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PHYSIOLOGICAL AND PSYCHOSOCIAL STRESS - BIOMARKERS OF STRESS

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In occupational medicine, psychosocial risks is a main concern. An occupational physician needs tools for an objective evaluation of psychosocial stress. Those tools could be questionnaires such as visual analogue scale of stress or job-demand-control questionnaire of Karasek, which can be useful to detect the most at-risk workers. Those tools to evaluate stress could also be biomarkers of stress. For example, we were the first team to propose saliva DHEAS as a reliable biomarker of stress. Then, stress can also be physiological. Main physiological stress are a mental stress, a physical stress (exercise), insufficient nutritional intake, or a sleep deprivation. Emergency physicians are a model of stress because they combine all types of stress. They are in a particular psychosocial context and they are confronted to death, they have sometimes to run, they cannot eat when they want and sometimes do not eat during 24 hours, they also cannot sleep. We will present main articles published from the Job stress study which compared several putative biomarkers of stress through different types of night shifts, through a shift-randomized controlled design. Main biomarkers of stress are heart rate and heart rate variability, as well as pro-inflammatory cytokines. We demonstrated several incidences of maximal HR during shifts combined with a high cardiac strain, as well as a

poor heart rate variability and a systematic inflammation. The 24-hour consecutive shifts exhibited the highest changes in biomarkers of stress. We also highlighted a prolonged response to the night shifts with the highest response three days after the shifts. The main explaining factor of the increase of biomarkers of stress was life-and-death emergencies. Therefore, we suggest that emergency physicians limit their exposure to 24-hour shifts and be cautious on the third day after the shift.

Biography

Frédéric Dutheil is a Professor in Medicine; Medical Doctor in Occupational Health; Physiologist and Researcher at University Hospital of Clermont-Ferrand (CHU) and; a Clinical Fellow of Australian Catholic University. He is member of Laboratory of Metabolic Adaptations to exercise in clinical and pathological conditions (AME2P-EA 3533) from 2006 to 2015, his work on biomarkers of stress led him to the creation and the Head of Physiological and Psychosocial Stress team at UMR CNRS 6024. He is the Scientist of Wittyfit, a software designed to improve health of workers, through a personalized and individualized feedback of their health, taking into account job characteristics. He is now aiming at building tools for objective measures of stress.

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