

A revised teaching assistant-led extracurricular physical activity programme for 8- to 10-year-olds: the Action 3:30R feasibility cluster RCT

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Scientific summary

The Action 3:30R feasibility cluster RCT

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Background

Physical activity is positively associated with improved health, yet at least 50% of children in the UK do not meet the minimum recommendation of 60 minutes per day of moderate to vigorous physical activity. Therefore, strategies to engage children in more physical activity opportunities are warranted.

After-school programmes present opportunities for increasing discretionary physical activity; however, provision is dominated by external companies delivering competitive sports, which can be expensive for schools. Physical activity declines as children age, and the decline is more pronounced in girls. Alternative options that are affordable to schools and engage the least active children, particularly girls, are needed.

Formative piloting of the Action 3:30 intervention in schools tested a model that trained teaching assistants to deliver an active after-school programme, underpinned by motivational theory, to children aged 9–11 years. The intervention showed promise as a scalable physical activity approach that increased physical activity levels in boys but not in girls. Evaluation work concluded that more work was needed to improve attendance rates and to appeal to girls and less active children.

Based on review of existing evidence and the issues raised in the original programme, a revised programme called Action 3:30R (hitherto referred to as Action 3:30 for simplicity) was developed, underpinned by motivational theory. The aim of this research is to test, via a feasibility study, whether or not the revised programme has the potential to recruit less active children, engage the interest of girls, achieve higher attendance levels, assess the evidence of promise for increasing the physical activity of boys and girls, and thereby examine the evidence for progressing to a definitive trial.

Objectives

Objective 1

To optimise the intervention to increase activity in boys and girls.

Objective 2

To identify effective means of recruiting less active children.

Objective 3

To assess intervention fidelity.

Objective 4

To estimate the effect of allocation to the Action 3:30 intervention on weekday moderate to vigorous physical activity of participants and related physical activity behaviours.

Objective 5

To collect the information needed to assess the feasibility of conducting a definitive trial and assess the implementation potential of the Action 3:30 intervention.

Objective 6

To assess whether or not five progression criteria for conducting a definitive trial are met:

1. At least 25% of schools that are approached agree to join the study.
2. At least 25% of eligible Year 4/5 pupils express an interest in the study by returning consent forms.
3. At least 40% of participants expressing an interest in the study are girls.

4. At least 50% of the participants in the intervention arm attend 50% of the sessions.
5. At follow-up, at least a small benefit for weekday moderate to vigorous physical activity is observed for each of boys and girls, comparing intervention schools with control schools, and the upper bound of the 95% confidence interval exceeds 10 minutes.

Methods

Study design

The study had two components. Component A, intervention optimisation, was used to address objective 1. Component B (addressing objectives 2–6) was a cluster-randomised controlled feasibility trial in primary schools to compare the Action 3:30 intervention with a usual-practice control. The trial included quantitative, qualitative, process and economic evaluations.

For component A, two primary schools were recruited and a sample Action 3:30 session was delivered by trained coaches to one class of Year 5 (aged 9–10 years) pupils in each school. Focus groups were held after the session with six boys and six girls separately in each school. Pupils commented on the content and teaching style of the sessions and offered suggestions of potential improvements that they thought would make the club more appealing. The findings were used to enhance the programme before it was delivered.

For component B, 12 primary schools were recruited from two local authorities (South Gloucestershire, $n = 8$; North Somerset, $n = 4$). Half of the schools recruited were above the local authority median for free school meals (an indication of socioeconomic position, i.e. more deprived).

Pre baseline

To address objective 2, all pupils in Years 3 and 4 in the 12 recruited schools were asked, via a parental opt-out consent process, to complete the validated Physical Activity Questionnaire for Older Children (www.prismsports.org/UserFiles/file/PAQ_manual_ScoringandPDF.pdf; accessed 10 April 2017) before being invited to take part in the main study when they reached Years 4 and 5, respectively. In a subset of four South Gloucestershire schools, participants were also asked to wear an accelerometer for 7 days. These data were used to compare physical activity levels between pupils who did and pupils who did not consent to participate in the main study.

Recruitment and measures

Prior to randomisation, baseline data were collected from up to 32 Year 4 and 5 pupils from each school who returned parental consent forms. Two different recruitment strategies were tested for effectiveness. Recruitment method A (standard) involved a short briefing in each class as well as detailed information sheets. Recruitment method B (enhanced) involved recruitment method A plus a 20- to 30-minute taster session of Action 3:30 club activities. Baseline measures included parent-reported individual and family demographics, including school travel mode and after-school club participation, objectively measured height, weight and physical activity (7 days of accelerometry), and child-reported psychosocial and health-related quality of life. Measures were repeated at follow-up during the final 3 weeks of the intervention in each school.

Randomisation

Schools were randomised to control ($n = 6$) or intervention ($n = 6$) after baseline data collection. Randomisation was stratified by local authority and recruitment method. Two teaching assistants in each intervention school were recruited to undertake training to deliver the intervention. Two of the intervention schools were unable to provide staff to attend the intervention training and so did not deliver the intervention. Therefore, four schools were intervention schools and six were control schools.

Teaching assistant training and intervention

In total, nine teaching assistants from the four intervention schools (at least two from each school) attended a 25-hour (5-day) training programme off-site. The programme equipped teaching assistants with the skills and resources (a comprehensive training guide for reference, 30 detailed session plans and access to an online video archive demonstrating 22 of the activities in the session plans) to deliver structured physical activity sessions focused on promoting children's perceptions of autonomy, relatedness and competence in relation to being physically active. Schools delivering the intervention were also given £200 to buy the equipment needed for the planned sessions. Once trained, teaching assistants delivered the Action 3:30 after-school club twice per week for 15 weeks. Each session lasted 60 minutes. Attendance rates in each intervention school were assessed after session 12 and spaces in each club were offered to new children.

Process evaluation

A process evaluation using the RE-AIM (Reach, Effectiveness, Adoption, Implementation, Maintenance) framework, reporting on recruitment, dose, intervention effectiveness, fidelity and adoption, was conducted in the four intervention schools to address objectives 3 and 5 using quantitative and qualitative components.

Quantitative

The number of schools approached and the proportion recruited were recorded. Teaching assistants were asked to record attendance and dose (the extent to which sessions were delivered as planned) of the intervention in log books. Three observation visits were conducted by research team members in each intervention school to assess intervention fidelity and dose, during which researchers observed sessions, pupils completed self-report measures of enjoyment and exertion, and teaching assistants completed surveys relating to self-efficacy and autonomy-supportive teaching style adoption. These teaching assistant measures were also conducted pre and post training to ascertain training fidelity and effectiveness at promoting autonomy-supportive teaching. School context was assessed in all schools using a validated school physical activity environment audit tool and questions relating to school physical activity policies. These data were used to examine whether or not differences in the social/physical environment and school policy strategies could affect the delivery of the intervention.

Qualitative

Post-intervention semistructured interviews were conducted with teaching assistants who delivered the intervention to explore their experience of the study, training and intervention, and to highlight potential changes to improve maintenance. Focus groups were conducted with eight boys and eight girls in each of the four intervention schools, exploring recruitment motivation, attendance issues, delivery experience, enjoyment and potential improvements. Key contacts from intervention schools were interviewed to explore wider attitudes to the programme, school burden and potential sustainability, improvements and potential contamination from teaching assistants moving between schools or sharing expertise with control schools. Finally, eight external stakeholders, including regional public health leads, school sport coordinators and directors of public health non-profit organisations, were interviewed about the sustainability, commissioning potential and dissemination considerations for programmes such as Action 3:30.

Analysis

Qualitative

The framework method was used to analyse qualitative data, as it produces a matrix of data from different participant groups and allows for constant comparison. Researchers identified themes for exploration in each participant group inductively and deductively. Themes were triangulated across groups to explore convergent and divergent perspectives. Findings were reported in line with Consolidated Criteria for Reporting Qualitative Research guidelines.

Quantitative

Summary statistics were presented comparing the control and intervention arms at baseline and follow-up on demographics, psychosocial and accelerometer variables, including moderate to vigorous physical activity. When distribution of the outcomes was approximately normal, mean values and standard deviations were presented. For binary/categorical variables, a number and percentage were presented. As this was a feasibility trial, the primary and secondary outcomes were reported using basic statistics to describe the recruitment, attendance, accelerometer and questionnaire data.

Economic evaluation

An analysis was conducted to estimate the cost-effectiveness and cost utility of the Action 3:30 intervention compared with no active intervention over the 1-year period of the feasibility study. Resource use and actual costs incurred by teaching assistants was assessed with a checklist. Prices were drawn from timesheet data and from published, established sources. Costs were categorised according to stage of programme delivery and were stratified by school as follows: one-off training resources, recurrent programme preparation resources and recurrent programme delivery resources.

To estimate the potential cost-effectiveness of Action 3:30 compared with no active intervention, objectively measured follow-up moderate to vigorous physical activity for intervention and control arms and data collected on Action 3:30-related resources and costs were examined. To assess the potential for change in health-related quality of life as a result of participating in Action 3:30, pupils were asked to complete two validated measures at baseline and follow-up: KIDSCREEN-10 (www.kidscreen.org/english/questionnaires/kidscreen-10-index/; accessed 10 April 2017) and the Child Health Utility 9D (www.sheffield.ac.uk/polopoly_fs/1.441111!/file/Health-Questionnaire-final-watermarked.pdf; accessed 10 April 2017). To compare Action 3:30 delivery costs with existing extracurricular club provision at participating schools, key contacts at each participating school were asked to complete a retrospective survey at baseline and follow-up providing a description of each existing after-school club, including session duration and the cost to the school and to parents or guardians.

Results

The primary goals were to assess the feasibility of conducting a cluster randomised controlled trial of the Action 3:30 project and to assess the efficacy for increasing physical activity in boys and girls.

Recruitment and attendance

Interest in the project was high, with 44% of schools approached agreeing to join the project and 43% of eligible pupils expressing an interest in the study by returning consent forms ($n = 459$). The programme appealed to boys and girls; 50% of consenting pupils were girls ($n = 228$) and > 70% of pupils (70% of girls and 74% of boys) attended at least half of the club sessions. Progression criteria 1–4 were therefore met. Furthermore, only 60% of control pupils and 62% of intervention pupils met the current physical activity guidelines at baseline, indicating that a range of pupils across the physical activity spectrum were recruited.

Physical activity outcomes

No evidence was found of a difference in weekday moderate to vigorous physical activity minutes between the intervention arm and the control arm at follow-up (-0.5 , 95% confidence interval -4.57 to 3.57). Likewise, the proportion of pupils meeting the guidelines of 60 minutes of moderate to vigorous physical activity per weekday was similar between the arms overall and among boys and girls separately. There was no difference in any accelerometer-derived measures of physical activity between the arms at follow-up. Therefore, progression criterion 5 was not met.

Secondary outcomes

No psychosocial outcomes showed any notable difference between the control arm and the intervention arm. The number of active travel days from school and the number of after-school clubs attended (excluding Action 3:30) was slightly smaller in the intervention arm than in the control arm (1.94 vs. 2.35, and 1.44 vs. 1.70, respectively).

Process evaluation

The RE-AIM framework provided an appropriate and comprehensive structure for the process evaluation. Quantitative and qualitative data indicated that, once schools were signed up to the study, teaching assistants were willing to be delivery agents and that Action 3:30 was successful in reaching a variety of children, including girls and those who were less active. Barriers to adoption at the school level included congested after-school programmes and the cost related to releasing teaching assistants for training. The training programme for teaching assistants was valued as professional development, which aligns with many school priorities. Intervention adherence was consistent across schools and acceptable. The training was deemed comprehensive and supported high adherence to content. The overall fidelity of implementation of Action 3:30 core principles was high, despite different teaching assistant experiences. One school decided to continue running Action 3:30 and other intervention schools expressed an interest in doing so, giving evidence of maintenance. Stakeholders suggested that the following were key to maintenance: delivery costs comparable with those for existing provision, funding for delivery and equipment, continued teaching assistant training, a flexible number of weekly sessions, and the ability to evolve content to keep less active children engaged. The results suggested that Action 3:30 may have replaced existing after-school provision rather than adding to it, which may partly explain why no increase in moderate to vigorous physical activity was observed.

Economic evaluation

As Action 3:30 was not shown to be effective at increasing moderate to vigorous physical activity, there was no basis for creating a cost-effectiveness ratio. Health-related quality-of-life measures did not differ between the intervention arm and the control arm at baseline or at follow-up. The findings indicated that Action 3:30 is inexpensive (with a mainstream cost after 1 year of £1.64 per pupil per session) compared with the average school-level costs of existing extracurricular physical activity (£5.91 per pupil per session). Therefore, Action 3:30 may provide a more economically viable option for schools than existing school provision.

Conclusions

A teaching assistant-led after-school physical activity programme is feasible to implement in primary schools. The study was able to recruit a range of pupils, including girls and less active children. Attendance levels were high for both boys and girls and were maintained throughout the study, and intervention fidelity was high. No effect was observed in any of the primary or secondary accelerometer-derived outcomes when comparing intervention and control participants. Process data implied that participants attending Action 3:30 sessions were swapping physical activity from other contexts instead of adding physical activity where it did not exist before. However, the economic evaluation revealed that Action 3:30 is inexpensive to deliver compared with existing provision and so could be a financially viable programme for primary schools to deliver, which would engage a range of pupils in physical activity and upskill core staff simultaneously.

Trial registration

This trial is registered as ISRCTN34001941.

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