

Ergonomics in practice

– Sitting work –

Activities that are performed in a seated position are not standard in a productive environment – typical cases are sorting and monitoring activities on the production line. Unlike when working while standing, sitting relieves the stress on the legs. However, if the seated workplace is not ergonomically designed, employees are at risk of forced postures and additional physical stress.

Ergonomic design of seated workplaces

Make sure there is enough space. Chair and work desk must be dimensioned in such a way that awkward sitting postures are avoided and there is enough clearance so that changes in body posture are possible. A corresponding legroom in width, height and depth must be available.

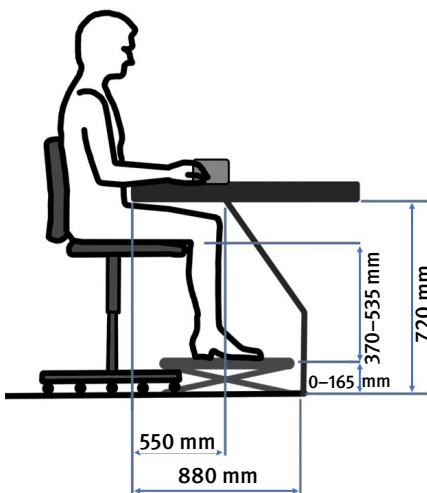


Figure 1: Space requirements for sitting at a non-height-adjustable work surface

Interfering objects or constructions around the knee and leg space which, for example, prevent turning with or on the chair while seated, must be avoided.

The recommended width of the foot and leg space is 800 mm, a minimum of 600 mm needs to be kept.

The correct working height for default work is slightly below elbow height when seated. This enables an upright posture with relaxed back and shoulders.

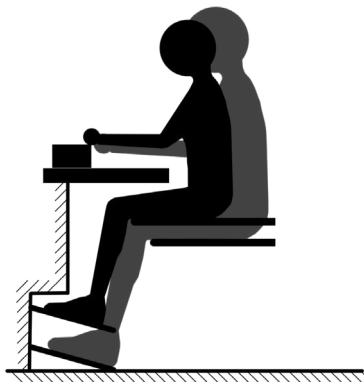


Figure 2: Variation of seat height for an appropriate working height

Ideally, the working height is realized by a simply height-adjustable work surface, which can also allow the user to switch to work in a standing position. In most workplaces, however, especially at interlinked machines and associated belts, a variable working height is not realistic. The height adaption at such workplaces is only possible by adjusting the height of the chair. For this, the height of the workplace must be ad-

justed to tall employees. Smaller employees adopt an elevated sitting position and use a footrest.

Use a footrest. At every height setting of the chair, there must be a possibility for resting the feet on. The support cross of the chair is not suitable for this as the angle between upper and lower leg is less than 90 degrees, which hinders the blood stream in the legs.

Use an ergonomic work chair which is stable, easy to adjust in height, padded and has an adjustable backrest. The front edge of the seat should be rounded. A rotating seat is generally useful to provide the necessary flexibility when working.

If the work surface is not adjustable in height and for technological reasons thicker than 50 mm (e. g. roller conveyor), a forward inclined seat is recommended for working in an inclined seating position.

If legroom is available but insufficient, workers can be offered chairs with a saddle seat. Sitting on these chairs the legs are automatically moved sideways out of the footwell in front of the person. It should however be tested in advance.

The preferred working area should include all arising activities at the workplace, if possible. Frequent leaning forward to reach points far from the seating position should absolutely be avoided.

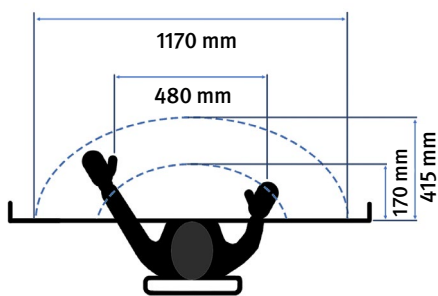


Figure 3: The preferred and maximum working range are shown

Frequent and extensive twisting of the upper body to perform activities should also be avoided. Therefore, place the feed in and removal points in such a way that they are not located behind the seating position. If this cannot be avoided, the workplace may not be suitable for seated work, even if a chair with a rotating function is used.

This also applies to workplaces where the recommended legroom requirements cannot be met. In such cases working in a standing position, if necessary supported by a standing aid, is the more ergonomic alternative to sitting in a forced posture.

The next sitting posture is the best.

Static sitting, i. e. constantly sitting in the same posture leads to critical permanent stress on the spine which promotes muscle tension and fatigue. Therefore, even in ergonomically designed workplaces, a constant change between different sitting postures is indispensable – the so-called “dynamic sitting”.

The regular performance of compensatory exercises is another behavioural preventive measure that counteracts one-sided permanent stress and is therefore recommended.

Variety is the key

If work can be accomplished both standing and sitting, this possibility should absolutely be used. Alternating standing-sitting work prevents muscular and skeletal diseases. The aim should be a percentage of 60 % sitting, 30 % standing and 10 % walking.



- **BGN Branchenwissen**
<https://bgn-branchenwissen.de/ergonomie>
- **DGUV Information 215-410** Bildschirm- und Büroarbeitsplätze
- **DIN EN ISO 14738** Anthropometric requirements for the design of workstations for industries and services