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Perfusion index among workers exposed to heat stress – a pilot study

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Abstract

Introduction: Increased heat at work place is an important environment risk factor affecting workers resulting in several health impacts such as heat exhaustion, heat stroke etc. The purpose of this present study is to elucidate the thermal strain loaded on workers exposed to heat stress at work place by measuring physiological parameters such as sweat rate and perfusion index.

Objective: To quantify work-related heat stress exposures and assess the perfusion index among workers exposed to heat stress at the work place.

Materials and Methods: Area Heat stress assessments were measured using Quest Temp WBGT monitor. Heart rate and sweat rate were recorded using standard procedures. Perfusion index was measured at rest (Pre) and after exposure to heat stress (Post) during work using Masimo Radical 7(USA).

Results: Heat stress measurements (WBGT) ranged from 29.3 - 36.6oC. Almost 50% of the workers exposed to increased environment temperature had high sweat rate. Post Perfusion index was significantly higher than the Pre Perfusion Index (3.5±1.4; 6.7±3.3). In addition, the workers gave history of signs and symptoms of heat disorders, such as excessive sweating, thirst, syncope, muscle-cramps and mental-disorientation during periods of increased ambient temperature

Discussion and Conclusions: This is the first ever pilot study to have measured perfusion index among workers, to the best of our knowledge. Further studies are needed to evaluate the use of perfusion index as a reliable, sensitive and specific health parameter to be used for assessment of health impacts of heat stress. Such parameters can be used for correcting fluid imbalances and prevent heat related health complications and thereby improve work productivity.

Biography

Dr. Krishnan S has completed his MBBS from Pondicherry University in 2011.At present he is doing MD-PhD (integrated course) at Sri Ramachandra University under the guidance of Prof. Padmavathi R and Prof. Vidhya Venugopal.