

Smart bathroom scale for a healthier life

A modified bathroom scale has been designed, able to measure several cardiovascular parameters in real time without any action by the user other than standing on the scale. For people with difficulties to stand up, the same cardiovascular parameters, and the respiratory rate, can be obtained by using the scale as a platform to rest the feet on it while seated, or by placing the electrodes on a flat surface. Partners to further develop the system and/or to establish commercial agreements along with technical cooperation are sought.

The Challenge

Preventive medicine and monitoring chronic patients at home largely reduce health care costs. But the provision of prevention and long-term monitoring services to a large population would be very expensive unless the per capita cost is small. This asks for reduced technology cost in terms of device acquisition, operation and maintenance, hence devices that are unobtrusive and affordable, and measurement methods that are fast and effortless to use.

The Technology

Electronic bathroom scales able to measure body fat include footpad electrodes for bioimpedance measurement in addition to the strain gages that sense the body weight. Some particular models include a handle bar with electrodes for segmental bioimpedance measurements. By processing mechanical and electrical signals that result from cardiovascular activity, according to methods disclosed in several proprietary patents, it is possible to obtain the heart rate, a single-lead ECG using footpads and a standard six-lead ECG if handle electrodes are used, and the pulse arrival time from the heart to one foot, which is strongly correlated to blood pressure and arterial elasticity.

Innovative advantages

- No new sensors must be added to the scale.
- As fast as standing for a few seconds on a scale.
- No external help needed to use the scale, neither to attach anything to the body.
- Beat-to-beat heart rate from people wearing shoes and from single-legged people.
- Trends in blood pressure and arterial elasticity, also for single-legged people.
- Applicable to seated people too.

Current stage of development

Laboratory prototype available.

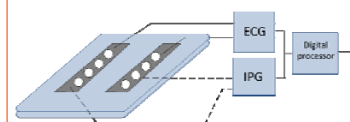
Applications and Target Market

Health promotion programs, home health care, treatment of nutrition disorders, retirement and nursing homes, hotels and spas, physical activity monitoring, sports medicine, fitness centers, labor medicine, groups screening, primary care centers, community health centers.

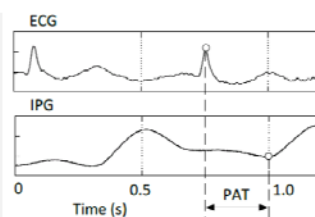
Reference number

MKT2011/0087_H

Bathroom scale for fast, comfortable, cardiovascular measurements



The ECG and the pulse arrival time can be obtained from footpad electrodes on the scale



Pulse arrival time measured using the footpad electrodes in a bathroom scale

Business Opportunity

Technology available for licensing with technical cooperation

Patent Status

PCT application

Contact

Ms. Elisabet del Valle
Licensing Manager
T. + 34 934 134 094
M. +34 626 260 596
elisabet.valle.alvaro@upc.edu

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