KAN Kommission Arbeitsschutz und Normung

KAN Study 51
"Draft of a guide on how to select and use anthropometric data correctly"

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Verein zur Förderung der Arbeitssicherheit in Europa e.V.

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Summary

Background

In 2009, the Commission for Occupational Health and Safety and Standardization (KAN) published a report entitled "Anthropometric data in standards" (Report 44). It highlighted the significance of body measurements for occupational health and safety and presented a range of recommendations for action. One key recommendation was aimed at the German Institute for Standardization (DIN) and concerned the preparation of a guide to help ensure anthropometric data is used correctly.

As a result, the Steering Committee of DIN's Ergonomics Standards Committee recommended its Working Committee on Anthropometry and Biomechanics to draw up a user guide in the form of a DIN SPEC. The mandate was to explain in easily understandable terminology how to select and use anthropometric data correctly. As the Committee asked KAN for support and as KAN felt this project could be a great help for designers of ergonomic work equipment, the present study was conceived as a means of preparing a draft version of the required guide.

Objective of the study

The objective of the study was to prepare a draft version of a guide that explains in easily understandable terminology how to select and use anthropometric data correctly. The draft is then to be forwarded to the national standards committee responsible for this field so that it can review and revise it and then publish it in a suitable format.

KAN would like to thank the authors, Dr Christiane Scheffler and Dr Grit Schüler from the University of Potsdam, for carrying out the project and preparing the draft. Our thanks also go to the following experts, who provided advice and support in their role as members of the project working group:

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Summary of the final report

The KAN study resulted in a guide aimed particularly at designers and persons working in product standardization and intended to help them use body measurements correctly in their work.

The first step involved developing a plan for the guide, which included the following points:

- a basic procedure for the use and selection of anthropometric data to be used in the design of humans' technical environment;
- information on how to use and select anthropometric data;
- selected body measurements with warnings;
- design examples;
- a glossary; and
- FAQs.

Every effort was made to translate the plan into a guide that used easy-to-understand workflow charts and easy-to-read, well-structured texts. The importance of using anthropometric data correctly in design activities and when drawing up product standards was also underlined.

The guide then explains

- where one can obtain anthropometric data,
- what information one can derive from anthropometric data,
- how anthropometric data is obtained,
- what percentiles are,
- what one has to bear in mind when using combinations of body measurements,
- what one has to bear in mind when using data from different countries,
- what influence the data's age has,
- what one has to bear in mind when using data for men and women and
- what other factors, e.g. clothing, influence how the data is used in practice.

There then follows a section on warning categories for different types of anthropometric data, using examples to show how the various influencing factors are reflected in the warnings. Example design tasks, one of them solved with the help of the guide, complete the guide. The terms most commonly used are listed in the annex, with simple explanations and cross-references to where they appear in standards. There is also an FAQs section on the use of anthropometric data.

Thus far, some designers and members of standards bodies have shied away from taking body measurements into account because of the complexity involved. The guide is intended to motivate them to use anthropometric data. This would mean that the data already available could play a more significant role in design and standardization work, with the guide preventing incorrect use.

Recommendations

1. DIN's Joint Working Committee on Anthropometry and Biomechanics (NA 023-00-03 GA) is requested to test the draft version in various standards committees (e.g. the committees for mechanical engineering and personal protective equipment) and other target groups represented in NA 023-00-03 GA (among the whole range of the working committee's members).
2. KAN is requested to publish the report as a whole on its website.
3. KAN is requested to commission the development of an online tool aimed particularly at members of standards committees and designers and make it available via its website (particularly via ErgoNoRA and the ergonomics tuition modules, which would mean it could also be used for training purposes).
4. DIN's Joint Working Committee NA 023-00-03 GA is requested to develop the draft guide into a document suitable for publication by DIN, e.g. a DIN SPEC (Technical Report). Once completed, it would make sense to publish the DIN SPEC (Technical Report) along with the relevant anthropometry standards, in the form of a DIN Handbook for instance.
5. Once the DIN SPEC (Technical Report) has been published, DIN is requested to include a reference to it in the foreword of any anthropometric standards.

Full text (in German)