Outcomes On Physical Activity Levels By Minimal Contact Intervention At A University Setting: Preliminary Results

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ABSTRACT:

PURPOSE: To compare the effects of an intervention program of minimal contact using Whatsapp® and Fitbit® over the levels of physical activity on a university population.

METHODS: We designed a 12-week intervention program of minimal contact on a university population. Participants were randomly assigned into two groups: intervention (IN) and control (CO). From a total of 177 participants, 19 (11 men, 8 women, aged 18 - 32) completed the program and had the complete accelerometry information measured with the wGT3X -BT® accelerometer. The program consisted of messages sent by Whatsapp® every week based on The Canadian 24 hrs movement: sweat, step, sleep and sit. All the messages were based on the motivational self-determination theory. The participants also wear a portable Fitbit® Flex 2 for 12 weeks. We evaluated the moderate to vigorous physical activity (MVPA) levels and sedentary behaviors in minutes/day and percentage of weekly wearing time by accelerometry using the IPEN criteria. We compared the outcomes by group (t-test, U Mann-Whitney) and time (paired T-test, Wilcoxon).

RESULTS: Both groups met the recommendations of MVPA in high proportion (IN=83.3%, CO=85.7%, >150 min/w). There were no significant differences in MVPA nor sedentary levels between groups at baseline and after 12 weeks. MVPA (in time and percentage) and time in sedentary activities decreased, however, the percentage of sedentary activities increased in IN group but decreased in the CO group. Nonetheless, these differences were no significant. Sedentary behaviors were very high in both groups. Independently of the intervention and the assessment moment, subjects spent more of the 60% of the wearing time on sedentary activities (Table).

CONCLUSIONS: This intervention was not effective to increase MVPA levels or decrease sedentary behaviors. Probably more time is needed to improve the entire 24 hrs movement component and/or the minimal contact should be more supervised in this sample.

INTRODUCTION

Physical inactivity is now recognized as the fourth leading risk factor for global mortality, accounting for 6% of all deaths (1). As such, the World Health Organization (WHO) recommends that adults should do at least 150 minutes of moderate-intensity physical activity or 75 minutes of vigorous-intensity physical activity weekly (2). In Mexico, the proportion of adults who don't meet the WHO physical activity recommendations is 14.4%. The prevalence of adults who spend 2 hours or less / day on screen-time was 44.5%, being higher in women than in men (49.9% vs. 38.5%) (3).

The major challenge at this point, therefore, lies in creating and delivering physical activity interventions which are effective, scalable, and affordable to the general adult population. Programs that provide an intervention without face-to-face contact may be one way of overcoming these challenges (1). Therefore, the purpose of this study was to compare the effects of an intervention program of minimal contact using Whatsapp® and Fitbit® over the levels of physical activity on a university population.

METHODS

Subjects

We enrolled 177 participants from different university centers from the University of Guadalajara. Participants were randomly assigned to one of two groups: intervention (IN) or control (CO).

Measurement of physical activity levels

We evaluated the moderate to vigorous physical activity (MVPA) levels and sedentary behaviors in minutes/day and percentage of weekly wearing time with the wGT3X-BT® accelerometer using the IPEN criteria (4).

Intervention

We applied a 12-week intervention program of minimal contact (IN) and compared the outcome variables with the CO group (no intervention). The program consisted of messages sent by Whatsapp® weekly based on the Canadian 24 hrs Movement: sit, step, sweat, and sleep in order to improve these behaviors. All the messages were based on the motivational self-determination theory. The participants also wore a portable Fitbit® Flex 2 during the 12 weeks.

Statistical analysis

We compared the outcomes by group (with T-test and U Mann-Whitney) and time (paired T-test, Wilcoxon). The percentages of the subjects who met the recommendations of physical activity in total time and bouts of 10 minutes were compared with Z-score test. All analyses were considered significant at a p-value ≤ 0.05.

RESULTS

Nineteen subjects (11 men, 8 women, aged 18-32) completed the program and had the complete accelerometry information. Both groups met the recommendations of MVPA in a high proportion (IN=83.3%, CO=85.7%, >150 min/w) at the end of the study. Based on the WHO's recommendations of performing physical activity for at least 10-minute bouts, we found that only 28.6% and 41.7% of CO and IN groups met the recommendations, respectively (Figure 1). There were no significant differences in MVPA nor sedentary levels between groups at baseline and after 12 weeks. MVPA (in time and percentage) and time in sedentary activities decreased. However, the percentage of sedentary activities increased in IN group but decreased in the CO group. Nonetheless, these differences were no significant. Sedentary behaviors were very high in both groups. Independently of the intervention and the assessment moment, subjects spent >60% of the wearing time on sedentary activities (Table I).

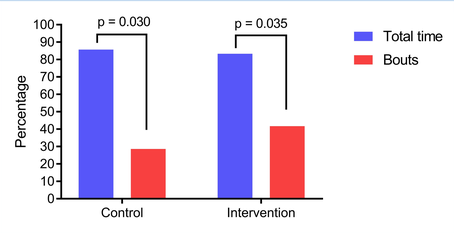

Figure 1. Comparison of the percentage of subjects who met the recommendations of weekly physical activity in total time and 10-minute bouts. No significant differences were observed between the control and intervention groups.

Table I. MVPA and sedentary behavior compared by group and time.

	Pre			Post		
	Intervention (n = 12)	Control (n = 7)	P*	Intervention (n = 12)	Control (n = 7)	P*
MVPA in 10-minute bouts	110.6 ± 103.4	111.4 ± 116.6	0.930	122.6 ± 90.9	131.4 ± 86.4	0.800
MVPA (min/day)	46.7 ± 21.9	50.1 ± 23.4	0.755	45.9 ± 21.1	49.7 ± 18.5	0.698
MVPA (%)	5.6 ± 2.5	5.8 ± 3.0	0.966	5.5 ± 2.6	5.7 ± 2.4	0.862
Sedentary (min/day)	536 ± 67.5	573.1 ± 64.7	0.257	529.5 ± 76.0	558.8 ± 87.7	1.0
Sedentary (%)	63.6 ± 5.1	66.1 ± 6.8	0.383	64.6 ± 7.8	64.2 ± 3.1	0.904

Data expressed as mean ± standard deviation. There were no significant differences for pre vs post assessments (p>0.05).
MVPA: Moderate to vigorous physical activity; (min/day): Average daily time on that activity; (%): Percentage of the whole week spent on that activity.

CONCLUSIONS

This intervention was not effective to increase MVPA levels or decrease sedentary behaviors. Probably more time is needed to improve the entire 24 hrs movement component and/or minimal contact should be more supervised in this sample. Studies investigating the compliance of physical activity recommendations should report both total time and time in bouts due to its possible difference of fulfillment percentage.

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