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Summary of research

Key words: atrial fibrillation, heart rate, exercise, outcomes

1a: To evaluate an algorithm for streamlined detection of rhythm disturbance in resting and exercise one-lead ECG from UK Biobank.

To assess the prevalence and predictors of atrial fibrillation (AF) in the UK middle age population and the impact of this condition on health outcomes in men and women.

To evaluate the determinants of the heart rate response to exercise and post-exercise recovery, and the impact of these variables on health outcomes in men and women.

1b: The results of this project will generate a gender-specific score for the identification of individuals at a high risk of developing AF and AF-related complications, validate electrocardiographic predictors (such as the abnormal heart rate response to exercise and recovery) of mortality & morbidity and identify the determinants of these parameters in men and women in UK Biobank.

1c: We will analyse resting and exercise ECG recordings from the subset of UK Biobank participants who were recruited to this enrichment protocol. ECG parameters such as resting heart rate, exercise heart rate dynamic changes,

and rhythm abnormalities will be used. Data on the participants' medical history, life style, diet, activity data, medications and socioeconomic status as well as the participants' health outcomes will be analysed both cross-sectionally (based on the initial baseline data) and longitudinally (based on subsequent health outcomes).

1d: The study will be conducted in the subset of (ca 120.000) subjects who have one-lead ECG recording during a short bicycle exercise test and recovery and/or at rest at the time of the baseline visit or subsequent repeat-assessment visits.