Stress Monitoring System for Individuals
Master in Computer Engineering

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BACKGROUND

The main goal of this research is to understand how Information Technology could help on purpose to monitor continuously stress factors in individuals.

It was created a prototype for a mobile application that synchronizes data provided by smartbands plugged in individuals with their smartphones. Tracking their physical condition in order to calculate if the individual is at risk of entering in a state of chronic stress.

It will be studied the importance on providing feedback regarding physical condition from the person in real-time and also the importance of giving appropriate advices to the person about how they can work on their habits in order to improve their health cares.

It is important researching about technologies and frameworks commonly used to create a system like the one in this proposal. This will help to define the ideal ecosystem for this prototype. There is the intention to provide the results retrieved from this study to the appropriate medical professionals, in order to ensure their quality.

OBJECTIVES

- Enhance health care system and quality of life for individuals;

- Lower absenteeism rates and also lower laboral rotations;

- Increase productivity and performance on indidual and organizational level;

- Decrease accident risk caused by human error;

- Develop a new *APP* with friendly interface to collect data, notify the users about their stress level and indicate good practices.

- Create a new model to measure the individual stress (replace surveys with biometric data).

METHODOLOGY

Phase one: collect data from individuals (150 through survey and cortisol analysis; 30 with biometric data and survey) and health care profissionals (30);

Phase two: find classificators with the 150 individuals that participated on the phase one survey. Determinate the relevant biometric data with the 30 individuals that participated on the phase one.

Phase three: collect data from 20 individuals to validate the model

Parallel to phases two and three: collect and evalute the users opion regarding the user interface and user experience with the APP. Adjust the interface accordingly to the results from the users evaluation.
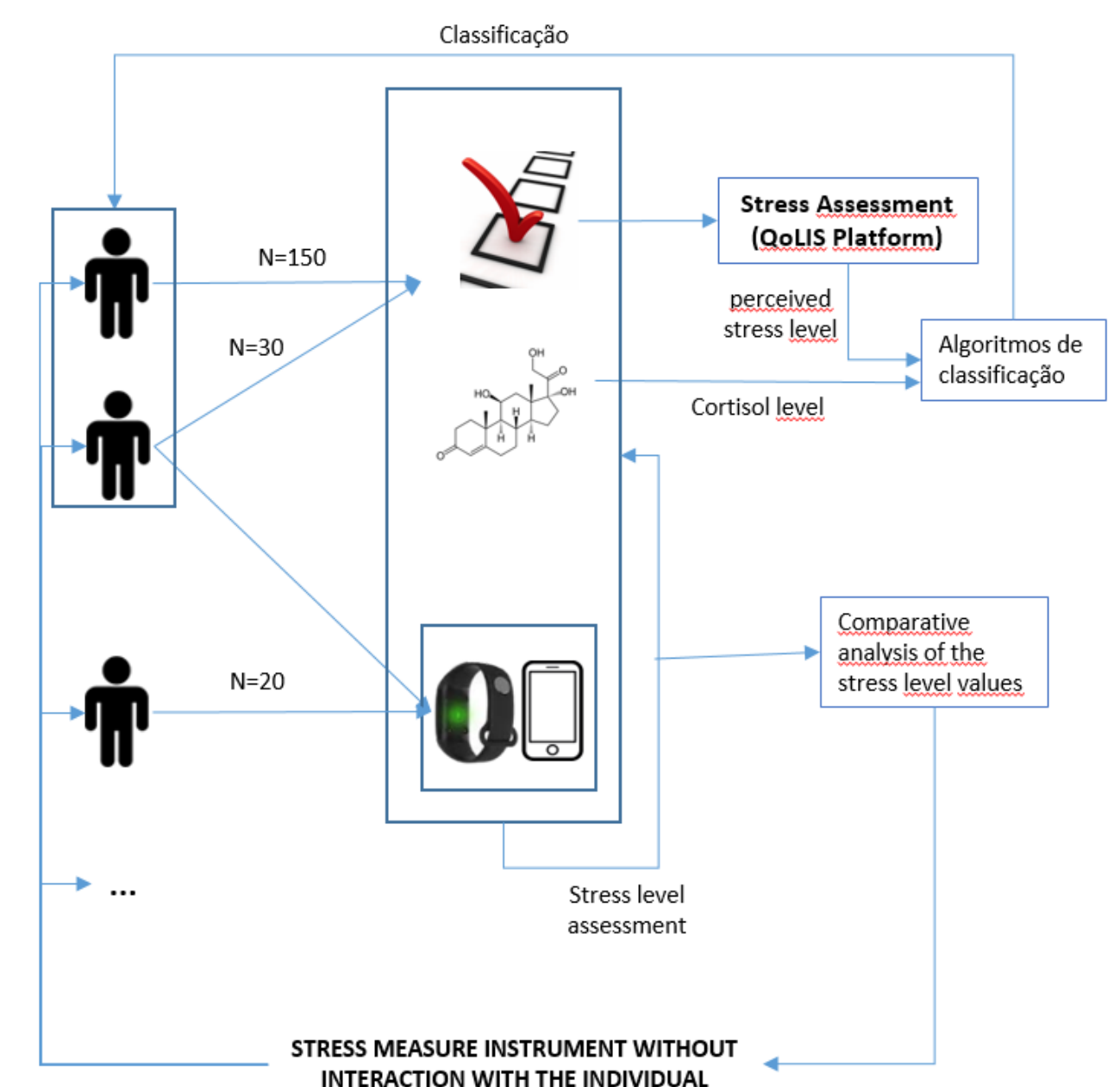
RESULTS AND CONCLUSIONS

The prototype of the mobile app created, accomplished, successfully, the purposes to prove that continuous monitoring of end-user biometric data consultation and notification effect on end-users when some anomaly data is fetch from the device.

The device used on this project as shown that is reliable for its usage when comparing it to a clinical device for the same biometric data measurement.

The user experience feedback given by the end-users, on using the prototype, prove to be widely accepted and complies with the requirements.

The privacy policy and personal data security was guaranteed by users data anonymity.

BIBLIOGRAPHY

Bergland, C. (22 de Janeiro de 2013). *Cortisol: Why "The Stress Hormone" Is Public Enemy No. 1*. Obtido de Psychology Today: https://www.psychologytoday.com/blog/the-athletes-way/201301/cortisol-why-the-stress-hormone-is-public-enemy-no-1

Boucsein, W. (1992). Electrodermal Activity . *Plenum Press, New York*.
Care), I. (. (2015). *Depression: What is burnout syndrome?* Obtido de PubMed Health: http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0072470/

Fernand-Seguin Research Center of Louis-H. Lafontaine Hospital, Q. -C. (2007). How to measure stress in Humans? 6-7.

WHO, W. H. (2011). mHealth: New horizons for health through mobile technologies: second global survey on eHealth. *WHO Library Cataloguing-in-Publication Data*

Shih, P. C., Han, K., Poole, E. S., Rosson, M. B., & Carroll, J. M. (2015). Use and Adoption Challenges of Wearable Activity Trackers. *iConference 2015*.

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