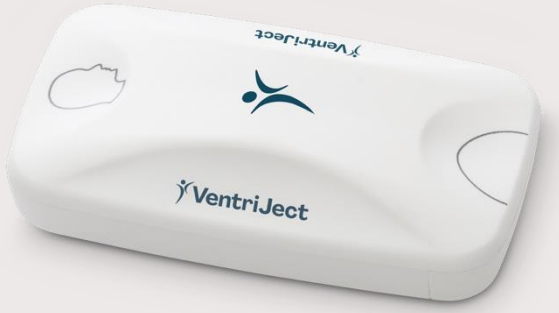
Seismofit®

The fastest and simplest VO_2max test



Introduction

Distributed by:

FutureMedics

VentriJect


“Probably the strongest indicator of health”
- American Heart Association
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Cardiorespiratory fitness

quantified as VO_2max

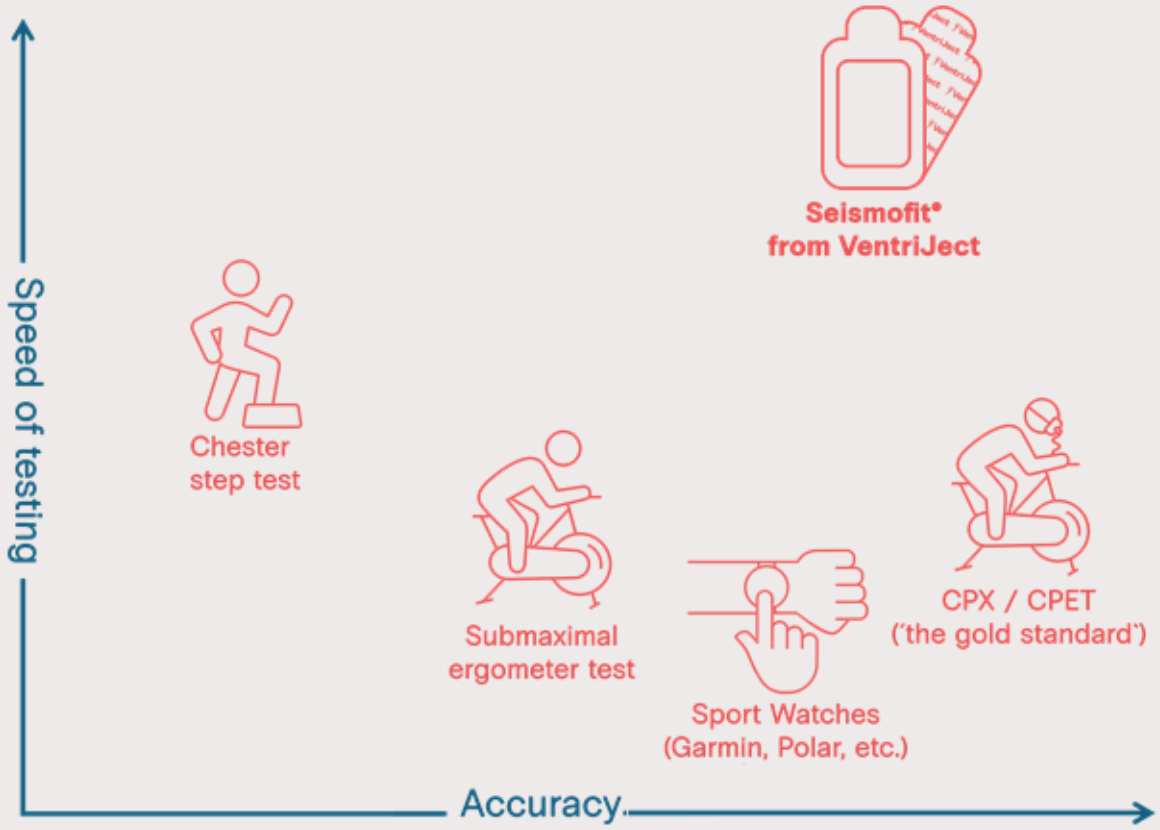
Why focus on VO_2max?

- Mortality and morbidity
- Cardiovascular risk
- Diabetes
- Risk of cancer
- Cognitive deficits



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Current Methods and Their Limitations



Step tests provide a moderate balance but may not be suitable for everyone.

Sport watches offer speed but sacrifice accuracy.

CPX/CPET is the 'gold standard' for accuracy, but it is time-consuming and resource-intensive, requiring expensive equipment.

Submaximal ergometer tests fall in between, offering a compromise but still with accuracy limitations.

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The science behind: Seismocardiography(SCG)

An accelerometer recordings of chest wall vibrations

A measure of cardiac function

For example: Systolic and diastolic events

The algorithm processes this in less than 3 minutes

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The impact of training

Small increases in Cardiorespiratory Fitness (CRF) (eg 3-6 VO2max-units) are associated with **10-30% reduction in adverse cardiovascular events**

Kodama et al: JAMA. 2009; 301:2024-2035

Individuals who previously had been hospitalized and managed to increase their cardiorespiratory fitness had 20% and 14% lower risk of future cardiovascular and all-cause hospital admission, respectively.

Griffin et al: European Journal of Preventive Cardiology, 2023

Exercise performed frequently over weeks or months may **improve CRF with 15-20%** in VO2max in adults

Skinner et al.:Med Sci Sports Exerc. 2000; 32: 157-161 (HERITAGE)



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Introducing Seismofit®

Democratizing access to VO_2max

Patient will be resting during test

Seismofit® eliminates the need for physical exertion during VO2max testing, removing a barrier for many, including obese, elderly, and frail patients

Takes less than 3 minutes

Seismofit® sensor measurements take under 3 minutes, a 10x time reduction compared to existing methods that typically require up to 30 minutes, with significantly less complexity.

Precise and reproducible

Seismofit® is precise and reproducible, ensuring reliable and consistent results across multiple tests and users.

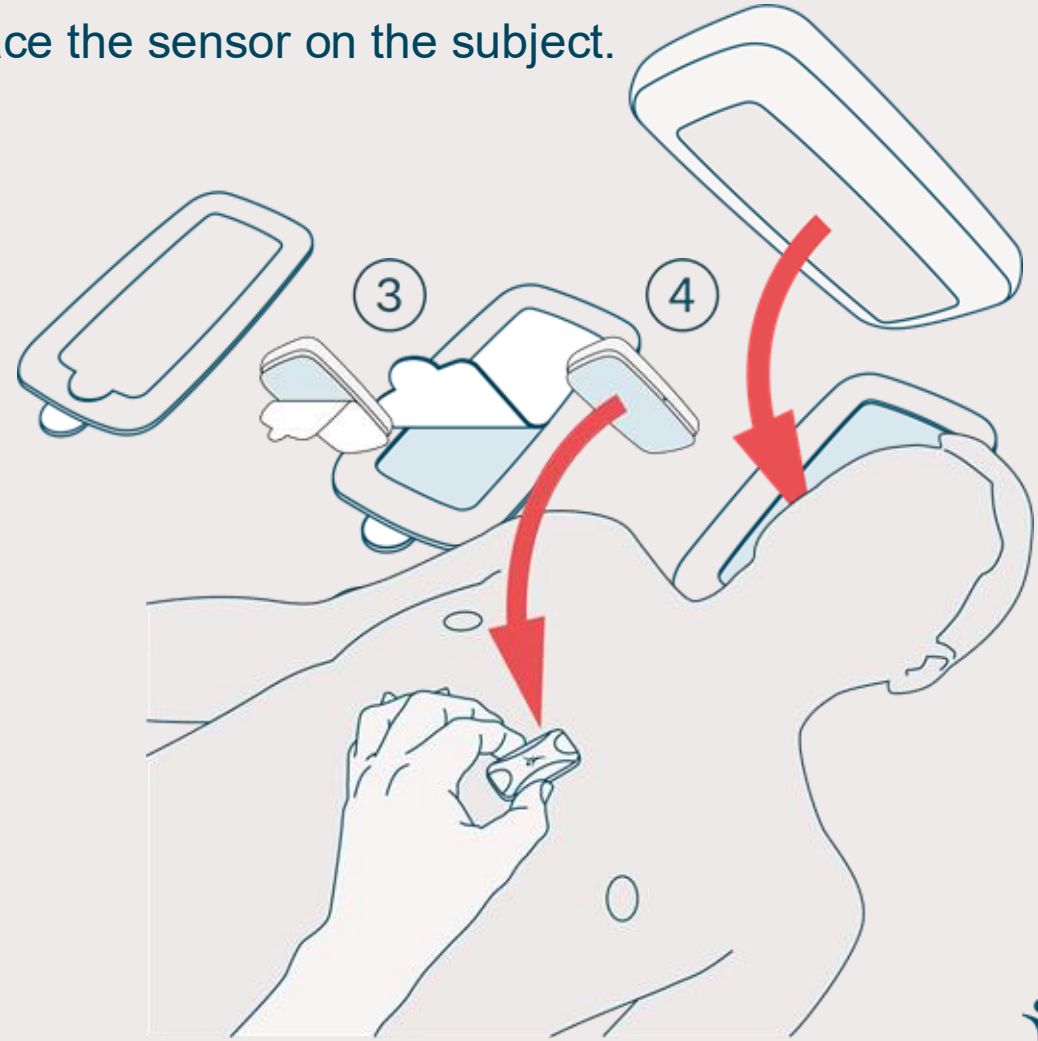
Very limited training required

The Seismofit® is user-friendly, often taking less than an hour for anyone, including healthcare professionals like doctors, nurses, and physiotherapists, to learn to operate.

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Attaching the Seismofit® device

Attach the patch to the sensor, then place the sensor on the subject.

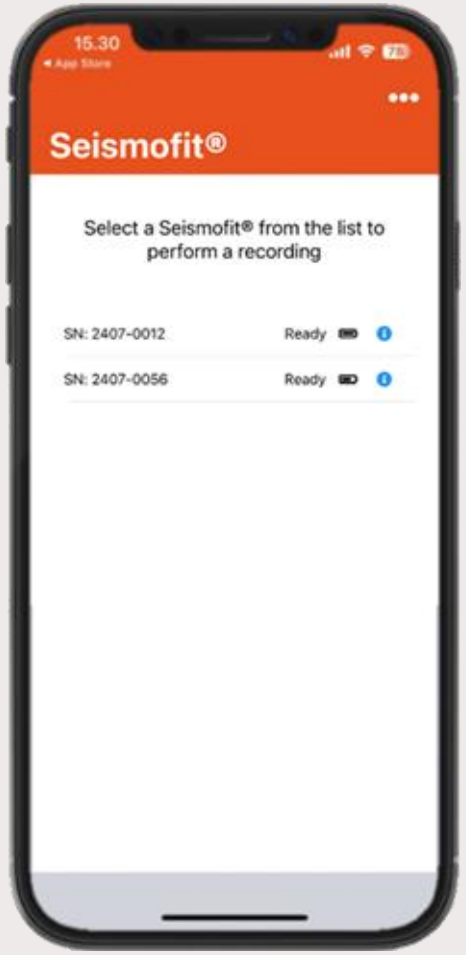


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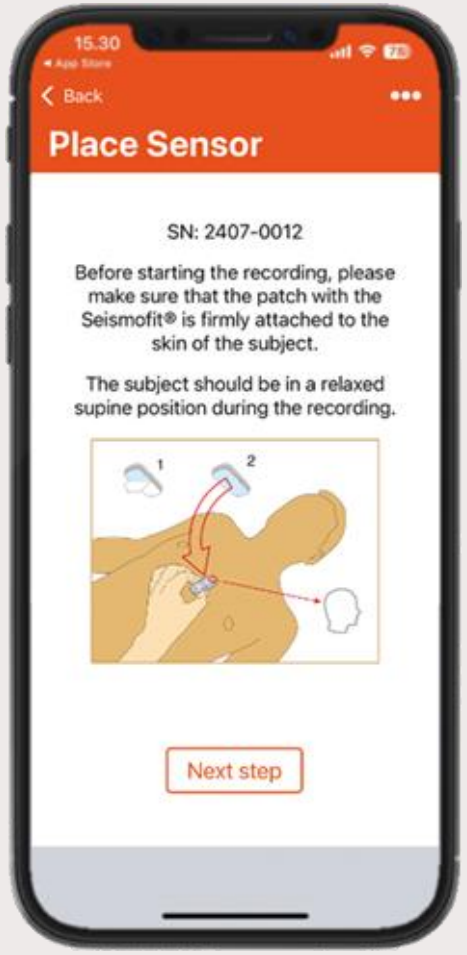
Using the app – Before recording

1-2. Select sensor (note the SN number if more sensors are present)
3. Fill in the 4 parameters

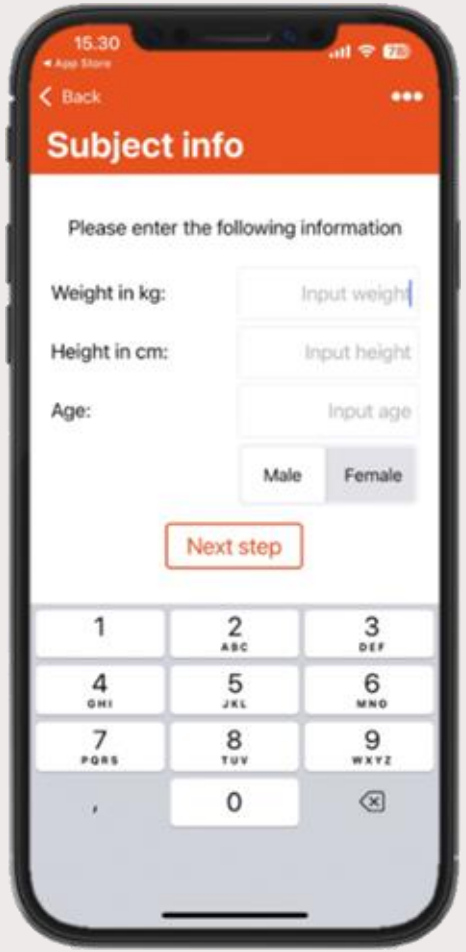
1



2



3

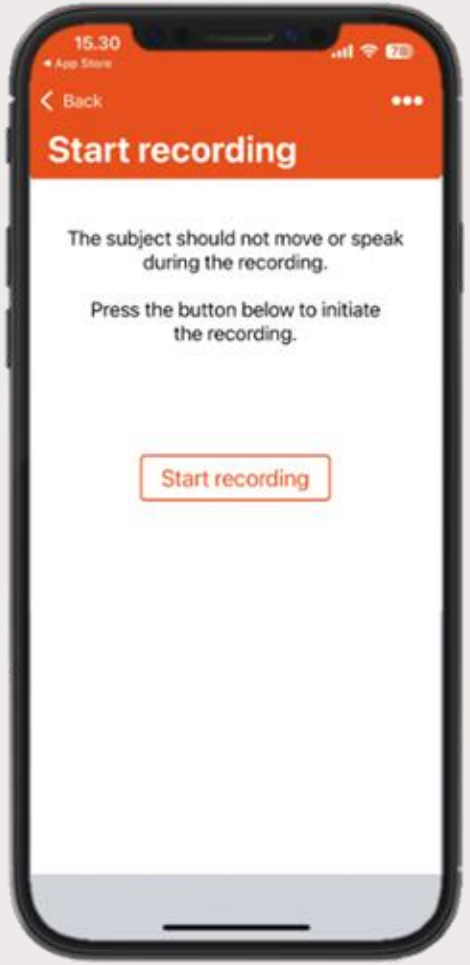


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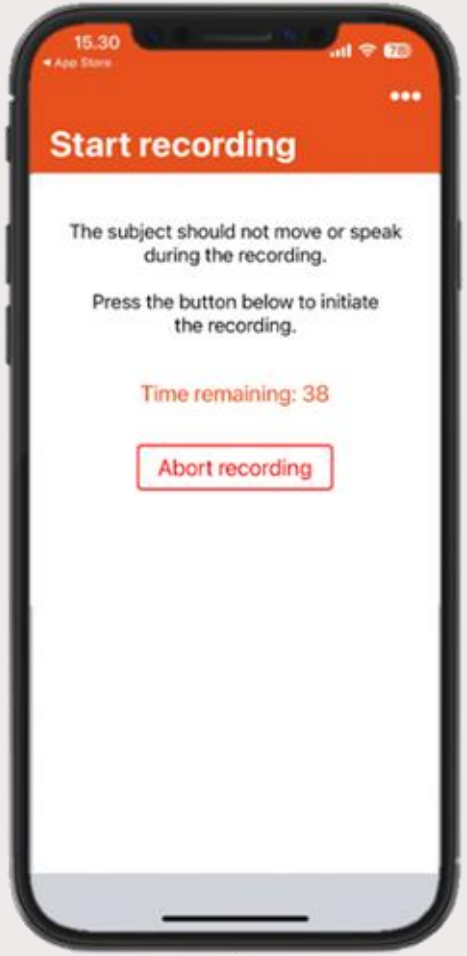
Using the app – Before recording

4. Before starting the recording ask the subject to lay still, not speak and breath normally.
5. Measure for 40 seconds (monitor “time remaining”).
6. Request PDF to store results (this can also be automated that the PDF is always sent to the user’s email)

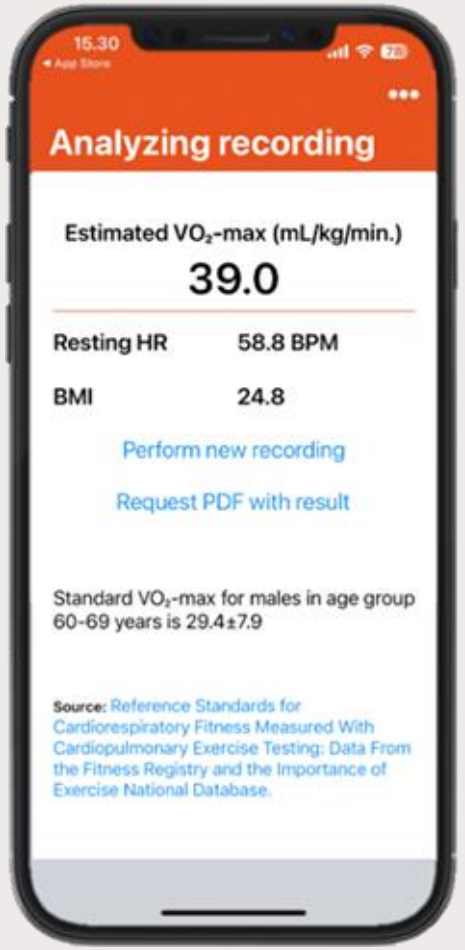
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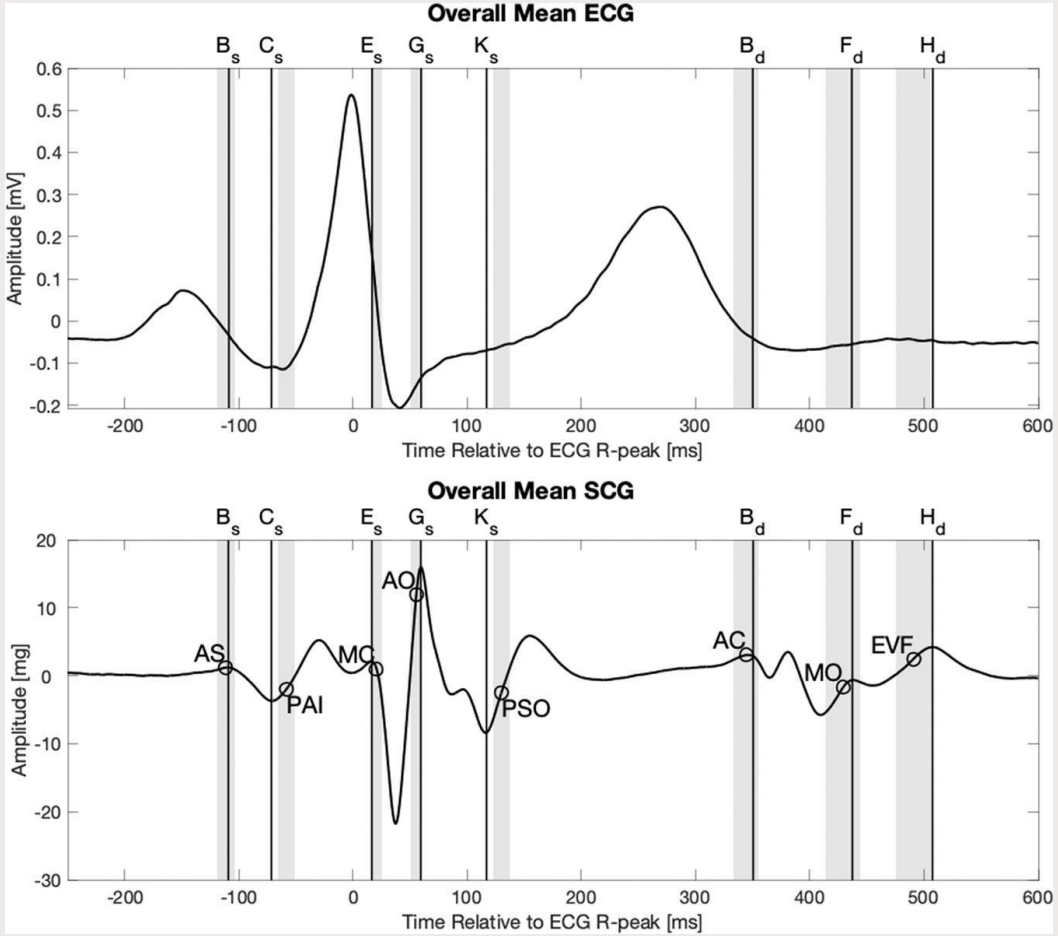
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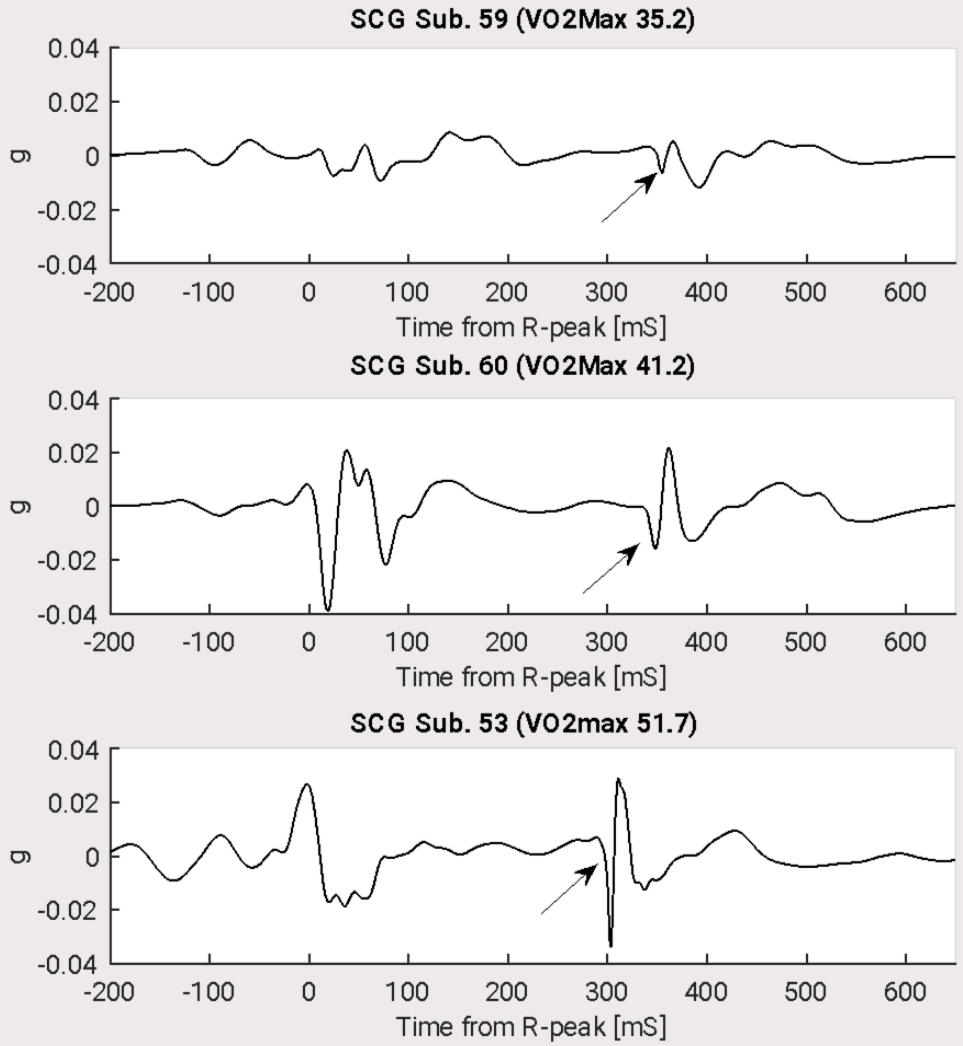
Overall mean electrocardiogram and seismocardiogram signal . The circles indicate the mean location of the following physiologic events found in ultrasound images, from left: Atrial systole (AS), peak atrial inflow (PAI), mitral valve closure (MC), aortic valve opening (AO), peak systolic outflow (PSO), aortic valve closing (AC), mitral valve opening (MO), early ventricular filling (EVF). The grey areas indicate the 95% confidence intervals of the means for the physiologic events found in the ultrasound images *.

*Sørensen, K., Schmidt, S.E., Jensen, A.S. et al. Definition of Fiducial Points in the Normal Seismocardiogram. Sci Rep **8**, 15455 (2018).
**R. S. Crow et al., "Relationship between seismocardiogram and echocardiogram for events in the cardiac cycle," American Journal of Noninvasive Cardiology, vol. 8, pp. 39–46, Jan. 1994.
***Agarn, Ahmad, et al. "Correlation between diastolic seismocardiography variables and echocardiography variables." European Heart Journal-Digital Health 3.3 (2022): 465-472.

SCG is a measure of cardiac function

- Systolic and diastolic events such as heart valve opening and closing are reflected in the SCG signal
- Correlation between SCG fiducial points and hemodynamic events has been validated using echocardiography

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Determining VO_2max

VentriJect uses AI and an advanced algorithm for determining VO_2max

VentriJect's algorithm for prediction of VO_2max is based on:

Basic physical attributes

- Gender
- Height
- Age
- Weight

SCG measurements

- Timings
- Morphology
- Amplitudes
- Variability
- Frequencies

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