

Management

Ohad BarSimanTov PhD – FT
(Hardware & Machine learning)
Sergey Shteyn – PT
(Software & App. development)
Rotem Ishay – PT
(Marketing & Training plans)

Advisory Board

Kenneth McLeod PhD – Research
David Schaffer PhD – Technical
Bruce Andrea, M.D – Medical
Bill Ritter – Business
Bjorn Toft – Athletic

FTE Employees - 2

Technology Status

Working lab prototype
Alpha prototype

Intellectual Property

Exclusive license, SUNY RF
Patent filing in progress

Collaborations

Binghamton University
Pace University
Sonostics
Durango Performance Center
Physioinnovation
Fort Lewis College

Financing to date

Personal funding - \$30K
Friends & family - \$60K
Performance Cardiology - \$10K

Fund search

Athletic - \$3.4M
Healthcare - \$22M

Use of Funds

Manufacture alpha
Manufacture beta
Validation studies
Marketing
Production
First sale 1Q 2016

Current Status (Feb.2015)

In ElabNYC – NYCEDC
Clinical Study w/ DPC

The Problem: Cardiac output (CO), the amount of blood pumped by the heart each minute, is perhaps the single most important physiologic assessment which can be obtained from a person. However, current CO monitoring rates are below 1% for those people who could benefit from it, includes athletes and everyone who takes medication that may affect their cardiac system. Given the lack easy to use and extensive cost of CO monitoring technology, heart rate (HR) is widely used, but is a poor measure of cardiac performance.

In the world of **Athletic**, HR is prone to drifts due to temperature, level of fatigue, dehydration, fitness, and, due to the nature of physiologic adaptation. HR can actually rise while CO is dropping and therefore, CO and SV are the preferred measures. Athletes often undergo stress tests (VO₂ and lactate at ~\$250 per test) to determine their aerobic level at one point in time under laboratory, rather than real-world, conditions. However, athletes want to know their aerobic condition all the time, during training, and competition.

Healthcare providers rely on CO measures to ensure organs and tissues are supplied with sufficient blood flow to operate effectively. However, current methods for assessing CO are expensive (\$1000+ per test) and dangerous (catheter based techniques) or provide one point in time, and as a result, these techniques are used sparingly. Hospitals are now faced with 30 day readmission policy; arise due to incorrect, missed diagnoses, medication ineffectiveness, or adverse reactions, preventing the hospital from receiving compensation. Most wireless monitoring devices on the market use ECG that only address arrhythmias and do not provide CO.

The Solution: ISM is developing a wearable hemodynamic monitor, CoreTrac, which relies on chest wall motion to detect stroke volume (SV), HR, and CO. Heart efficiency (ejection fraction) is affected by many variables including medication, food intake, hydration, and fitness level. We provide athletes with real time aerobic/anaerobic state, exercise efficiency to observe how the athlete progress in training. In healthcare, convenient and inexpensive long term remote tracking out of the clinic allows medication adjustment, reduce readmission, and early detection of cardiac complications. Convenient portable, continuous CO monitoring has the potential to significantly enhance athletic training. Home monitoring of CO would allow the capture of irregular cardiac activities preventing a serious adverse event requiring re-hospitalization.

Company Mission: Achieve an ease of cardiac output monitoring and widely use similar to that which has been achieved for serum glucose monitoring to improve the health and wellness. What was once available only in hospital and clinical settings will be available to the entire community.

Technology: Our technology is based on a MEMS accelerometer detection of sternum motion, combined with a proprietary algorithm to provide a correlation of 0.9 to an FDA approved CO monitoring device. CoreTrac provides the athlete, coach, or clinician with real time (beat to beat) Stroke Volume (SV), Heart Rate (HR), and Cardiac Output (CO) while the user undertakes their daily activities/exercise in the home or in the field. These parameters are wirelessly communicated to real-time read-out device and as well, can be stored for subsequent downloading and analysis by physicians and coaches to provide better assistance.

Competition/Competitive Advantage: True cardiac function can only be obtained in a laboratory settings using VO₂ (oxygen reader, \$30,000) or Bio-impedance technology (Enduro by PhysioFlow, \$15,000). None of our competitors can provide true CO in the field, that is, wearable and continuous. Our system provides portability while exercising and long term monitoring (10+hours), result with better information on athletes training progress, and the effect of medication during daily condition. Moreover, CoreTrac price point is x10 times lower (\$1000) and x10 times easier to use than current devices, in a familiar form of a HR monitor.

Sales/Marketing:

There are 730,000 registered cyclists in U.S. clubs and from our April 2014 survey with 100+ cyclists: 55% use a power meter (cost \$700+), 20% of those would purchase a CoreTrac at \$1,000 if available in the market (~\$80M). 30% of all cyclists would buy a CoreTrac if it was proven to provide SV information (~\$200M). Beta product would sale directly to our partners at sep.2015 where, first ship is scheduled to 1Q 2016 and expect to sale 850 units. The U.S. market for sport monitoring is \$5B and expected to grow to over \$13B by 2018. The U.S. market for wireless patient monitoring systems has dramatically increased, from \$3.9B in 2007 to \$8.9B in 2011, and is expected to exceed \$20B by 2016. The current market for wearable cardiac monitoring is \$600M, where Medicare is reimbursed for wireless patient monitoring in 18 states.

Finance/Investment: Total development and market entry cost for the athletic market is estimated at \$3.4M. Healthcare/pharmaceutical markets require over \$22M, much of these costs should be covered by cash flow generated by the athletic product and services.

Current traction: Currently, we provide cardiac efficiency vs exercise intensity test (aerobic and anaerobic ranges), cyclists are provided with optimal cadence range, recovery time, and the optimal output power for maximum cardiac performance, valued at \$150 by our customers.

