

## 2022 ABSTRACT

**JASLEEN MINHAS, MD**  
University of Pennsylvania  
Philadelphia, Pennsylvania

*Phenotypes Based on Physical Activity Patterns in Pulmonary Arterial Hypertension*

Limitation in physical activity is one of the earliest manifestations of PAH.<sup>1</sup> Intuitively, we expect that more severe PAH leads to reduced activity. However, the relationship between RV function and activity has not been studied. This proposal aims to better understand the relationship between underlying disease severity and physical activity patterns, and the association of activity patterns with clinical outcomes in PAH. Our group and others have previously shown that patients with PAH are largely sedentary. Using cross-sectional data, we have also found that better RV systolic function, measured by tricuspid annular plane systolic excursion (TAPSE), is associated with total daily activity levels and that higher daily activity levels are associated with better health-related quality of life. Furthermore, preliminary data show that there are heterogeneous temporal activity patterns in patients with PAH. The clinical significance of these patterns is unknown.

We will use data from an NHLBI-funded multicenter randomized clinical trial of anastrozole (PHANTOM) (HL134905, NCT03229499, PI: Kawut) that is nearing completion where patients wore accelerometers for seven consecutive days at baseline, 3 months, 6 months and one year. We will use accelerometer-derived measures in a multilevel functional principal component analysis to determine predominant activity patterns in this patient population. This method accounts for variability over time within each patient and for additional day-to-day changes. The findings will be validated in an independent cross-sectional cohort of 60 patients with PAH enrolled at the University of Pennsylvania. We propose to determine whether RV systolic function is associated with a temporal pattern of sustained physical activity. We also aim to determine if sustained physical activity is associated with health-related quality of life in patients with PAH. Additionally, we will explore the association of baseline physical activity patterns with clinical worsening over time.