



CELTIC-NEXT Proposers Day

23rd of February 2021, Online via WebEx

CVF- Cardiovascular fatigue



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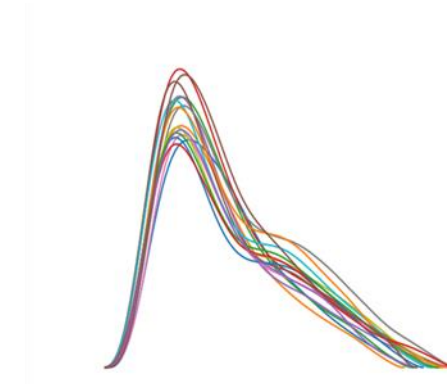
Cardiovascular diagnostic for prevention, prediction and intervention using a fatigue biomarker

Objective fatigue measurement is an unmet clinical need for cardiovascular diseases (CVD). Studies show fatigue complaints have hemodynamic correlates.

CVF consortia will demonstrate effective use of its novel fatigue biomarker to assist health care providers monitor disease's progress, promote patients' better lifestyle choices and therapy adherence. Current use of self-reported questionnaires is too subjective to be effective.

CVF offers the consortium members the opportunity to help develop and help integrate a novel digital biomarker into cardiovascular treatment, prevention and prediction in a disease that results in 2.9 mm deaths/year in Europe

With 12- clinical studies, 3- pilot studies ,1- verification study, and 5 years developing a machine learning platform, the Company has developed the algorithms to objectively measure levels of fatigue and stress through pulse wave analysis. In addition, the technology can discriminate between different types of stress/fatigue.



20- pulse waves collected during a single 2- minute period, neutralized for time

Feature(s)	Physical vs others	Mental vs others	Sleep vs others
One feature model	0.833 ± 0.095	0.746 ± 0.102	0.564 ± 0.086
Two features models	0.896 ± 0.053	0.795 ± 0.067	0.766 ± 0.088
Three features models	0.911 ± 0.054	0.842 ± 0.088	0.776 ± 0.081

My-Vitality Sarl, (www.mypulses.com)

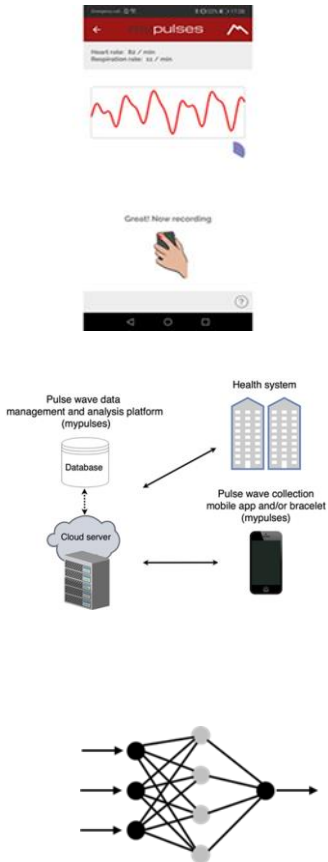
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Existing technology to be used



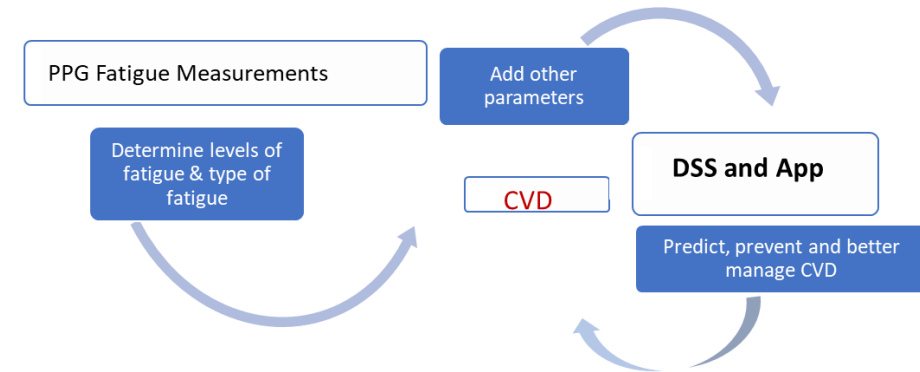
Data Collection
from smartphone camera,
band, or pulse oximeter

Data Management

- Data base
- Server and cloud

- Machine learning platform
- Signal processing
- Algorithms

CVF Proposal



- Offers a new health care pathways in CVD care
- Provides a person-centred approach to treatment that benefits both citizens and care providers

CVF deliverables in 36- months:

D1: Cardiovascular-rehabilitation dataset: Dataset will contain all the clinical data, self- reports and PPG, as well as the documentation of all the variables. In the spirit of open scientific data, it will include an assessment of what parts of the dataset should be published in what venue.

D2: Cardiovascular-rehabilitation risk prediction models, intervention design and DSS Report describing the risk-prediction models and their evaluation on the dataset. It will also describe the developed DSS.

D3: Cardiovascular trial evaluation report: Report on the effectiveness, usability and cost-effectiveness of the CVF system in CVD rehabilitation.

Platform user case	Platform benefits
Tool for care providers and outpatients with CVD to help predict and monitor disease progress.	<ul style="list-style-type: none"> • A biomarker for detecting levels and main sources of fatigue; • Predicts severity of disease and its evolution; • Supports patients in making lifestyle choices and therapy adherence.
With DSS, user cases extended to vulnerable to CVD. Based on premise: “body more susceptible to disease when tired, weak.”	<ul style="list-style-type: none"> • Provides personalised preventive measures to make the most effective lifestyle choices to increase energy levels; • Provides motivation to set and achieve goals through an app user interface that enhances quality of life
Integrated into healthcare as a management support tool CVD treatment to help make therapy-related decisions.	<ul style="list-style-type: none"> • Therapy plan (intensity, length, amount, type) partially chosen from initial fatigue levels and sources; • Therapy adjusted regularly based on fatigue levels and sources; • Monitors disease trajectory for health care professionals, patients and carers with realistic scenarios for care pathways.

Collection

Multiple pulse wave collection methods/devices

Use case

Fatigue monitoring in cardiovascular treatment, prevention and prediction

Product

Multiple products, multiple means to deliver results

CVF is looking expertise in following areas:

- **Health care providers** to help collect variables predictive of relevant outcomes in cardiac patients and the ground truth for prediction. The data will be collected from 100- patients undergoing CVD rehabilitation
- **Health care experts** to help predict risks and outcomes of patients undergoing CVD rehabilitation with and without fatigue monitoring. Assist in medical compliance of the DSS.
- **Current providers of health care diagnostics** to help with the design of the decision support system and with interest in implementation with European health care providers after the CVF project
- **Clinicians** able to help conduct a proof-of-concept trial of the CVF system

For more information and for interest to participate please contact:

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25th February 15.00 CET Join the follow-up Telco

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