디지털 휴먼 모델링 및 시뮬레이션을 통한 K9 자주포의 개선 설계에 대한 인간공학적 평가

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Ergonomic evaluation on a revised design of K9 self-propelled howitzer by human modeling and simulation

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ABSTRACT

Objective: The present study aims to conduct an ergonomic evaluation on a revised design of K9 self-propelled howitzer (SPH) through the application of digital human modeling and simulation techniques. **Background:** Anthropometric dimensions vary across countries, and each country may have a different concept of weapon operations. As K9 SPH is exported to various countries, revision of the K9 SPH design to better fit the anthropometric characteristics of operators and the concepts of weapon operation of the target export country is needed. **Method:** Information was collected on the revised design of K9 SPH, representative anthropometric characteristics of operators of the target population, crew members and their tasks, and design requirements. Representative human models were created for simulation, and various ergonomic evaluations were conducted with the representative human models in the revised SPH while performing mission tasks. **Results:** The evaluation results of the revised K9 SPH design were presented in terms of visibility, reach, posture, clearance, and accessibility. If the revised design failed to meet the design requirements, issues and modified designs were informed to design engineers. **Application:** The ergonomic evaluation of the present study demonstrates the usefulness of digital human modeling and simulation techniques to identify design problems and propose a modified design in the development of a revised product design.

Keywords: Digital human modeling; Design simulation; Ergonomic evaluation; Vehicle design; Workplace design

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