Initial Effects of a Free Swimming Pilot Programme on Physical Activity Levels of Young People

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Introduction

Concerns remain over the physical activity (PA) levels of young people [1-2]. Consequently, identifying interventions that are effective at encouraging young people to adopt and improve PA levels over the life course [3] - especially those not meeting PA guidelines - is central to non-communicable disease prevention in later life [1]. Efforts to increase PA levels through the promotion of swimming and aquatic activities for children and young people are one such option [4-5]. Swimming has been referred to as the UK's 'major participation sport' and a mode of exercise that inactive groups contemplate when seeking to increase their PA levels [4]. The aspiration to find effective and sustainable models of PA intervention necessitates rigorous monitoring and evaluation within the context where implementation takes place. With those thoughts in mind, this research set out to investigate the effectiveness of a local authority (LA) led pilot programme of free swimming (FS), with this paper reporting the initial key findings emerging from this study

Intervention Context

Interventions took place within a major city in the South West of England, United Kingdom. In line with current guidance [6], activities prioritized and provided young people with a series of programmed/unstructured aquatic activities in community venues [7]. Activities included unrestricted access to 'public swimming' sessions during evenings, weekends, and school holidays, as well as access to more structured activities including diving; life-saving, water polo, inflatable fun sessions and water-based youth clubs [4]. FS interventions were led by the LA who also employed a local programme coordinator and supporting staff [7] to plan and implement the programme. FS activities took place in swimming venues that were

centrally located and also smaller community swimming pools within the suburbs of the City [7]. Participants received a FS pass permitting 'free of charge' entrance to swimming activities [7] and the programme was dovetailed with local and national promotional initiatives. In facilitating recruitment, educational, community and healthcare practitioners such as teachers, community workers, nurses and GPs, could refer to FS, participants who met one or more of 22 criteria [7]. Participants could also self-refer into the FS programme. These criteria cover seven categories of determinants which could impact on the health and PA of children and young people: (I) Geographical priority areas, (II) Economic disadvantage, (III) Education, (IV) Family, (V) Health profile, (VI) Black and minority ethnic (BME) group and (VII) other professionally defined factors not included in (I-VI) above .

Research context

Following ethical clearance, recruitment and consent/assent, participants completed self-report measures for demographics and PA participation. Completion of self-reports took place at first point of contact, typically at participant inductions and participant information sessions [7-8]. PA was measured pre and post-intervention (typically three months), using adapted and validated population-specific, 7-day self-report measures [9-10]. Descriptive statistics were used to show the demographic profiles of participants engaging both the intervention and evaluation (adopters) and participants providing both pre and post PA measures (completers) [10]. Chi-square tests assessed for differences in age, ethnicity and PA categories at pre-intervention.

Key findings

Demographic profile of adopters

Key results show 1011 participants took part in FS and the evaluation (adopters). These subsequently provided demographic data, of which 55%, (n=557) were males and 45% (n=454) were females. The majority, 93%, (n=939) were young people under 16 years of age and of white British decent. School and educational practitioners, such as teachers were the dominant source of referral for participants (n=800, 69%), followed by self-referral (n=110, 9%) and referral by youth workers (n=83, 7%).

Demographic profile of completers

The demographic characteristics show 245 participants provided pre and post-intervention data (completers) and had a mean age of 13.45 (±0.79) years. Completers were predominantly white British (91.2%) and female (57.4%). When compared to boys, there were significantly more girls aged 14-15 (χ^2 [1] = 4.38, *p*=0.036) and from black and minority ethnic (BME) backgrounds (χ^2 [1] = 3.86, *p*=0.049).

Pre-versus-post-intervention physical activity levels for completers

The cohort was dominated by completers who were predominantly insufficiently active at pre-intervention (n=136, 55.5%). shows that girls (n=9/6.4%) were much less likely than boys (n=21/20.4%) to be highly active and presented significantly less favorable moderate-to-vigorous PA categories (χ^2 [3] =14.24, *p*=0.003). Further, Table 1 highlights the reversal, maintenance and improvement in PA categories for

completers pre-versus-post-intervention. Analysis revealed no significant change in PA category for all completers (z= -1.133 p=.257), or for boys (z= -0.284 p=.776). However, there were significant improvements in the PA category for girls over the intervention period (z= -0.284 p=.776). Over 77% (n=21/27) of sedentary completers (73% [n=14/19] of girls and 87% [n=7/8] boys) improved at least one PA category at post-intervention. Improvements in at least one PA category were found for 49% (n=54/109) of completers residing in the low PA category at pre-intervention (50% [n=30/60] girls and 49% [n=24/49] boys). Further 16% (n=13/78) of all completers in the moderately active category (15% [n=8/51] girls and 19% [n=4/21] boys) improved their PA status. Around two thirds of completers (66.5%, n=163/245) performing PA stabilized or improved their activity category within an initial intervention period.

Insert Table 1 here.

Data shows encouraging outcomes for completers who were insufficiently active at pre-intervention. At post-intervention, 48%, (n=66/136) of these completers were achieving the PA recommendations (49% [n=39/79] girls and 47% [n=27/57] boys). When considering changes in PA levels (MET-minutes/week), there were no significant changes pre-versus-post-intervention for all completers (p=0.226) or for boys (p=0.949). However, girls showed significant improvements (p=0.039), undertaking an additional 227 MET-minutes/week over the intervention period. Boys were achieving an additional 289 MET-minutes/week compared to girls at pre-intervention (p=0.057). At post-intervention boys were only undertaking an additional 73 MET- minutes/week compared to girls (p=0.632).

Summary

This study investigated the effectiveness of a FS intervention on the PA levels of young people. Insufficient PA was not a specific criterion for referral to FS yet over half of completers engaging FS were not meeting PA recommendations [1] Importantly more than half of these individuals reported improving in their PA category post-intervention. Significant differences in pre-intervention PA categories were witnessed when looking at gender disaggregated data. Boys were much more likely to be highly active and less likely to be sedentary at baseline when compared to girls. Given that participation levels in the UK show a higher proportion of girls to be inactive [2], it is unsurprising that the largest increase in PA levels was for girls in this study, yet this figure was less impressive for boys. Limitations include the use of self-reports, small sample sizes and loss of data for adopters and completers. Future evaluations aim to investigate the impact of FS over a longer intervention period along with accompanying process investigations which identify key design characteristics impacting on adoption and completion rates.

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