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Technological Advances in the Analysis of Work in Dangerous Environments: Tree Felling and Rural Fire Fighting

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Abstract

Ergonomists have always been interested in studying work and especially the safety aspects of work. Studying work in dangerous situations is an area that presents particular challenges to the researcher and potentially to the worker.

The objective of this study was to explore the use of new technologies in facilitating the field study of people engaged in dangerous work situations without disrupting the work or adding to the danger. This was achieved through the investigation of work activity in dangerous environments: tree felling and rural fire fighting. The two case studies formed the basis for an investigation into three aspects of work: first, to record, measure and understand the work (including physiological workload) of people engaged in dangerous occupations; second, to understand how hazards were identified and dealt with by individuals working in extreme conditions and third, to gain insight into hazardous work environments for the purpose of enhancing training for personnel working in dangerous conditions.

An innovative suite of equipment was developed for the study, enabling data collection that did not disturb or inhibit the individual working in dangerous, and sometimes extreme, conditions. The results of the study have shown that, through triangulation of novel combinations of recording instrumentation and video-cued reflective interview, we can gain rich interpretative insights into the working world of the tree faller and rural fire fighter and understand how they manage the hazards they confront in their work. This in turn enables us to develop practices designed to minimise or avoid physical risk to the worker, Furthermore, the annotated video collected in the forests and at fires can be utilised as an authentic resource for training of both workers and trainers.

My study has highlighted the value of, and need for, research that is situated in real work environments, and that captures the multidimensionality of workers' activities without impeding or altering their behaviour.

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