

DIPPAO randomized controlled trial: study protocol

SUPPLEMENTARY ONLINE MATERIAL 1***Hypotheses on PA adherence***

First, we argue that the Kiplin intervention will produce greater PA levels than the usual care (face-to-face supervised APA) during the whole intervention. More particularly, the Kiplin intervention will avoid the compensatory decrease between leisure PA time and supervised PA time frequently observed in traditional programs (King et al., 2007; Westerterp, 1998) by stimulating daily PA. This compensatory decrease is in line with the ActivityStat hypothesis (Gomersall et al., 2013), which suggests that an increase or decrease of PA in one domain will be compensated in another domain, in order to maintain an overall stable level of PA or energy expenditure over time. By stimulating daily PA with gamification features and goal setting, the Kiplin intervention may limit the decrease in total PA that could occur in compensation of an increase in PA in supervised sessions.

We also hypothesize that this improvement in PA will be sustained after the follow-up period.

Hypothesis 1a: Patients of the Kiplin group will demonstrate increased total PA over 3 months that will be superior to the total PA of patients in the face-to-face supervised APA condition.

Hypothesis 1b: Patients of the Kiplin group will demonstrate improved PA over 9 months that will be superior to the total PA of patients in the face-to-face supervised APA condition.

In parallel of these improvements, we expect to observe a decrease in the overall sedentary time resulting from a compensatory stimulation of the daily activity, notably led by gamification strategies.

Hypothesis 2: The Kiplin intervention will be effective in reducing SB. This effectiveness will be superior to the face-to-face supervised APA condition.

Hypotheses on the intervention mechanisms

The Kiplin intervention including multiple components to change behavior, this trial will aim to identify the psychological mediators that can explain a potential improvement in PA. We argue that one of the potent ingredients of the Kiplin intervention will be its ability to promote a self-determined motivation toward PA. This motivation should be filled by basic needs' satisfaction and through the enjoyment of the playful activities experienced by the patients.

Hypothesis 3a: The Kiplin intervention will improve patients' self-determined motivation toward PA.

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Hypothesis 3b: The satisfaction of the three basic needs (autonomy, competence, and relatedness) and the enjoyment of the program will mediate the relationship between Kiplin intervention and patients self-determined motivation toward PA.

Hypothesis 3c: Kiplin intervention-related changes in motivation will increase PA.

The development of a self-determined motivation toward PA may limit the reduction of the effect of the Kiplin program on PA at the end of the intervention compared to the face-to-face supervised APA condition.

Hypothesis 3d: Kiplin intervention-related changes in motivation will sustain the PA improvement over the follow-up period compared to face-to-face supervised APA condition.

In parallel, we argue that this group-based digital intervention will encourage the emergence of a social identity in the group, being the basis for mutual and social support among the participants. Moreover, engaging in a group-based program in a co-operative setting with people sharing the same stigmatized characteristic (i.e., related to weight, pathology, and symptomatology) should allow individuals to overcome their fear of being discriminated, and more generally remove barriers related to the negative stereotypes that target them (Jetten et al., 2018; Olander et al., 2013). This would ultimately facilitate engagement in the proposed activities and promote behavior change.

Hypothesis 4a: The Kiplin intervention will reduce perceived discrimination, weight stigma concerns, and weight bias internalization compared to the usual care condition.

Hypothesis 4b: Kiplin intervention-related changes in weight stigma processes will increase PA.

Hypotheses on the cost-utility of the intervention

Finally, we hypothesize that the achievement of the aforementioned objectives associated with the advantages of e-health interventions (i.e., a broad accessibility through technology, permitting to address a large population) will allow to reduce the time of face-to-face supervised PA by an APA professional, for an identical number of patients, and to reduce the costs and constraints associated with a classic face-to-face care. In order to measure this potential increase in efficiency, we will integrate a health economic evaluation within this protocol.

Hypothesis 5: By requiring fewer face-to-face APA sessions, the Kiplin intervention may lead to economic benefits and health care saving in patient management compared to face-to-face supervised APA condition.

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References

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