

Differential effect on objective physical activity during recess

- a comprehensive school intervention

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Introduction:

The primary aim is to evaluate differential intervention effect across students with different characteristics i.e. gender and baseline recess physical activity (PA), and to analyse potential implementation moderators i.e. perceived access to unfixed equipment.

Methods:

The Danish SPACE-study used a cluster randomized controlled study design with a 2-year follow-up, and enrolled 1348 students aged 11-13 years from 14 schools. Questionnaire was used to obtain knowledge of the perceived environment and accelerometry was used for objective measurement of PA. The intervention comprised four components related to recess PA, and included a combination of changes to the physical environment, access to unfixed equipment and supporting organizational changes (Fig. 1).

Results:

Overall the intervention resulted in a non-significant effect of physical activity during recess on 65 mean count per minute (MCPM). The average MCPM for all 916 participant at follow-up was 684, which had dropped from 1003 two years earlier. Gender significantly moderated the intervention effect and the effect for boys was 117 MCPM ($p=0.08$) and non-significant for girls at only 16 MCPM. Further analyses of the differential effect between groups of different baseline recess PA levels showed a tendency for intervention effect in the most active groups, and a significant intervention effect in the medium active boys ($p=0.04$)(Fig. 2).

Despite difference in implementation of access to unfixed equipment (Fig. 3) the students at the intervention schools perceived overall a significant improvement. Adding school average access to the statistical model attenuated the intervention effect to half (29 MCPM) and one unit improvement in perceived access was associated with a non-significant increase on 47 MCPM.

Conclusion:

The objective measures of recess PA revealed a tendency towards a positive intervention effect on approximately 10% with great variation across schools, which might be explained by differences in implementation. The intervention seems to have been more effective for boys and not for girls. Access to unfixed equipment is a low cost intervention which appears effective, and future recess programs should investigate this further and target school environments for girls.

Fig 1. Intervention components

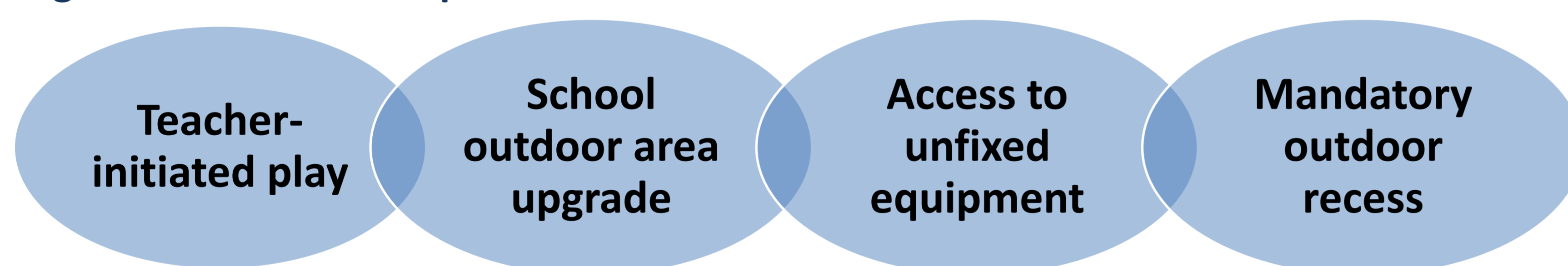


Fig 2. Adjusted recess MCPM at follow-up (mean age: 14.5 years).

For groups defined by sex, baseline recess PA and intervention group. (C=comparison & I=Intervention).

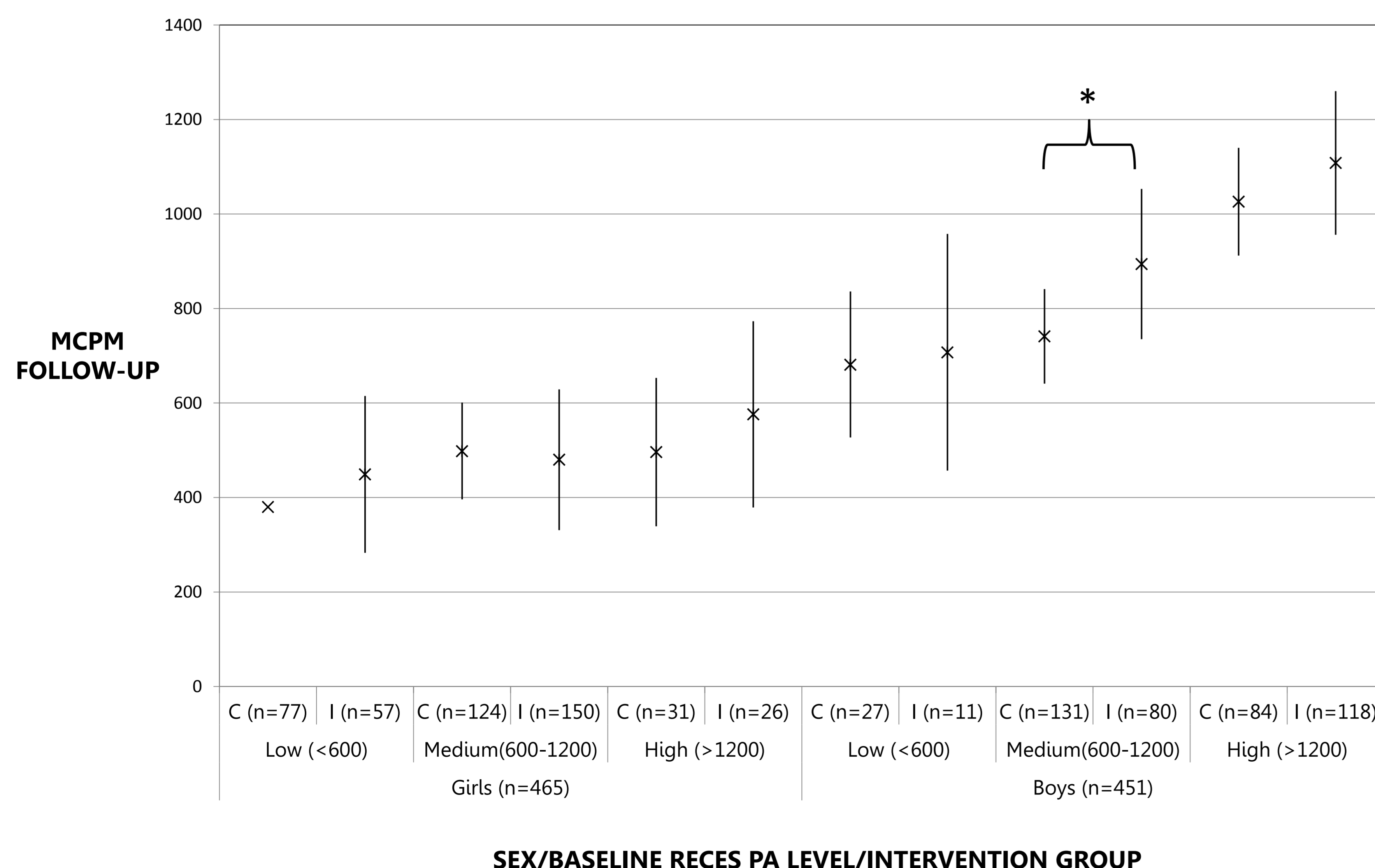


Fig 3. School average access to unfixed equipment (BL=baseline & FU=follow-up)

