

# A school-based multilevel intervention to increase physical activity and decrease sitting among youth: Lessons from a randomized feasibility trial

## PURPOSE

- Socioeconomic health disparities, partly due to differences in physical activity (PA) levels, call for targeted intervention efforts among lower educated people
- No school-based PA interventions among youth have demonstrated long-term effectiveness (Hynynen et al., 2015), possibly due to inadequate piloting in the development phase
- Even in interventions delivered with high fidelity, the uptake of the intended Behavior Change Techniques (BCTs) by participants can be surprisingly low (Hankonen et al., 2015) and possibly explain low success → the use of BCTs should be evaluated
- The Let's Move It intervention for vocational college youth targeted PA and sedentary behavior (Figure 1), drew from Intervention Mapping and COM-B/BCW approaches, and was based on self-determination and self-regulation theories, original research, reviews of evidence, collecting best practices and co-creation with the target group.

## RESEARCH QUESTIONS:

- What is the feasibility and acceptability of the intervention and trial procedures?
- Do participants use the intended BCTs?
- How was the intervention optimized?

## METHODS

- Design: A pilot cluster-randomised controlled trial, with outcome-assessor blinding
- Four classes of students (matched pairs) randomly allocated to intervention or teaching-usual control group
- Intervention: 1) group sessions targeting PA motivation and self-regulatory skills, with active & problem-based learning approach, 2) teacher-led sitting reduction in all other classes, 3) PA equipment in classrooms, 4) website.
- Measures: Objective assessment of PA (7-day accelerometry) was measured at T1, T3 and T4, and body composition (Tanita) at T1 and T4. Acceptability questionnaires at T3 and individual interviews (n=15) took place post-intervention.
- Trial registration: ISRCTN34534846, the Let's Move It Feasibility Study

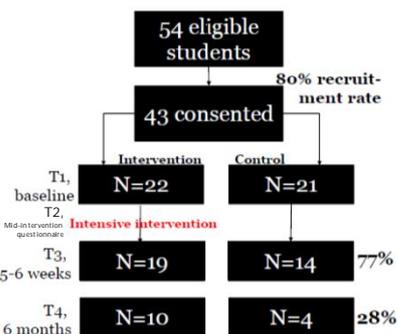


Figure 2. Flow chart

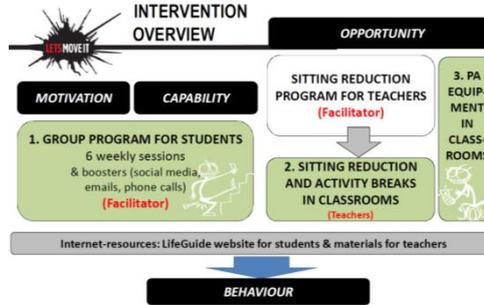


Figure 1. Intervention tested in the feasibility study

## FINDINGS

- Blind to group allocation, 43 students (80%) gave their consent to participate (Figure 2)
- Acceptability ratings of sessions and program were high (Figure 3)
- Intervention group reported increased use of BCTs post-intervention (Figure 4), including key BCTs such as goal setting and action planning
- Use of BCTs correlated with objectively measured PA (e.g.,  $r=.57, p=.011$ )

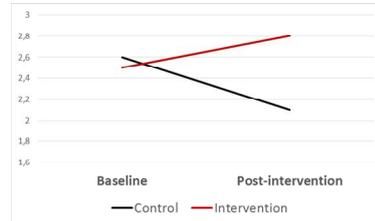
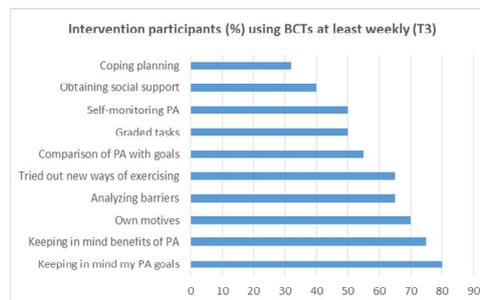


Figure 4. Self-reported use of BCTs

Proportion of those reporting weekly use of BCTs varied from 32%-80%, with self-regulatory BCTs less popular than "motivational" BCTs:



Measurement of BCT use (15 self-enacted BCTs) During the last two weeks, have you done the following?

- I have set myself PA goals
- I have self-monitored my PA
- I have thought about why PA is for me personally important

Response options:

- For 5 BCTs, Not at all true (1) – True (5)
- For 10 frequency-dependent BCTs, Not once (1), Once during the two weeks (2), About 1-2 times per week (3), About every other day (4), Daily (5)

"This program was refreshing, as most of the courses contain pretty much lecturing, so it's nice to get to do something and actually learn. We didn't have to sit and listen all the time." Student, age 17

"Really good, we got to do and try things out, and making the plan, because I had left sports behind, so it's nice to try to get back onboard and plan in smaller amounts - make realistic plans, so that you can better influence it." Student, age 17

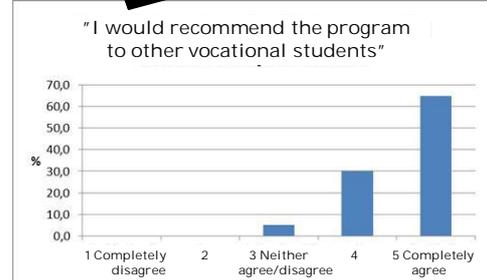


Figure 3. Student feedback

Identified improvement needs led to optimization, i.e., changes

- in the program, for example:
  - Provide more concrete examples of goals & plans
  - Better rationale for BCT use both in sessions and campaign materials in cafeterias
  - Make self-monitoring optional for some homework tasks
  - Increased discussion of how to obtain social support over the sessions
  - Decrease program focus on website
- in the trial procedures, for example:
  - Add SMS reminders for wearing the accelerometer
  - Improve procedures to prevent study drop-out
  - Decrease length and number of questionnaires

## CONCLUSIONS

- Despite positive feedback on the program, uptake of the intended BCTs was low
- This novel approach in testing the use of the whole range of protocol-defined BCTs in the feasibility study phase proved to be useful as it reveals which BCTs are used the most and least, thus identifying weak spots
- High willingness to participate and proof of the acceptability of the concept implies that, after improvements, the effectiveness of the program can next be tested in a full randomized controlled trial.

## REFERENCES

Hankonen, N., Sutton, S., Prevost, T., Simmonds, R., Griffin, S., Kinmonth, A., Hardeman, W. (2015) Which behaviour change techniques are associated with changes in physical activity, diet and BMI in people with recently diagnosed diabetes? *Annals of Behavioral Medicine*, 49, 7-17.

Hynynen, S., van Stralen, M., Sniehotta, F., Hardeman, W., Araujo-Soares, V., Chin A Paw, M., Vasankari, T. & Hankonen, N. (2015) A systematic review of school-based interventions targeting physical activity and sedentary behaviour among older adolescents. Under review.