

# Effectiveness of fitness-boosting strategies may be linked to personality traits

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In a randomized clinical trial, the effectiveness of different strategies for boosting physical activity varied according to participants' demographic, psychological, and behavioral characteristics. Xisui Shirley Chen formerly of the University of Pennsylvania Perelman School of Medicine (currently at the Mount Sinai Health System in New York City) and colleagues present these findings in the open-access journal *PLOS ONE* on October 14.

Strategies to alter people's health behaviors—such as increasing their physical activity—vary in effectiveness, likely due in part to personality and psychological traits. However, it is unclear how best to determine which subgroups benefit most from which strategies.

Chen and colleagues addressed this issue by revisiting data from a randomized clinical trial that showed that a competition-based strategy to boost activity among 602 American adults with overweight or obesity worked better than strategies based on collaboration or [social support](#). The researchers wondered whether these findings would hold true for subgroups of the participants.

Using a [statistical approach](#) called latent class analysis, the scientists identified three major subgroups based on the trial participants' demographic, psychological, and behavioral characteristics: extroverted and motivated, less active and less social, or less motivated and at-risk. Each participant was assigned to one of the three categories.

By reanalyzing the trial data, the researchers found that the competition-based strategy was effective in boosting physical activity for extroverted and motivated participants, but these participants were less likely to stay active after the program ended. Competition-, collaboration-, and social support-based strategies were all effective for less active and less social participants, who all stayed active

afterwards. None of the strategies were effective for less motivated and at-risk participants.

These findings suggest that latent class analysis could aid efforts to target behavior-changing strategies to the people most likely to benefit from them. Future research could help validate latent class analysis and other statistical approaches to identify key sub-groups, as well as formally test different strategies within identified sub-groups.

The authors add: "We demonstrated that we can identify groups of people who have different behavioral phenotypes and that they responded differently to a [physical activity](#) program using social incentives. Clearly, one size does not fit all so constructing behavioral phenotypes is a promising approach to designing and targeting behavioral interventions based on meaningful individual differences."

**More information:** Association between behavioral phenotypes and response to a physical activity intervention using gamification and social incentives: Secondary analysis of the STEP UP randomized clinical trial, *PLOS ONE* (2020). [DOI: 10.1371/journal.pone.0239288](https://doi.org/10.1371/journal.pone.0239288)

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