EMOTIONALLY-RESPONSIVE CLOTHING FOR LEISURE AND EXERCISE ACTIVITIES

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INTRODUCTION

The possibility of augmenting high-specification sportswear, for a broad range of users from enthusiasts to non-sporting people, through the integration of textile sensors and actuators that can monitor and respond to the emotional status of wearers, is being explored. The long-term aim is to develop clothing that could help wearers manage their emotional intelligence. Physiological sensors, such as heart rate monitor, sweat pads, etc., are widely used in sports and medical areas. However such sensors can also be used to gain an insight into the condition of affect in people. Body actions and gestures are well known to be reliable indicators of temporary emotional status in humans. It is, however important to classify and quantify in a systematic and to establish reliable set of controlled variables that allow to assess and control psychological status.

METHODS

The current study focused on the on the initial design of close loop system for assessment and control of emotional responses by the sole use of kinematic and postural parameters, such as joint angels and joint angular velocity as an initial stage of the development.
Initial consideration was given to most common postures and gestures that allow reliable measurement through integrated textile sensors.

RESULTS AND DISCUSSION

A key focus is to identify the possible emotional meanings of physiological and behavioural information within a range of sports/training contexts, and to determine whether these signals can be translated into a *language of emotions*, which wearers and trainers can use to manage emotions to positive effect in exercise and leisure activities. It is essential (Fig.1) to provide the clothing system with appropriate self-calibrating facilities to allow it to learn from its wearer, so that emotional identification and response become uniquely attached to that person. By being able to monitor an individual's emotional status, the amount of training or sports activity engaged in could be modulated and enhanced, thereby reducing the risk of over-training. Such a clothing system might also help with motivation, as hormones produced as a result of physical exercise are known to promote feelings of happiness, with the possible advantage of combating life/work stress. In general the idea is to shift the focus of the exercise from performance targets to level of satisfaction and sense of achievement that will allow to offset the boredom factor that stops many people from undertaking exercise. By monitoring and enhancing technique through force feedback actuators, a sense of achievement might be attained quickly, thereby enhancing wellbeing, and consequently motivation. Clothing that changes [e.g., colour, emits aroma] or produces sound/music according to mood, emotions, and environmental context should help influence/modulate mood, promoting positive self-esteem. Integrated mobile communications, would enable the remote exchange of emotional impulses between wearers.

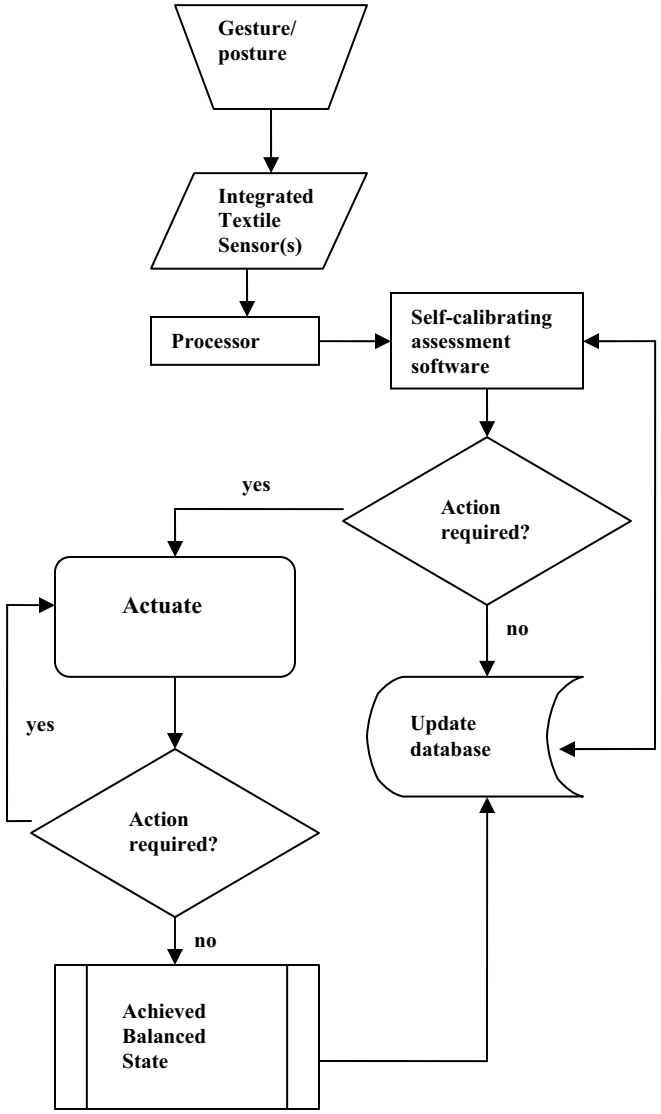

Fig.1 Proposed design for emotionally responsive clothing.
The project is in its infancy (although clothing with built-in electronic devices has been developed and used) and is to be expanded in the next few years as some large hardware and software manufacturers are to be involved in it.

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