A Feasibility Study of a Web-based Physical Activity Program for University Students: Final Report for Sigma Foundation for Nursing

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Summary of project aims

The purpose of this project was to evaluate the feasibility an 8-week web-based physical activity intervention adapted specifically for young adult college students who were insufficiently physically active. The project aims were to: (1) evaluate intervention demand, acceptability, practicality, and implementation, and (2) conduct preliminary efficacy testing of the intervention to obtain estimates for use in future proposals.

Theoretical/conceptual frameworks

Two theoretical frameworks were used in the development of this research study: (1) the evaluation of feasibility was guided by Bowen et al. (2009); and (2) the intervention content was grounded in the Multi-Process Action Control (M-PAC) framework developed by Rhodes (2017). The M-PAC framework incorporates cognitive processes for motivation and intention while emphasizing processes important for translating intention into sustainable action. The M-PAC processes include *initiating reflective processes* (perceived capability; instrumental attitude), *ongoing reflective processes* (affective judgments; perceived opportunities), *regulation processes* (behavioral regulation), and *reflexive processes* (identity; habit) (Rhodes, 2017).

Methods

Design. A quasi-experimental pretest-posttest design was used to test the feasibility and preliminary efficacy of the 8-week web-based intervention.

Sampling. A voluntary convenience sample of 21 college students, ages 18 – 24, participated in the study during the Spring of 2021.

Intervention. The intervention was adapted for college students from a program originally developed for adults by Liu et al. (2019). The newly adapted 8-week web-based physical activity intervention included weekly lessons based on the M-PAC framework, manual entry goal and step trackers, additional resources, and a private social media group led by a wellness coach.

Procedures. The study protocol was approved by the university's Biomedical Institutional Review Board, and participants gave informed consent. Data were collected via pre-post web-based questionnaires, web-analytics, and post-intervention interviews. Feasibility outcomes included demand (e.g., recruitment and retention), acceptability, practicality, and implementation. Preliminary efficacy outcomes included physical activity and M-PAC processes. Participants were entered into a drawing for a $100 e-gift card upon completion of each of three data collection timepoints (i.e., pre-intervention questionnaire, post-intervention questionnaire, and post-intervention interview).

Analysis. Descriptive statistics were used to analyze perceived demand (retention and recruitment) and pre-post preliminary efficacy trends (physical activity and M-PAC processes). Preliminary efficacy was further analyzed using t-tests, Wilcoxon signed rank tests, and Hedge's *g*. Qualitative data on acceptability, practicality, and implementation were thematically analyzed.

Summary of findings

Recruitment and retention rates were 70% and 71%, respectively. Engagement dropped most substantially with lessons five and six. Participants reacted positively to the program, content, and features, except for the step-tracker and private social media group. Among participants who completed the post-test (n = 14), 85.7% increased their light physical activity and 92.9% increased

their moderate-to-vigorous physical activity per week. Substantial pre-post trends were also present in three of the M-PAC processes: 93.3% of participants increased their behavioral regulation, 73.3% increased their physical activity habit, and 73.3% increased their physical activity identity. Statistically significant differences were found in physical activity across all levels of intensity including moderate-to-vigorous physical activity (t_{13} = 3.584, p = .003, g = 0.930 [0.299, 1.538]), as well as self-regulation behaviors (z = -3.30, p = .001), habit (z = -2.50, p = .012), and identity (z = -2.18, p = .029). The findings supported the feasibility and preliminary efficacy of the intervention for insufficiently active young adult college students.

Recommendations

Recommendations for future iterations of the intervention included objective measures of physical activity with automatic integration with web-based platform and/or mobile application, shorter intervention duration, in-person social support opportunities, and the incorporation of more relevant social media platforms.

Testimonial

The 2019 Small Grant from the Sigma Foundation for Nursing provided the financial support needed to conduct this feasibility study of the web-based physical activity intervention with young adult college students who were insufficiently physically active. The findings from this study provided much needed information regarding the feasibility of the intervention with this population, as well as additional modifications needed to improve and tailor the program. Thus, this grant allowed us to take the first step towards developing a tailored, effective, and scalable physical activity intervention for young adult college students who are insufficiently physically active.

References

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