

Different Ergonomic Exposures and Infrared Thermal Temperature on Low Back

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Abstract : Objectives: Infrared thermography (IRT) has been little documented in the objective measurement of ergonomic exposure. We aimed to examine the association between different ergonomic exposures and low back skin temperature measured by IRT. Methods: A total of 114 subjects among sedentary students, sports students and cleaning workers were selected as different ergonomic exposure levels. Low back skin temperature was measured by infrared thermography before and post ergonomic exposure. Ergonomic exposure was assessed by Quick Exposure Check (QEC) and quantitative scores were calculated on the low back. Multiple regressions were constructed to examine the possible associations between ergonomic risk exposures and the skin temperature over the low back. Results: Compared to the two student groups, clean workers had significantly higher ergonomic exposure scores on the low back. The low back temperature variations were different among the three groups. The temperature decreased significantly among students with ergonomic exposure ($P < 0.01$), while it increased among cleaning workers. With adjustment of confounding, the post-exposure temperature and the temperature changes after exposure showed a significantly negative association with ergonomic exposure scores. For maximum temperature, one increasing ergonomic score decreased -0.23°C (95% CI $-0.37, -0.10$) of temperature after ergonomic exposure over the low back. Conclusion: There was a significant association between ergonomic exposures and infrared thermal temperature over low back. IRT could be used as an objective assessment of ergonomic exposure on the low back.

Keywords : ergonomic exposure, infrared thermography, musculoskeletal disorders, skin temperature, low back

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