

## Plan Overview

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*A Data Management Plan created using DMPTool*

**Title:** Use of remote monitoring for heart rate variability and fall identification: innovation and adaptability

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**Funder:** Universidade de São Paulo (www5.usp.br)

**Template:** Template USP - Mínimo

### **Project abstract:**

The adaptation of the human organism to several metabolic demands through the regulation of the cardiorespiratory system is performed by the modulation of Heart Rate Variability (HRV). HRV's study is focused on evaluating an individual's health status and it has been done with the use of remote patient monitoring (RPM) by the development of electronic devices with remote communication. In that sense, the aim of the present study is to propose the development and testing of a device, initially named CardioUp, equipped with sensors capable of identifying heart events by monitoring heart rate in a precise and portable way. Additionally, the possibility of it also identifying falls will be studied. Volunteers recruited will be selected into two groups: 30 healthy young adults for testing simulated falls and 30 healthy adults to use the device during 24 hours and fill in a form with the activities of the day. HRV will be analyzed with 12 to 15 minutes of electrocardiographic data collected through a modified H7 polar. Data will then be filtered digitally and evaluated by linear methods both in frequency and time domains. Fall identification will be evaluated through the accelerometer from the smartphone.

**Start date:** 03-01-2022

**End date:** 12-01-2025

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## Use of remote monitoring for heart rate variability and fall identification: innovation and adaptability - Descrição dos Dados e Metadados produzidos pelo projeto

Será feita a coleta de dados de sensores cardíacos agrupados em séries temporais que permitam a análise de tendências. Serão dados numéricos salvos em bancos de dados que possam ser exportados em CSV, XLS ou TXT. Estes dados estarão hospedados em bancos de dados relacionais que proporcionarão acesso histórico. Os dados cadastrais poderão ser reutilizados em diversos projetos diferentes. Seu versionamento será feito via GitHub para cada nova *feature* ou correção. Para garantir a qualidade dos dados, teremos 2 pontos de aferição para validação das coletas, tentando atingir o maior número de leituras por período possível.

Será utilizada captura através de sensores. Os dados entram como pulsos elétricos e são convertidos para dados numéricos. O versionamento será realizado via GitHub para cada feature ou correção e, para garantir a qualidade dos dados, teremos 2 pontos de aferição para validação das coletas, tentando atingir o maior número de leituras por período possível.

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