

# The influence of production ergonomics on product quality

- A research project conducted at a paced assembly line

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## Summary

There are numerous studies that discuss the subject of ergonomics in the contexts of sick leave and social expenses. However, there are much fewer that relate production ergonomics to other factors such as quality and productivity. There is still a need to put production ergonomics in a larger financial context, and this study was aimed at doing that.

The project has been carried out at Volvo Trucks' production plant outside Gothenburg in Sweden, as a pilot study. The objectives have been to show that there is a relationship between production ergonomics and product quality in the plant, and to present this information in a financial context. This has been done by performing a retrospective analysis of data collected over a period of 37 production weeks. A number of assembly tasks were selected and the errors associated with these tasks were examined. The tasks had been classified by the company ergonomist as either ergonomically suitable or ergonomically harmful for the workers.

The difference in the number of errors associated with the respective ergonomic categories showed that there are over twice as many errors connected to the ergonomically unsuitable tasks compared to the tasks where the ergonomics are appropriate.

The results were then put into a financial context by investigating the times that were needed to correct the errors. Among other things, the correction time correspond to personnel costs for the workers that are correcting the errors. It was not possible to trace any other costs to the individual errors, but the difference between the ergonomically suitable tasks and the harmful tasks is still significant.

The result serves as an indicator of the relationship between production ergonomics and product quality and the hope is that the financial figures will encourage the plant management to further investigate the matter. This is not about saving money, but rather about using resources for value adding work and increasing the amount of products being made right the first time. Several recommendations are provided in the report as how to continue the work with production ergonomics at Volvo Trucks.

*Keywords:* Quality, Ergonomics, Manual assembly, Cost of inadequate quality, Truck manufacturing, Ergonomics in a financial context.