

# E-shirt improves physical exercise

September 17 2010

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TrainGrid consists of an e-shirt with sensors to determine in real time the athlete's electrocardiogram, heart rate, skin temperature, body position and location via satnav. All the data are transmitted via Bluetooth to a mobile phone or computer to share with a coach, doctor, friends or on a social network.

Credits: emxys

Whether you are a professional athlete or just enjoy physical exercise, instant data on your performance can improve your training. With help from ESA, a Spanish firm has developed a smart 'e-shirt' to measure and transmit key body information during exercise.

TrainGrid and its e-shirt is being developed by the start-up company emxys at ESA's Business Incubation Centre Noordwijk in the Netherlands under the Agency's Technology Transfer Programme.

“Most of today’s monitoring aids for athletes, even the high-end ones, are very inaccurate and record so few parameters that both professional and amateur athletes continue to use pencil and paper to track their training,” explains Dr José Antonio Carrasco, CEO of emxys.

“TrainGrid offers the full package for everyone: for those who just run for fun and for professional coaches and athletes.

“Put on your TrainGrid e-shirt and you can track your route, know if you are getting quicker, check if your friends are running and verify your heart rate.

“And all the data are automatically recorded; no more stopwatches or uncomfortable straps to measure your heartrate around your chest.”

At the incubation centre, emxys is receiving technical support from ESA engineers and business support by experts to turn their idea into a viable business.

“We found all that was necessary and more, from expert advice for making the business plan to support in promotion and communication with potential investors or partners,” says Francisco García-de-Quirós, Chief Technical Officer of emxys.



TrainGrid tracks the athlete’s exact path and displays for later evaluation.

Credits: emxys

ESA Technology Transfer Officer Niels Eldering is helping emxys in getting their company off the ground: “We have seen many times that our incubation centres provide inspiring environments to nurture start-up companies using space technology in non-space fields.

“emxys is a good example of how cross-fertilisation between the different start-ups can create collaboration.”

“It is now used by another start-up company, EstrellaSat, to watch over miners in hard jobs at remote locations, improving safety. This transfer may not have happened had the two start-ups not been under the same roof.”

TrainGrid uses an e-shirt with sensors to measure in real time the athlete’s electrocardiogram, heart rate, skin temperature, body position and location via satnav.

Shocks, falls and overall speed are calculated to determine the exercise outcome, and everything is transmitted via Bluetooth to a mobile phone or computer to share with a coach, doctor, friend or on a social network.

“We launched our product commercially in June 2010 and a number of runners are already using it,” adds Dr Carrasco.



The results of TrainGrid's measurements present on computer the athlete's electrocardiogram. Credits: emxys

“Now we are exploring other potential applications, such as monitoring workers in remote locations or during risky activities like fire fighting or rescue mission.”

“For this, we are considering integrating satellite communication in our e-shirt. The next version could then provide real-time monitoring by satellite of personnel at even the most remote location on Earth.”

Provided by European Space Agency

Citation: E-shirt improves physical exercise (2010, September 17) retrieved 9 April 2024 from <https://phys.org/news/2010-09-e-shirt-physical.html>

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