

Swimming with the Heart



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For longer than I can remember, swimming has been a big part of my life. I was always part of swimming teams, even when my hectic work-load as a mechanical engineering student at AUB made it challenging to swim as much as I would have liked to.

In 2010, during my final semester, while preparing for the final year project and potential job interviews, I saw an ad for the “Stars of Science” competition organized by Qatar Foundation, a Pan-Arab docu-reality TV program dedicated to innovation. **Just for fun, I decided to apply with an idea I always had in mind: a heart rate monitor designed for swimmers. It was a tool I always needed; however, there was no adequate product in the market that could do the job.**

My chances were very slim; the SOS team was touring in 8 countries with a panel of judges to select only 16 out of the 7,000 applicants. But I made the cut! I was the only one to be selected from Lebanon and I decided to take the jump even if it meant compromising my studies and not graduating on time with my friends.

The 16 of us were invited to enter a specially designed

workshop in Doha, located in the heart of Qatar Science and Technology Park, where we had access to endless resources as well as the support of top professionals in order to build our product. The competition was divided into 6 different steps that are corresponding to a key stage of the innovation process: Orientation, Proof of Concept, Product Engineering, Design, Business and Marketing. At the end of each phase –which lasted 3 weeks on average– projects were evaluated and only the strongest ideas would be allowed to move forward.

The key innovation of my newly assembled device was its heart rate sensor design: It had to be integrated in the swimming goggles while measuring the heart rate from the temporal artery (a ramification of the carotid artery that runs through the neck). The technologies for heart rate measurement in today’s market products consist of pressure sensors (used in treadmills), piezo-electric sensors, sound sensors (used in the chest belt of sports watches) and transmitted IR sensor (used in the pulse oximeter). While these are very accurate and reliable, none of them can be mounted on a piece of eyewear. My design was based on an optical sensor, where the heart rate would be detected by reflection from the temporal artery. Together with doctors and engineers, I studied deeply the morphology of the head, the location of the artery, the flow of the blood, the thickness of the skin, etc. in order to obtain



the angle of reflection that would give the most reliable heart rate signal. The next step was to make the design small, lightweight, and most importantly, waterproof. The challenges seemed insurmountable; we only had 3 months to build a product that might take established companies years. I faced many obstacles, mainly coming from my lack of expertise in electronics engineering, but I was motivated by the idea of creating a break-through device I had always dreamt of owning.

By the end of the competition, I was awarded third place! For me, it turned out to be much more than just a competition, in retrospect, I can say that this award changed my life. With the prize I won, I founded my own little research hub in Beirut to further develop my product that I called Instabeat, and today we are a team of 8 people, working on releasing the product into the market. The journey has been very long and arduous: we went through investment, crowdfunding, long manufacturing runs, etc.,

but the idea of swimmers from around the world using our product to improve their performance, is very rewarding in itself.

After we have released our first market product, Instabeat will not stop at that. The way I see Instabeat, is more than just one product, but a company dedicated to building innovative products that will enhance athletes’ performance and help them understand their bodies better. So stay tuned, as there is more yet to come!