SCUBAPRO

SELF-TRACKING AND SCUBA DIVING IN THE 21ST CENTURY

SCUBAPRO SPEARHEADS HUMAN FACTOR DIVING™ USING BIOMETRICS

We live in a data-driven world. Every day, from every direction, we are carpet-bombed with information. We want to know everything, we want to share everything. But truth be told, what we're most interested in is information that focuses on who we are and what we do on an individual level.

Modern technology is helping us get to know ourselves, in intimate detail. Today's movers-and-shakers call it the Quantified Self, and it's a 21st Century approach to self-knowledge that employs a multitude of technological advancements enabling us to collect a truckload of data on how our bodies are functioning throughout the course of a normal day – walking, working, sleeping, and also during sports and other activities.

This self-tracking is made possible through the use of a multitude of new monitoring devices that use biometrics to count steps while walking or laps while swimming, track heart rate and blood pressure, monitor the amount of calories being burned, watch cholesterol or blood oxygen levels, and so on.

It's All Upside When You Embrace the Quantified Self

Why would you want to "sensor" yourself in such detail? That's easy. Because self-knowledge is the key that opens the door to a happier, healthier, easier life.

Being aware of the "real-time" status of your body helps maximize its efficiency. It lets you know when you're over-exerting or under-exerting, and alerts you to potential problems before they escalate into major events. Self-tracking helps increase performance and decrease injury, it saves money in health costs, and it boosts confidence.

Plus, let's face it, it's just fun. Who doesn't like to compete with their friends in calorie burning, or in who logged the most steps today, or jogged the farthest, or recorded the biggest dip in resting heart rate? We would all like to brag, just a little, about the progress we made in increasing our endurance or the weight we lost. With the personal data gleaned from biometrics you can light up social media by having something meaningful to share about the inroads you've made in your health, fitness, and general well-being.

Human Factors Engineering Makes it all Happen

Human Factors Engineering (HFE) specializes in the creation of products that are designed to adapt to people, as opposed to yesterday's design approach that expected people to adapt to products. These HFE products, many of which can be worn on the body (referred to as wearable technology or wear tech) and incorporate biometrics, are the modern monitoring devices that enable you to embrace the Quantified Self.

Running the gamut from smart watches to health monitors, pedometers to activity trackers, calorie counters to heart rate and blood pressure analyzers, you'll find them strapped to wrists and legs, incorporated into chest belts, mounted inside shoes, clipped to clothes -- all collecting crucial data to allow you to enjoy a happier, healthier, more satisfying life.

HFE and Biometrics are Revolutionizing Scuba Diving

With the surge in this thirst for self-knowledge and all its attendant benefits, it was inevitable that the Quantified Self would find its way into scuba diving, and that SCUBAPRO would be at the forefront of this new technology.

Combining Human Factors Engineering, biometrics and wearable technology is a new approach to product development that SCUBAPRO calls Human Factor Diving™. This concept takes many of the data-collecting methods you use to monitor yourself in your topside life, and lets you take them under water.

SCUBAPRO's line of "smart" personal dive computers, including the Galileo line, the Mantis, and the Meridian, are all designed with Human Factor Diving™, and all enable you to better track your time underwater and improve your diving by continually calculating and adjusting to new data based on your personal biometrics.

This is ground-breaking stuff, and a monumental leap forward for the sport of scuba diving. After all, a personal dive computer should be just that -- personal. Not a one-size-fits-all instrument that delivers the same basic computations regardless of whether it's being used by a 25-year-old triathlete or a 55-year-old novice diver carrying a couple extra pounds around the waist. In this ever-changing world of electronics and technological advancements, divers deserve to have a personal dive computer that's "personal" in more than just name.

SCUBAPRO Leads the Industry in 21st Century Dive Computer Design

Using the Human Factor Diving™ concept, SCUBAPRO "smart" personal dive computers offer visually pleasing display screens, easy-to-use interfaces, intuitive menus and simple system navigation. By incorporating biometrics into their designs, they also feature:

- **Adaptive Algorithm.** All dive computer algorithms factor in depth, bottom time and gas mix to calculation deco time. However, SCUBAPRO's ZHL-8 ADT MB PMG is the only dive computer algorithm that includes a diver's respiration/breathing rate as an indicator of workload during a dive and adjusts the decompression plan to avoid risk factors.
- **Microbubble Settings** enable the adaptive algorithms to adjust for each diver's experience level, age and physical conditioning. Choosing a microbubble level between LO-L5 allows you either take up less nitrogen or off-gas more quickly.
- **Profile Dependent Intermediate Stops,** a feature that calculates an intermediate stop based on how much nitrogen the body has absorbed, takes into account the current dive, previous dives and breathing mixes.
- **Heart Rate Monitor.** Exclusive to SCUBAPRO dive computers, by visually monitoring your heart rate you can better assess your workload – real time – and promptly react to heightened stress or over-exertion. At the same time, the dive computer incorporates this information into its workload calculation, adjusting the algorithm to make the dive safer.

According to DAN, twenty-five percent of diving fatalities involve cardiac problems. In many of these cases, although the divers often experienced symptoms such as shortness of breath or fatigue, they proceeded with their dives anyway – they didn't have enough data to make an informed decision. SCUBAPRO's HRM provides that additional data.

On a less critical level, measuring your heart rate also lets you focus on increasing your endurance training, which allows you to transform your love of diving into a fitness sport.

- **Skin Temperature Monitor.** This patent-pending feature provides yet another aspect of a diver's physiology that can be factored into the workload algorithm. Extreme cold can affect a diver's ability to off-gas nitrogen. This additional information lets you update the decompression calculations to improve the diving experience.
- **Stroke Counter** can be a valuable aid when exercising or lap swimming. By keeping track of strokes you can also calculate distance.
- **Calorie Burning** can be calculated by combining heart rate and workload data. In today's fit-conscious society you'd be hard-pressed to find anyone not interested in how many calories were burned over the course of a dive.
- All of this **data**, available only on SCUBAPRO personal dive computers, can then be downloaded for analysis using LogTRAK software for both PC and Mac as well as an Android LogTRAK app, contributing to an accurate study of the Quantified Self.

In short, Human Factor Diving™, when used in the design of personal dive computers, presents more vital information in a more intuitive delivery system, empowering you to make smart decisions based on solid data, and that makes diving safer, enhances fitness, helps improve diving skills, and as a result, makes the time you spend under water a heck of a lot more fun.

Human Factor Diving™ is the Future of Dive Equipment Development

This is the age of the Quantified Self. By being able to self-track your own body, you know when you're doing good, you're alerted when potential problem arise, and you have lots of quantifiable data that can be downloaded for analysis and sharing with friends and family.

There's really no downside to the Quantified Self. That's why the trend toward self-tracking is only going to get bigger. It's been said that the number of self-monitoring devices in use will top over 150 million by 2018.

Everyone wants to be happy and healthy and know that their bodies are operating at peak performance. Self-monitoring devices incorporating biometrics help make this possible. Surveys suggest that the vast majority of people who have used these monitoring devices claim they have contributed to the improvement of their overall health and well-being.

SCUBAPRO and Human Factor Diving™ brings the world of biometrics and wearable technology to diving. SCUBAPRO's "smart" personal dive computers are indispensable tools for divers of all skill levels, providing personalized data not available on any other dive computers that contribute to a richer underwater experience as well as a happier, more self-aware topside life.

Look to the future and you find SCUBAPRO.