

## Dr. Philip Green

### PROJECT DESCRIPTION

The proposed K23 Career Development Award will enable Dr. Philip Green to establish an independent career with expertise in conducting research in interventional geriatric cardiology. Dr. Green is a clinical interventional cardiologist whose long-term goal is to optimize outcomes in older adult patients who receive invasive procedures to treat heart disease. Dr. Green's prior work has led the way in demonstrating that frailty is an important risk factor that complements traditional cardiovascular risk assessment and that frailty increases the risk for adverse events after valve replacement in older adults with aortic stenosis. The primary objective of this K23 research training program is to **identify mechanisms underlying frailty related risk** in order to lay the groundwork for future studies designed to test interventions to target those mechanisms and reduce the risk of adverse outcomes in older adults who received cardiac interventions. We hypothesize that decreased physiologic reserve manifested in the operating room during valve replacement and during recovery after valve replacement mediates frailty related risk of adverse outcomes. To test this hypothesis this proposal outlines two separate but related studies. Study 1 will analyze continuously recorded physiologic data collected during the valve replacement procedure to evaluate the impact of impaired physiologic reserve during the procedure on complications immediately after valve replacement. Study 2 will use accelerometers to measure activity before and for 6 months after valve replacement to analyze the dynamics of physical activity recovery as a mediator of frailty related decreased quality of life after valve replacement. To conduct this research training, Dr. Green has assembled a multidisciplinary team of mentors to provide training in: (1) geriatric cardiovascular research methods; (2) quantitative methods for evaluating high density repeated measures datasets; (3) biostatistical methods for evaluating complex constructs (mediation); and (4) ethical research conduct and research dissemination. This area of research addresses an unmet public health need in that it aims to identify a novel pathway to improve outcomes in older adults with aortic stenosis who receive valve replacement. Aortic stenosis is a common and growing problem among older adults and can only be cured with valve replacement. Advances in transcatheter aortic valve replacement (TAVR) and surgical aortic valve replacement have made valve replacement available to high risk and frail older adults. Therefore efforts to improve outcomes in this population should be seen as a high priority. This K23 proposal will position Dr. Green to accomplish his goals of identifying novel targets for optimizing outcomes in the frail elderly with heart disease and facilitate his development into an independent investigator in the field of geriatric interventional cardiology.