

KAN position paper

Requirements that in the opinion of the OSH stakeholders should be met by the European Commission's study of adult anthropometrics

Part 1: Selection of body dimensions to be measured and need for a guidance document

Last updated: July 2025

1	Core positions.....	2
2	Background	2
3	KAN's position	3
3.1	General requirements to be met by the study	3
3.2	Specific requirements concerning the study	4
	About KAN.....	6

1 Core positions

- KAN welcomes the European Commission's study for surveying up-to-date anthropometric data. The data concerned is particularly relevant to occupational safety and health. Products and workplaces can be safe and competitive only if the anthropometric data against which they are designed correspond to the body measurements of the current population.
- Experience gained in the role played by anthropometric data in standardization and the design of work equipment reveals key requirements to be met by the study. Part 1 of this KAN position concerns the selection of body dimensions to be measured, primarily of the hand (relevant for the design of test probes based upon these dimensions), and also an essential guidance document for application of the data, and access to the raw data.

2 Background

The characteristics of the human body, particularly associated values for width, depth, girth and weight, have changed dramatically in recent years. These changes give rise to an urgent need for action by all parties responsible for safe products and workplaces. Risks to safety and health can be prevented only if the body measurements used (including in standards) keep pace with this development.

For the purpose of illustration, examples of applications are described below in which anthropometric data plays an important part in the safe design of work equipment/workplaces:

- **Access/passage openings:** A range of workplaces feature openings whose dimensions are geared to human body dimensions. EN 547-2, for instance, governs openings for whole body access at workplaces on machinery. The provisions of this standard are no longer consistent with current body dimensions. For example, access openings for fingers are tested with use of the probe for verification described in EN 61032, which was standardized on the basis of outdated and incomplete anthropometric data dating back to the 1960s.
- **Personal protective equipment (PPE):** The fit of PPE is generally important for the protection it provides. Failure to consider increases in the relevant body dimensions results in loss of the PPE's protective action and fitness for use. Detailed measurements conducted on women as well as men are also required for the purposes of differentiation.

- **Reaching of important controls:** The reaching of control elements (e.g. emergency stop actuators, or pedals in vehicles) is often linked to standard sitting or standing positions. However, these positions cannot be assumed by persons with significantly higher width, depth or circumference dimensions. An example is a driver's seat that is moved back to accommodate greater abdominal girth, as a result of which the driver's leg length, which has not increased, may no longer be sufficient to enable the driver to reach the pedals reliably.
- **Safety of work equipment particularly in a sitting position:** Here too, failure to give consideration to increases in body dimensions gives rise to problems. Standards, such as that governing industry work chairs, must not only consider the increase in weight with respect to the seats' load-bearing capacity, but also adjust the seat surface area and take account of changes in seat tipping characteristics when obese persons rise from the seat.
- **Dimensioning of escape and rescue routes:** The maximum dimension of the body girth, which must be taken into account during dimensioning of escape routes, has risen substantially in recent years. It can therefore be assumed that the limits currently being applied are not adequate.
- **Work in the healthcare services/handling of patients:** Many findings (for example concerning lifting aids or the load-bearing capacity of rescue stretchers) are based upon outdated anthropometric data, as a result of which work equipment cannot be used safely or at all.

3 KAN's position

3.1 General requirements to be met by the study

Experience of the role played by anthropometric data in standardization and in the design of work equipment gives rise to the following essential requirements to be met by the study.

- **Hand dimensions** are particularly relevant to occupational safety and health, since the hand is among the parts of the body most frequently injured during operation of work equipment.

→ In the view of the OSH stakeholders, all hand dimensions must be assigned “high priority”.¹

- The OSH stakeholders consider a **normative guidance document** absolutely essential. This document should provide information on how the anthropometric data is to be used in a range of application scenarios, and what particular aspects are to be considered with respect to what dimensions (example: safety allowance for fingernails in the finger length for safety-related tests, for which no provision is made at present in the EN 61032 standard for probe for verification B). Experience has shown that experts with anthropometric expertise are not involved in the standards committees addressing product standardization. To prevent the data from being used incorrectly, the standards committees must be provided with a guidance document containing information on proper use of this data.
- All stakeholders must have access to the **raw data**, and not only the percentile data. This data enables experts to create anthropometric types as a basis for standardization, as relationships between different body measurements and weights can be modelled (e.g. the “tall and slim” type).

3.2 Specific requirements concerning the study

Present situation	Requirements to be met by the study	Requirements to be met by the guidance document
Finger and probe for verification B each consist of three finger segments and three sub-lengths.	Measurements of all three finger segments are to be taken during the study, in order for up-to-date data to be obtained. At present, only INDEX FINGERTIP TO PROXIMAL JOINT is included.	-

¹ This requirement refers to the “Anthropometry Notebook – DRAFT LIST OF BODY MEASUREMENTS” developed in the initial phase by the project contractor conducting the study (Instituto de Biomecánica de Valencia (IBV)). This list assigns a priority to each body dimension for subsequent measurement.

Present situation	Requirements to be met by the study	Requirements to be met by the guidance document
The probe for verification B fails to take account of the fingernail length.	Fingernail lengths are also to be surveyed, including those of conductive artificial nails where applicable. If fingernail lengths cannot be measured, adequate safety margins must be provided.	Note on consideration of fingernail lengths (safety margin)
Deformation of soft tissue at the base of the finger enables the finger to penetrate deeper into an opening than is indicated by the anthropometric dimension of the finger length.	As this probably does not lend itself to measurement, a safety margin is to be added.	Indication of a safety margin, as fingers may penetrate deeper into an opening when they are pushed through it with greater force.
In anthropometrics, the distal segment of the finger differs in width from the proximal segment. This difference is not yet taken into account by the probe for verification B (EN 61032).	Measurement of the proximal and distal segment widths (provision is already made for this).	Indication that the different width dimensions must be taken into account for the purpose of safety tests employing a test probe.
Measurement of the index finger circumference fails to reproduce the flattened oval geometry.	The finger geometry is to be determined by measurement of the height of the joints as well as their circumference and width. Should extrapolation be possible, a statement to this effect in the guidance document is sufficient.	Indication that the cross-section of the finger is not circular and that a test probe with an oval cross-section must therefore be designed.
The probe for verification B fails to reproduce the biomechanically correct chain of angles.	-	Indication of what positions are biomechanically possible.

About KAN

In the Commission for Occupational Health and Safety and Standardization (KAN), the German representatives of employers, employees, the federal and state governments and the German Social Accident Insurance Institutions pool their interests and discuss them with DIN (German Institute for Standardization). KAN analyses standards and other outcomes of the work of the standards bodies, and where applicable other organizations developing standards, that have a direct or indirect impact upon safety and health at work.

KAN's activities therefore include the monitoring of standardization activity where it impacts upon occupational safety and health, and also the associated legislative activity in Europe, and drawing attention to needs for action. It is in KAN's interests that regulations and directives set out suitable and coherent statutory provisions and lead to corresponding standardization mandates.

KAN is registered in the EU Transparency Register with the number **90520343621-73**.

Contact: Dr. Beate Schlutter
Commission for Occupational Health and Safety and
Standardization (KAN)
– Secretariat –
Alte Heerstraße 111, 53757 Sankt Augustin, Germany
Email: info@kan.de
Internet: www.kan.de

Published: July 2025

With support from the



Federal Ministry
of Labour and Social Affairs

on the basis of a resolution
passed by the German Bundestag