79$) and ($\alpha = 0.89$) for the two time points in children aged 9 to 15 years.⁶ Crocker and Colleagues (1997) also demonstrated item scale correlations were all above 0.30, and the scale reliability was acceptable for both females ($\alpha = 0.83$) and males ($\alpha = 0.80$). Secondly, amongst 8-13 year olds, the convergent validity of the PAQ-C was supported by moderate relationships with activity ratings ($r = 0.63$), while divergent validity was supported due to no relationship between the behavioural conduct scale and the PAQ-C.⁷ Overall, the PAQ-C demonstrates acceptable measurement properties for use with this population.

The children were also asked to complete the Self-Efficacy Questionnaire for Children (SEQ-C). The SEQ-C is a 24 item questionnaire that represented three domains of self-efficacy; social self-efficacy, academic self-efficacy, and emotional self-efficacy.⁸ Through factor analysis the three factors were deemed valid, as well as showing satisfactory internal consistency through Cronbach's alphas of 0.88 for the total self-efficacy score, and between 0.85 and 0.88 for the subscales.⁸ This validation was conducted with children aged between 14 and 17 years of age, however a study by Suldo and Shaffer⁹ supported the use of the SEQ-C in 11-13 year old American adolescents. Although at the upper age limit of the school children participating in the Engage to Compete Challenge, the SEQ-C was utilised to understand the three subscales of self-efficacy and their relation to physical activity.

To understand the parents' perceptions of their child's physical activity levels the parent questionnaire used in the Children's Leisure Activities Survey (CLASS) was adopted. This large scale research project explored how the family environment influenced children's physical activity and sedentary behaviours. The questionnaire has two questions. The first includes a list of activities and asks if the child takes part in any of them, and if so the day and time frequency during weekdays and weekends. The second question relates to other leisure activities and the time frequency during weekdays and weekends.

The questionnaire used to understand teachers' self-efficacy to overcome barriers to teach physical education was the Physical Education Teachers' Physical Activity Self-Efficacy Scale (PETPAS). This 16-item, four-factor (student, space, time, and institution) questionnaire was developed following exploratory and confirmatory factor analyses that produced reliable and valid scores.¹⁰ The results further suggest that the PETPAS is valid across teaching levels, although validity cannot be generalised to all situations.¹⁰ The four subscales and suitability of this questionnaire to measure self-efficacy to overcome barriers preventing the delivery of physical education across various teaching levels, established the appropriateness of the PETPAS for this research.

Focus Groups/Semi-Structured Interviews

Qualitative data collection in the form of focus groups and semi-structured interviews were used to gather insight from a sub-sample of children, parents, and teachers following similar themes from the questionnaires described above. This was to prompt and promote further discussion around key aspects. The focus groups/semi-structured interviews were conducted at a sports day in July 2016 at which each of the three target groups were in attendance. Members of the ukactive Research Institute conducted the focus groups/semi-structured interviews.

Engage to Compete Activity Challenge

The scores achieved in the Engage to Compete Activity Challenge, which consists of coordination, stamina, and agility tasks (as described in the introduction), achieved by each child were collected by Fit For Sport and shared with the ukactive Research Institute.

Data analysis

All response data was cleaned and pre and post questionnaires paired using MATLAB (version 2016b, MathWorks, Massachusetts, USA), with further and statistical analysis conducted in Microsoft Office Excel and SPSS (version 22, IBM, New York, USA). Paired samples t-tests were conducted on all four measures of self-efficacy (total self-efficacy, academic, social, emotional), and the PAQ-C responses collected before and after the Challenge to determine the difference between these two time points.

The PAQ-C and SEQ-C responses were compared using a Pearson's correlation to determine the strength and direction of the association that exists between the two measures. Regression analysis was also conducted to determine the SEQ-C score required to be classified as active according to the PAQ-C. Focus groups were analysed using thematic analysis which drew out the most prominent (higher order) themes and categories of sub-themes that lie within these.

Results

Overall 1,011 children completed the PAQ-C and SEQ-C questionnaires regarding physical activity and self-efficacy to exercise. Responses were received from children in school Years 4-6, aged between 8-12 years old, across a total of 11 different schools. The children were relatively evenly split in sex, with a slightly higher percentage of males (52%) than females (48%). Alongside this, a total of 167 parents completed the CLASS measuring their perceptions of their child's physical activity levels. These parents had children in Years 1-6 from across 5 schools. A total of 15 teachers completed the PETPAS – teachers' self-efficacy to overcome barriers in delivering physical activity – questionnaire.

Children's Self-Reported Physical Activity Levels

A total of 199 children completed the PAQ-C before and after taking part in the Engage to Compete Challenge. Results revealed that 55% of children self-reported to be active before the Challenge, with 45% sedentary. This reduced slightly at the end of the Challenge with 51% of children reporting that they are currently active. A paired samples t-test of pre and post means indicated that there was no significant difference in children's self-reported physical activity levels across the school term (Mean Difference [MD] (Standard Deviation [SD]) =0.025 (0.612), $t_{(198)}=0.587$, $p=0.558$), showing instead that physical activity levels remained consistent.

Children's Self-Reported Self-Efficacy

The SEQ-C was completed by 176 children before and after taking part in the Engage to Compete Challenge. The mean self-efficacy scores reduced over time for all three of the self-efficacy sub scores, as well as the total (Table 1). Paired samples t-tests were conducted on all measures of self-efficacy, including total self-efficacy score, and individual scores of academic, social and emotional self-efficacy. Total self-efficacy and academic self-efficacy significantly decreased over the duration of the Engage to Compete Challenge (Table 1).

Table 1. Mean (SD) and paired samples t-test results for the SEQ-C responses. Alpha = 0.05.

	Mean (SD)		Paired samples t-test		
	Pre	Post	t	df	p
Total Self-Efficacy	83.0 (15.3)	80.5 (16.3)	2.318	175	0.022*
Academic Self-Efficacy	29.4 (5.5)	28.6 (5.9)	1.975	175	0.050*
Social Self-Efficacy	27.7 (5.9)	27.0 (6.1)	1.604	175	0.110
Emotional Self-Efficacy	22.7 (5.8)	22.0 (5.9)	1.822	175	0.070

*indicates a significant difference where $p \leq 0.05$

Self-Efficacy and Physical Activity

The SEQ-C and PAQ-C responses were compared both before (Figure 1) and after (Figure 2) the Engage to Compete Challenge using a Pearson's correlation to determine the strength and direction of association between self-reported self-efficacy and self-reported physical activity levels for the children.

There was a positive correlation between the PAQ-C and SEQ-C before the Engage to Compete Challenge, which was statistically significant ($r=0.337$, $n=442$, $p<0.001$). After the Engage to Compete Challenge, there was still a positive correlation, however this was slightly less correlated, yet still statistically significant ($r=0.270$, $n=277$, $p<0.001$). These results indicate that as a child's self-efficacy increases, their physical activity levels also increase.

Regression analysis further reveals that before the Challenge 11.3% of the total variation in SEQ-C (self-efficacy) scores can be explained by the PAQ-C score (a low score; physical activity), and the regression model statistically ($p<0.001$) predicts the SEQ-C score. The regression highlights that a child should have a self-efficacy score of 81.5 in order to achieve a score of 3 on the PAQ-C and thus be classified as active (highlighted by the red line in Figure 1).

Regression analysis of the data collected after the Challenge similarly indicates 7.3% of the total variation in SEQ-C score can be explained by the PAQ-C score (a low score), and the regression model statistically ($p<0.001$) predicts the SEQ-C score. The regression highlights that a child should have a self-efficacy score of 81.0 in order to achieve a score of 3 on the PAQ-C and thus be classified as active, lower than before the Challenge (highlighted by the red line in Figure 2).

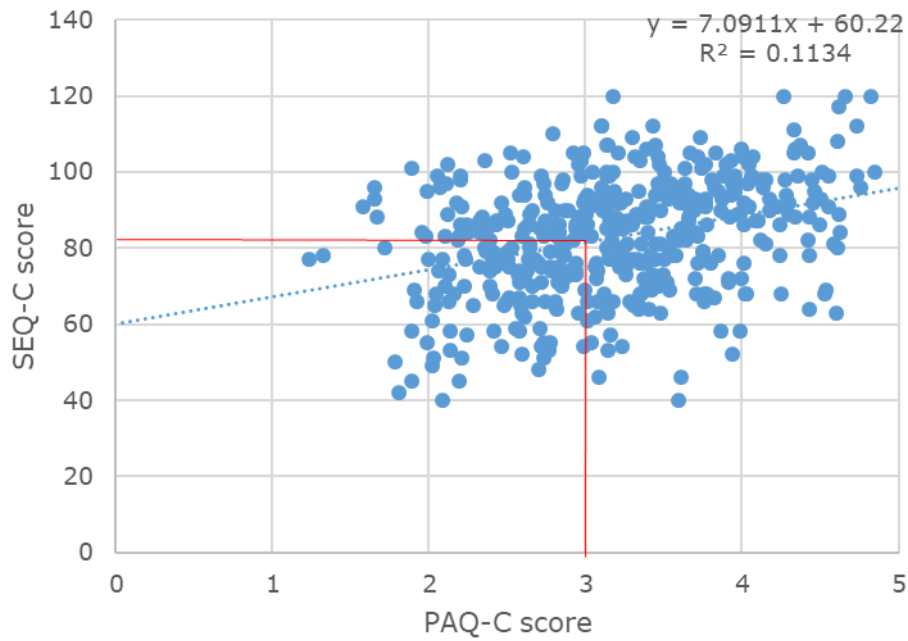


Figure 1. Correlation between self-reported physical activity and self-efficacy pre Engage to Compete.

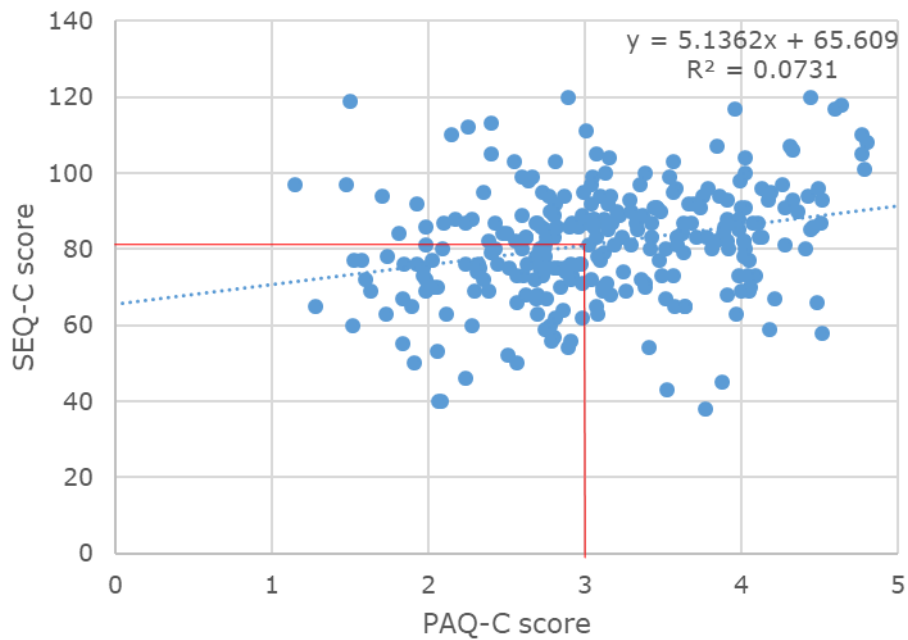


Figure 2. Correlation between self-reported physical activity and self-efficacy post Engage to Compete.

Parent's Perceptions of their Child's Physical Activity

Of the 167 parents that completed the CLASS, 27 could be paired up with their child's PAQ-C response. This allowed for a comparison of children's self-reported physical activity in certain sports with their parent's perceptions of the same sport. A total of 89% of children's and parents' responses were misaligned, with 41% of parents perceiving that their child took part in more sports than their child reported doing, and 48% of parents perceiving their child participated in fewer sports. While 11% of children's responses matched their parent's, on average children reported participating in 0.30 more sports than their parents perceived they were taking part in.

On average, when comparing the types of sports that children had participated in like-for-like, children's and parents' responses matched for 10.9 out of 15 sports (73%). Nevertheless, only one child's perceptions completely matched their parent's.

Overall, these results indicate a disparity between parents' and children's perceptions of their activity. This may be as a result of children overestimating their own participation, or alternatively may indicate that parents are assuming children to be less active than they are.

Teacher's Self-Efficacy

A total of 15 teachers completed the teachers' self-efficacy questionnaire from three different schools covering all year groups. The teachers had been teaching for an average of seven years, ranging from 1 to 20 years. Eleven females and four males made up the sample who taught an average class size of 23 pupils (range = 18 to 30). Two teachers taught PE one day a week, 13 taught PE twice a week, with one teacher not teaching PE at all. On average teachers spent 74 minutes a week teaching PE.

The self-efficacy questionnaire results are split into four factors: student, space, time, and institution. Overall results can be seen in Figure 3. The highest score was found for teachers' self-efficacy for managing students that did not enjoy or value physical activity (student factor). Similarly rated was teachers' self-efficacy for teaching with a lack of space (space factor), and teaching with limited time (time factor). The lowest score was for teachers' self-efficacy to overcome a lack of support from the institution (school) when teaching PE or physical activity (institution factor).

Of the individual questions, space being used for other purposes was scored as the greatest barrier (45.3%) followed by not enough time in a term (36.0%). The lowest scores, and thus the items presenting the lowest barriers to teaching, were Headteachers not providing support (7.3%), too many students in a PE class (8.0%), and too little contact time with students (10.7%).

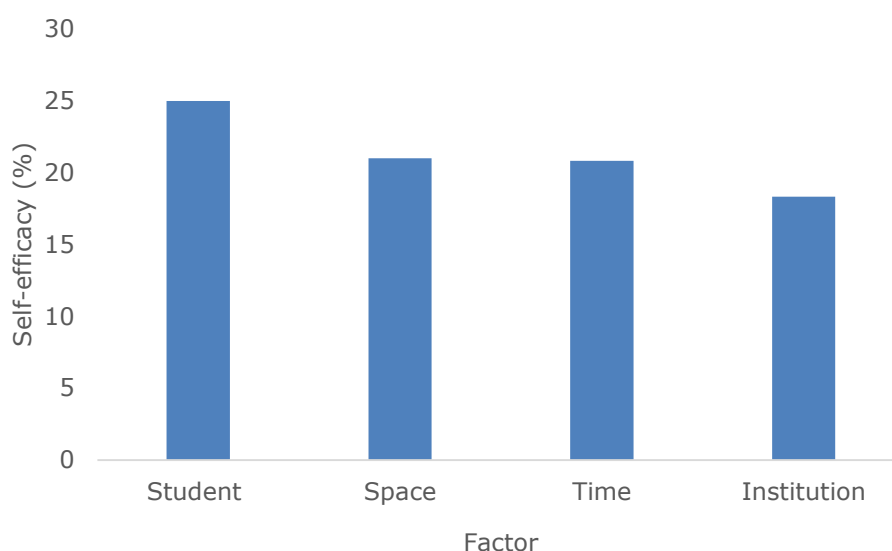


Figure 3. Breakdown of teachers' self-efficacy scores.

Engage to Compete Challenge

Engage to Compete data was collected from a total of 2,618 (1,059 in 2016; 1,559 in 2017) children across the two academic years. Children were from 15 schools (five in 2016; 11 in 2017 [one school across both years]) and consisted of 1,318 boys and 1,271 girls (534 boys and 497 girls in 2016; 784 boys and 775 girls in 2017).

The average for each Challenge collected from all participating children, for each academic year, can be seen below in Figure 4 for 2016 and Figure 5 for 2017. The data collected during 2017 reveals a higher starting score for each of the three Challenges. The only Challenge score in 2017 that was lower than 2016 was the score for Running collected during the second Challenge.

Comparable data was collected from time points one and two for a total of 1,159 children (265 in 2016 and 894 in 2017). A paired samples t-test was used to test for the significance of these changes over time. During 2016, Throwing and Running remained fairly constant and the change was non-significant ($p=0.836$ and $p=0.743$ respectively). Jumping decreased over time to a significant level ($p<0.05$). During 2017, all three tasks changed significantly ($p<0.05$) with throwing significantly increasing and both Jumping and Running significantly decreasing.

There was no correlation between the SEQ-C and the Engage to Compete results or the PAQ-C and Engage to Compete results.

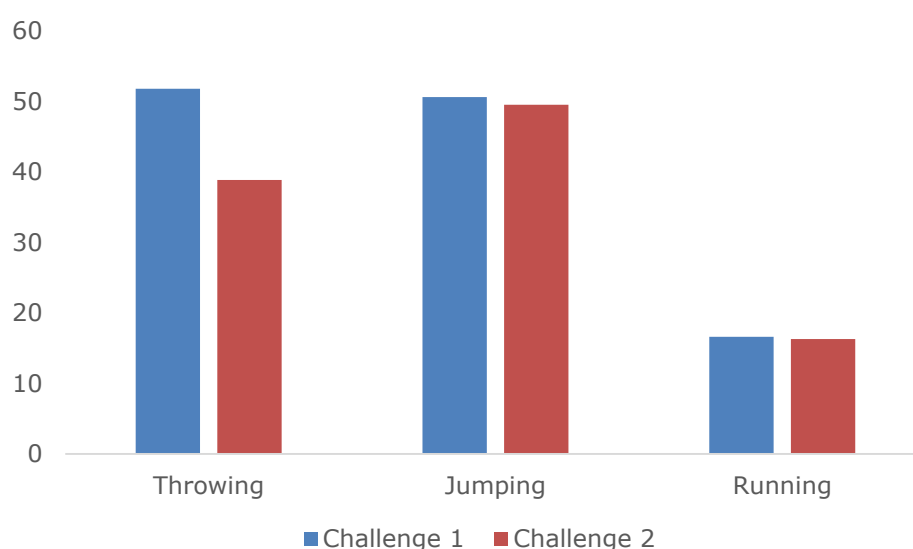


Figure 4. Engage to Compete scores for 2016.

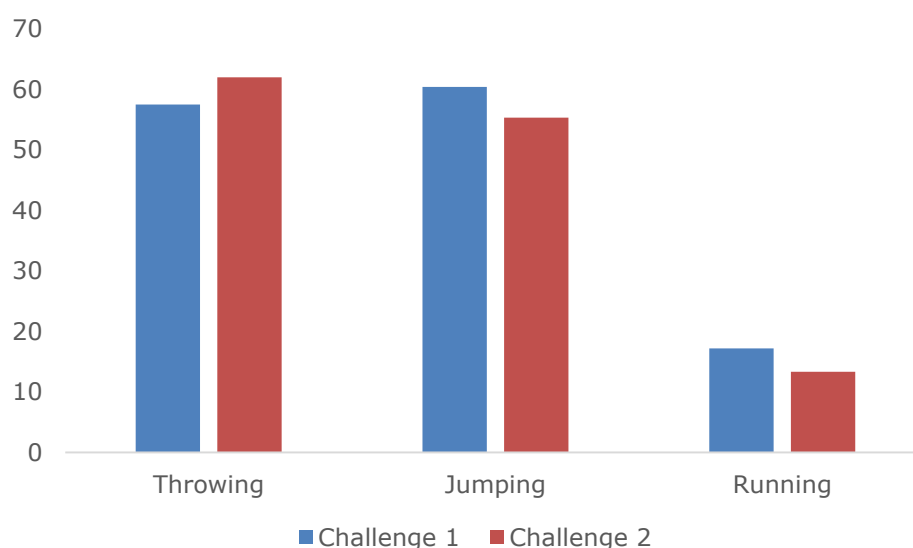


Figure 5. Engage to Compete scores for 2017.

Table 2 shows the breakdown of each Engage to Compete task for boys and girls during 2017 (gender breakdown was not present for 2016 data). The greatest increase was seen in scores for boys' Throwing increasing by 6. Both boys and girls produced comparable results for the Jumping and Running activities, with the exception of Jumping in during the second Challenge. The greatest difference in scores between genders were recorded for Throwing.

Table 2. Breakdown of Engage to Compete scores by gender for 2017.

	Challenge 1		Challenge 2	
	Boys	Girls	Boys	Girls
Throwing	61	55	67	57
Jumping	61	60	58	53
Running	18	17	13	13

Focus groups

The teachers' perceptions of the children's enjoyment of physical activity mirrored the children's responses. The majority agreed that they loved taking part in PE, and most took part in some form of sport (e.g. football, 'Highball', dance) both inside and outside of school. Within school, children, parents and teachers agreed that the children completed at least 2 hours of PE a week, with activity at play time and after school in addition to this. Most children claimed that they were active every day, and took part in the school initiative 'GoNoodle' daily. However, only a small number of the children said they learnt about the benefits of physical activity in school, with none mentioning they knew how much physical activity they were supposed to be doing. This aligns with comments from both the teachers and the parents, whereby the teachers claimed the children tended not to be aware of being active, and instead just liked to have fun. It appears that the children only began to become aware and health conscious in the older age groups (Year 4 & 5), which the teachers believed was as a result of guidance from the parents. Of the parents interviewed, 75% claimed they were not aware of the CMO guidelines for children's physical activity, whilst those who were aware believed they would benefit from more guidance from the school about the guidelines. Likewise, a majority of the teachers agreed that although the school had good facilities and space to provide activity, physical activity and its benefits were not valued or seen as a priority in the school in comparison to other subjects, and that some teachers would also like further guidance.

In regards to the teachers' self-efficacy to teach physical activity, the most commonly cited barrier towards teaching was a lack of time. This was less so for teachers of Years 3 and 4, but appeared particularly to be the case for teachers who taught older year groups, who also felt that there were too many curriculum pressures to focus on physical activity and PE. Nonetheless, children's self-efficacy to exercise was better explored, with children showing a positive attitude towards being active and PE classes, indicating a strong self-efficacy to want to take part in exercise. In addition, children of all ages stated that they would choose to take part in activities or sports if they had a choice, even in the rain or cold, and sometimes picked this over playing inside. This implies that these children could be involved in the 'action' or 'maintenance' stages of behaviour change, where it becomes important to ensure activity is maintained into adulthood to become a life-long habit. This was complimented by the parents, some of whom claimed that their children started being active from a

young age at home with their families. Indeed, this appears to benefit both the children and parents reciprocally, as these parents also claimed that taking part in sports and activities with their children was a prominent way in which they kept active themselves.

However, not all children indicated self-efficacy to exercise; it appears that self-efficacy is lower for children classified as overweight. These children, according to their teachers, were reported to “really [not] like PE”, to “rarely participate” and often feel “self-conscious”. Some of these children often forget their PE kits on purpose, and purposely did not attend Sports Day. By intentionally avoiding the situation, the children are potentially not situating any stage of behaviour change, albeit sustaining relapse. This also suggests that these are the children that need to be targeted to become more involved in activity, and their reasons for not participating understood to inform physical activity and PE delivery.

Discussion

This evaluation has shown how a child’s self-reported physical activity and self-efficacy are correlated, how parents have differing opinions of their child’s activity levels, how teachers are able to overcome barriers, and that the Engage to Compete Challenge has helped improve key aspects of skills related to physical activity.

The data collected as part of the Engage to Compete Challenge reveals that Throwing is the most successful activity, with Jumping the least successful. Across the two years of collection, mean scores were higher during the second year for both time points which could suggest that the group of children were more competent overall during 2017. Statistical results reveal both significant increases and decreases where data could be paired together over time. This demonstrates that although there were decreases in the children’s skill level, the Engage to Compete Challenge can have a positive effect on Throwing.

The focus of this project was not solely on the Engage to Compete Challenge but the wider impact on the children, their families, and teachers during their ‘Journey to Sport’. The children’s self-reported physical activity levels remained consistent throughout, with slight reductions seen in self-efficacy. Pairing the self-efficacy and physical activity questionnaires indicated that as a child increased their self-efficacy their physical activity levels also increased. Self-efficacy results also indicated the level of self-efficacy required to determine if a child is to be active. However, there was no correlation between SEQ-C and the Engage to Compete scores. The questionnaire data demonstrates the wider impact of Engage to Compete and the positive impact that increasing a child’s confidence in their ability can have on their activity levels. Both Fit For Sport and teachers can use this information to ensure children are gaining the skills and knowledge they need to feel empowered to develop specific skills.

The focus groups revealed that the children really enjoyed taking part in both sport and PE. However, only a small number of those spoken to knew the benefits of regular physical activity, typically those at an older age. This was confirmed by the parents and teachers who suggested it was about the fun rather than the benefits. Fit For Sport are able to utilise Engage to Compete to add the fun element into activities whilst providing children with the opportunity to learn key physical skills that can help in their 'Journey to Sport'.

The focus group information also showed that children have a positive attitude towards PE and strong self-efficacy, which links to the questionnaire findings. However, overweight children had less self-efficacy, often avoiding PE. Information on the children gained from the questionnaire and focus groups demonstrates how sport and PE is having a positive benefit on those taking part, although additional support may be required for specific groups.

Teachers indicated that although the school had facilities to ensure PE was delivered, time constraints, other curriculum pressures, and the fact that the benefits were not understood by some teachers, were barriers to effective engagement. However, Headteachers did provide support. For those schools where this is the case, Fit For Sport are able to offer Engage to Compete to provide children with the opportunity to take part in PE whilst providing teachers with the benefit of additional time, and Headteachers can show their overall support for PE.

Limitations

There were only a small number of responses from teachers and children that could be paired up, meaning only limited insight could be gained. A more in-depth understanding will require greater engagement with the teachers. One reason for this may be the time available to the staff (as highlighted in the responses collected) for completion, or that they felt they were being tested. The focus group information provided additional information to complement the questionnaire.

Similarly, the number of questionnaires completed by the parents was small. This again limited the comparisons that could be drawn between parents' and children's perceptions of physical activity levels. One potential barrier could be language, as a number of the parents who took part did not speak English as their first language.

Conclusion

The results from this research indicate that the Engage to Compete Challenge can be delivered to support the development of specific skills required for an active lifestyle, with the wider correlations between self-efficacy and self-reported physical activity demonstrating an important link. The benefits of regular physical activity need to be taught earlier and understood by families as well as schools. Combining these elements may help a child's 'Journey to Sport' through wider participation, increased self-efficacy, skills, and greater knowledge.

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