**The effectiveness of a mobile-app guided moderate-to-vigorous physical activity program with a wearable activity tracker for enhancing mental health among older adults**

**[Goal]**

We will pilot test and evaluate a 6-week mobile app-guided moderate-to-vigorous program with a wearable activity tracker for enhancing mental health targeting older adults.

**[Problem Statement]**

The purpose of this proposed research is to pilot test and evaluate the effects of a mobile app-guided moderate-to-vigorous physical activity program with a wearable activity tracker on the mental health of older adults. In recent years, a few studies investigated the relationship between exercise intensity and relief of depression via endorphin secretion and found only the moderate-to-vigorous physical activity can attenuate depression levels, whereas low-intensity physical activity has no effect (Woods et al., 2020). Nevertheless, the majority of physical activity intervention-based studies have either focused on the light physical activity such as walking or have not considered the different effect of different intensity of physical activity. In this study, older adults, using wearable activity trackers, will participate in a 6-week mobile-app guided moderate to vigorous physical activity program (e.g., high-intensity interval training) selected and designed by exercise experts.

While several studies have used wearable activity trackers for capturing daily physical activity levels, most usage of these devices was limited to presenting collective information such as step counts and physical activity duration. In the proposed study, rather than this type of passive approach, we will use a wearable activity trackers with an app called “MoovTM” to implement a 6-week mobile app-guided moderate-to-vigorous physical activity program. This app-guided intervention program will enhance the accessibility and flexibility of older adults’ participation in more intense physical activity program, and further, improve one’s mental health especially during the “social-distancing” era. Taken all together, specific aims of the study include:

* Aim 1. Using a randomized controlled pilot trial design, we will implement the 6-week mobile-app guided MVPA program with a wearable activity tracker (MoovTM - <https://welcome.moov.cc/>).
* Aim 2. To evaluate the effectiveness of our program, we will assess the level of moderate-to-vigorous physical activity program and mental health outcomes at baseline and post-intervention in the intervention condition and the control condition.