



How ergonomically do companies work in manual production?

Analysis of the current situation and potential for optimization
to increase efficiency and improve employee satisfaction

A STUDY BY ITEM

item

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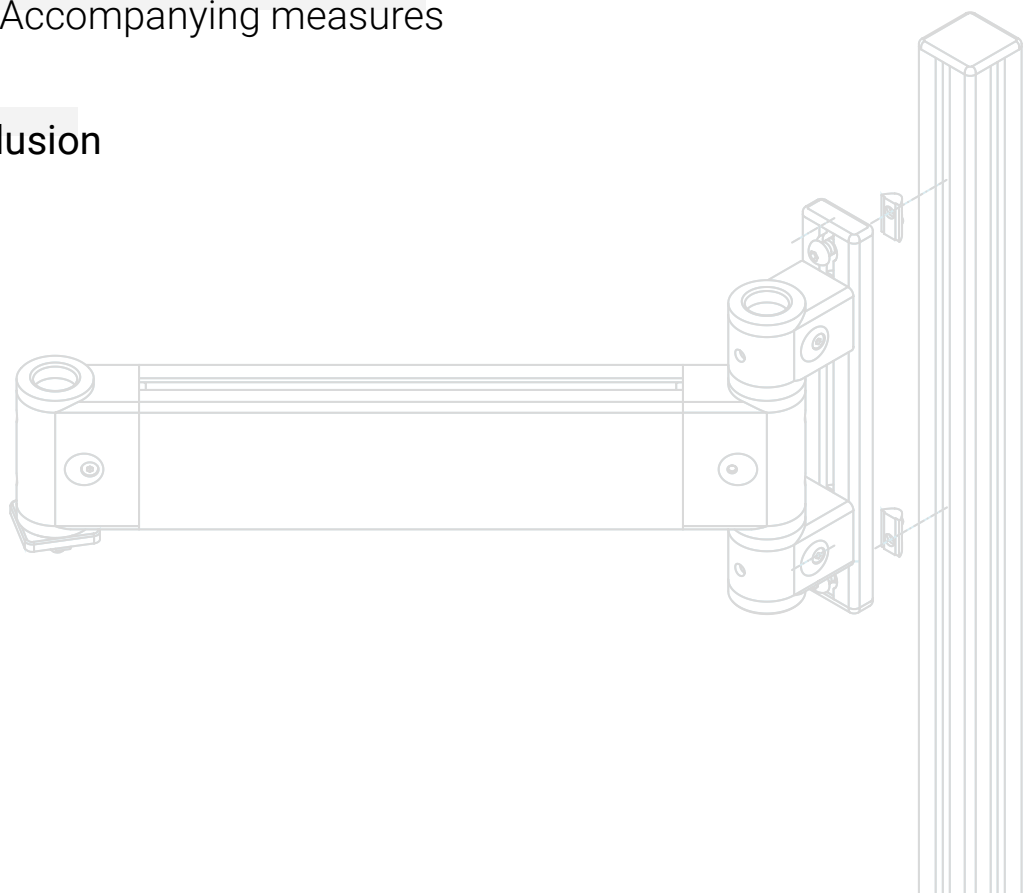
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Foreword

The subject of ergonomics seems to have reached a wide audience when it comes to designing manual workstations in industry. The many articles on the subject in the trade media reinforce this impression. The extension range of ergonomically optimized workstation systems can also be seen as an indication that many industrial organizations are now investing in ergonomics. At the same time, in contrast to the ergonomic design of office workplaces, there is a lack of concrete figures on the extent to which companies in manual production today really do pay attention to an ergonomic work environment.

The term “ergonomics” – or better Ergodynamics® – ultimately refers to a holistic approach with a variety of individual measures to optimize manual processes. This is reflected, for example, in the certification of the “Industrial Workplace” concept by medical committees of AGR e.V. (agr-ev.de/konzept-industriearbeitsplatz).

In addition to the general issue of the use of ratio-ergonomic solutions, it is essential to know which measures this concept actually involves. This study not only demonstrates to those responsible for workplace design the status quo of ergonomics in manual production processes. It also allows a direct comparison of the measures implemented within the company against the overall situation of the solutions available today. This reveals previously unused potential for optimization - stretching from a lower sickness rate among employees to an overall increase in productivity. For businesses in which decision-makers have adopted a more reluctant approach to ergonomics, the study offers an important argumentation aid when making investments from which the entire company benefits – in terms of personnel as well as cost. Such measures also ensure a positive public image and are also suitable for certification as a “health-promoting company”.

I hope you enjoy reading this brochure.

Detlef Detjen

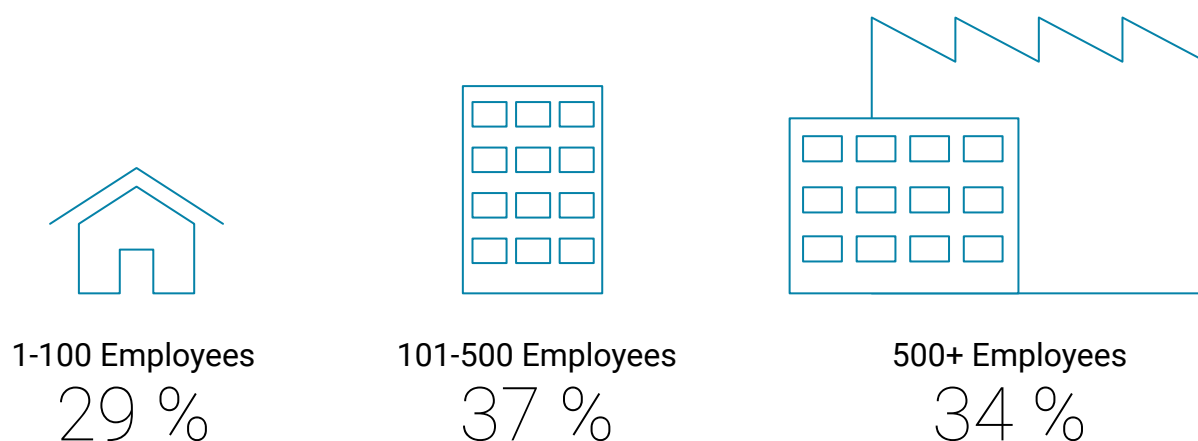
Managing Director Aktion Gesunder Rücken (AGR) e.V.

Methodical approach

The present results are based on initial individual interviews with six experts from industry and research on the topic of “ergonomic workplace systems”. These statements were supplemented by further individual interviews with decision-makers in small and medium-sized companies who have already ergonomically optimized their manual production processes. Subsequently, the theses and questions developed from this were transferred to an online survey with 153 participants in spring 2020. All of the participants are employed in businesses with manually performed production steps. They are also decision-makers or co-decision-makers in the selection and configuration of workstation systems – regardless of whether they are ergonomically optimized or not.

All of the figures presented in the following are based exclusively on this survey conducted with the market research institute Innofact AG. In some points, the data has been supplemented with the results of a customer survey conducted by item Industrietechnik GmbH. For this survey, 64 companies whose production facilities already have a high degree of ergonomically optimized industrial workstations were specifically interviewed. For the sake of simplicity, the term “employees” is used in the following to refer to the entire workforce of the companies and thus also to the many female employees working in manual production.

Distribution of the 153 study participants by company size

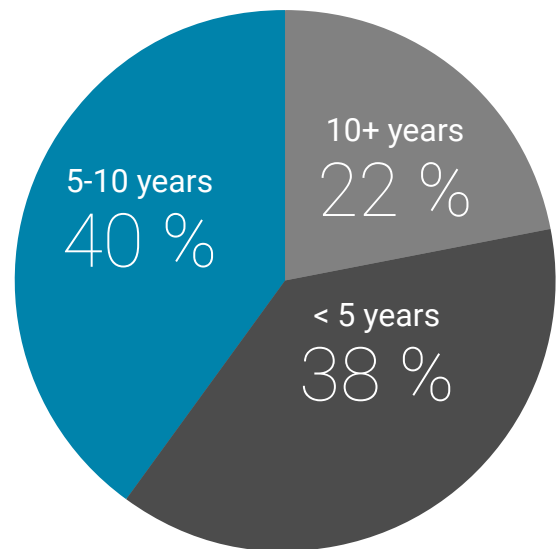


Status quo: Ergonomics in manual production

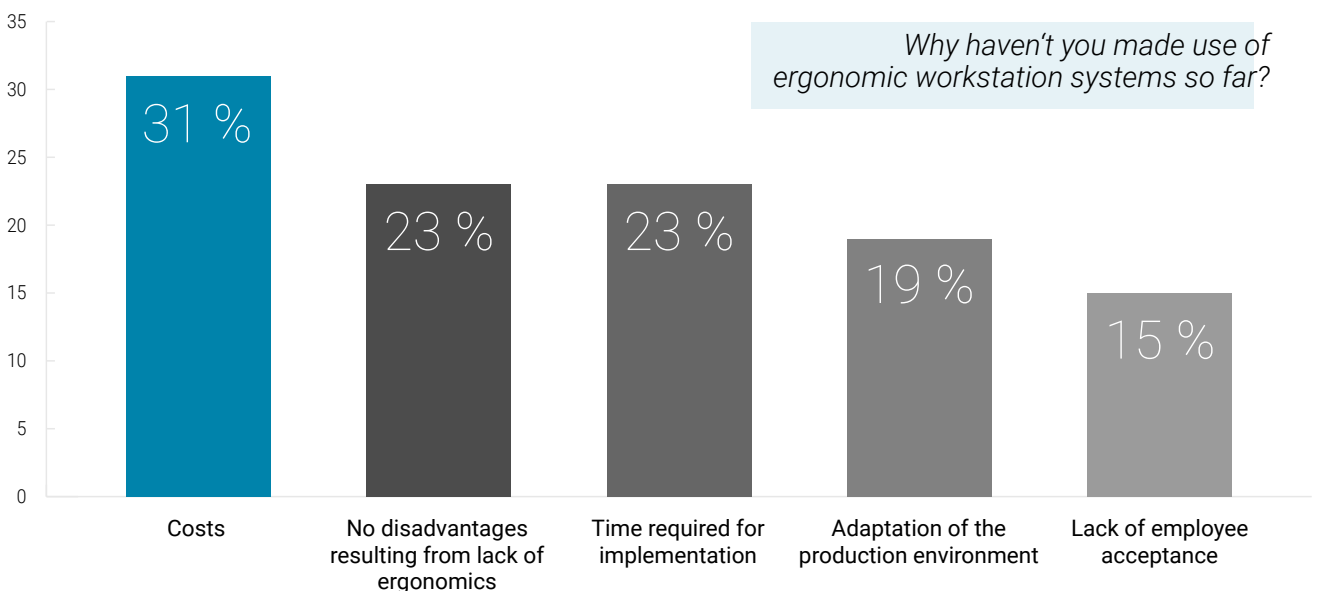
At first sight, there appears to be a clear trend towards ergonomics: 83% of the study participants stated that ergonomic workplace systems are already being used in the manual production of their own company. The topic of ergonomics has been established in 62% of the companies for more than five years. Moreover, 55% of the participants stated that investments with an ergonomic focus have a particularly high priority in their companies.

This contrasts with the clear minority of 17% of companies that have so far refrained from using proportionate ergonomic solutions in manual production. In general, these study participants perceive the costs of an ergonomically optimized work environment as the biggest obstacle. This applies to the initial investment as well as to the time and effort required for the implementation of ergonomic workstation systems in the established production process.

Since when do you rely on ergonomic workstation systems?



Why haven't you made use of ergonomic workstation systems so far?



What is striking is that 22% of the participants from companies without ergonomic workplace systems say that there are no disadvantages caused by a lack of ergonomics in manual production. At the same time, 73% of these companies do invest in ergonomics – yet only in ergonomic office workplaces. For Prof. Dr.-Ing. Volker Ahrens, a reluctant attitude towards the topic of ergonomics in manual production is often a problem at decision maker level:

“Many companies simply lack the necessary expertise when it comes to ergonomics. Unlike an apprentice, who is highly qualified to become a master craftsman and is closely involved in the processes, those responsible for the field of ergonomics today have often undergone a course of study covering a wide range of subjects. Topics such as ergonomics and time management are no longer focal points for these managers,” says the head of the Bachelor of Science Industrial Engineering and Management degree program at the Nordakademie.

Initial drivers

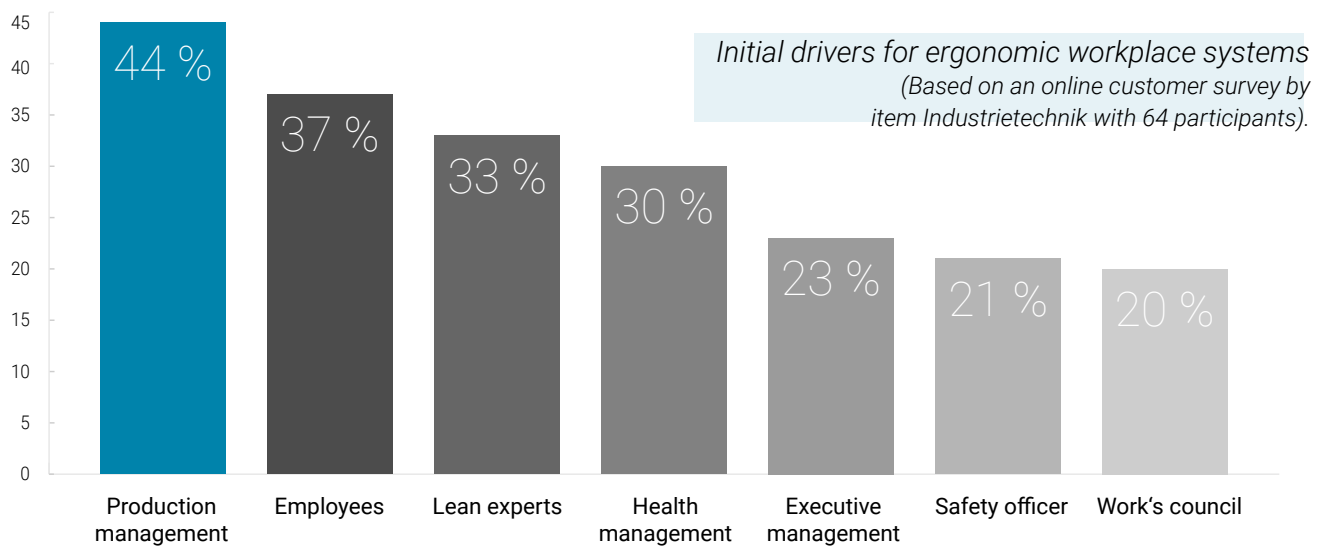
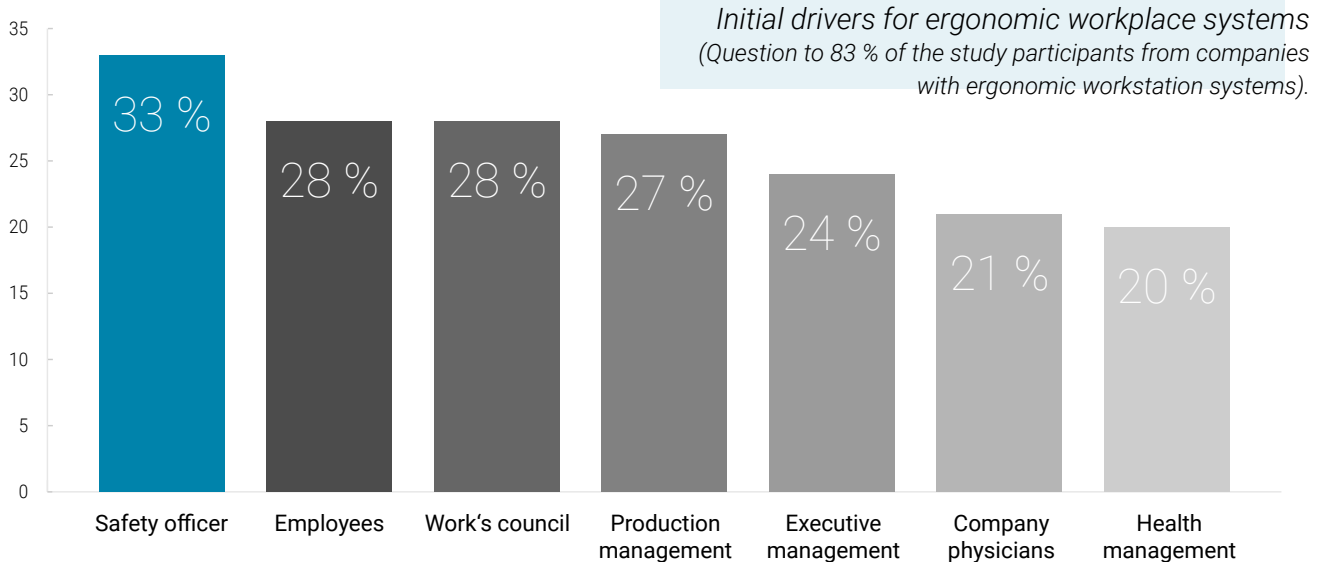
All experts were in agreement that initial drivers are needed to transport the topic of ergonomics into the respective company. Due to their area of responsibility, safety officers and occupational safety specialists are typical drivers for topics that focus on reducing health risks for employees. However, it is often the employees themselves who, together with the works council, introduce the topic to the company before the decision-makers do.

In short:

- 83% of the companies in the survey already rely on ratio-ergonomic solutions.
- Investments involving solutions with an ergonomic background have a particularly high priority in 55% of companies.
- The remaining 17% are hesitant, primarily due to the expected costs for purchasing and implementation.
- Ergonomics is still partly seen as a primary topic for office workplaces.

This result comes as no surprise to Prof. Dr.-Ing. Karsten Kluth from the University of Siegen:

“Most companies do not actively address the issue of ergonomics in production until it is brought to the attention of management by the works council following a related injury or long-term absence of an employee.”



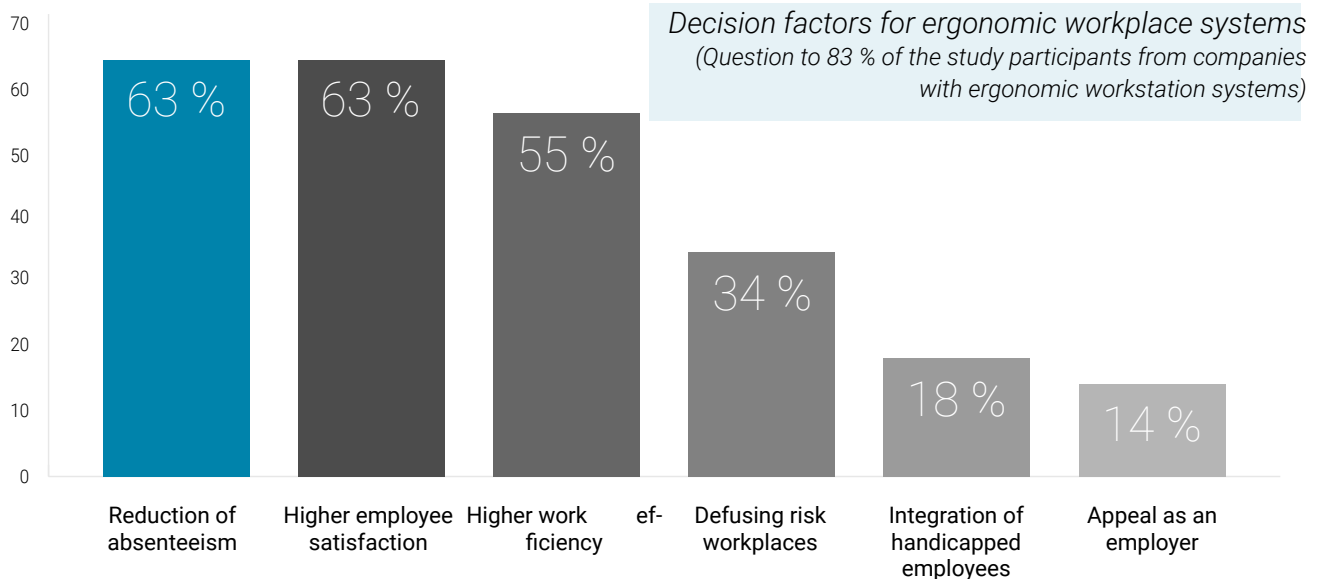
A special feature of the customer survey conducted in parallel by item Industrietechnik is the frequent reference to lean experts. Only 6% of the study participants see this group as initial drivers. For the majority of the experts surveyed, the best possible design of workplaces in manual production has a clear connection with the topic of lean production: "Manual production optimized in line with typical lean standards is one of the few remaining levers for further optimizing work efficiency," says Prof. Dr.-Ing. The opportunities for avoiding ergonomic waste have not yet been fully exploited in many companies.

In short:

- In many companies, the initial impulse to invest in ergonomic workstation systems stems from employees and employee representatives.
- Management often only becomes active through an impulse from the company.
- Lean production in manual production is closely associated with the avoidance of ergonomic waste.

Decision factors and decision makers

Companies that opt for ergonomic workstation systems have clear expectations of this investment.



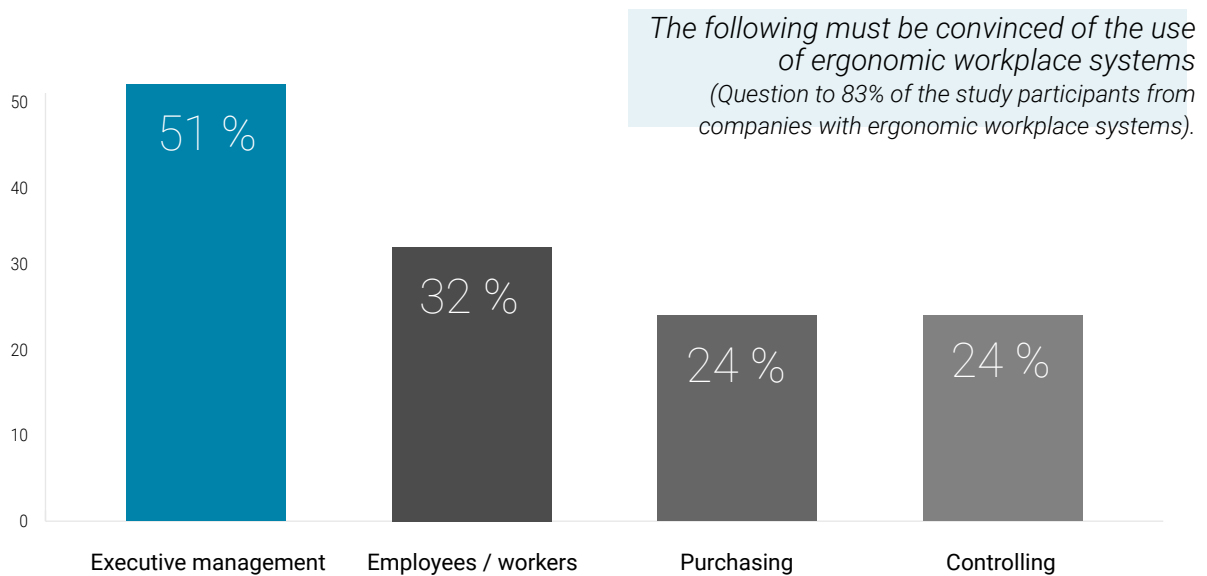
Retention of employees' health and thus the reduction of absenteeism is the most important argument for ergonomic workplace systems according to the participants of the study. This result was also predicted by the experts, as was the high weighting of employee satisfaction. The resultant reduction in staff fluctuation reduces the initial costs of new hires. In addition, new employees would only achieve optimal work efficiency with increasing experience. According to the experts, minimizing employee fluctuation in manual assembly therefore represents an important factor that makes consistently high work efficiency possible in the first place.

It should also be noted that there is also a „battle for talent“ when it comes to manual assembly activities. It is crucial to attract employees who perform this work with conviction and full commitment through optimal workplace design. In view of demographic change, it is also important to be able to deploy precisely these employees in production in the long term.

However, experts continue to find it difficult for manual production to express the benefits of deploying ergonomic workstation systems in concrete figures.

All decision-makers who were asked in the run-up to the study confirmed that ergonomics has improved the above-mentioned points in their companies. However, the individual circumstances of each manual production operation are too

dissimilar for universally valid values. As a result, (co-)decision makers in many companies have to be convinced of the advantages of ratio-ergonomic solutions.



According to the experts, it is important to see the introduction of ergonomic workstation systems as a strategic decision for the entire company. Management must be convinced of their return on investment, and production management / manufacturing management must involve employees in the practical implementation at an early stage. Only this way can it be ensured that ergonomics becomes part of the corporate culture, which is supported by all levels of the hierarchy. Experts, study participants and the participants in the customer survey all agree that the importance of employees in manual production as drivers and decision-making factors in the field of ergonomics should not be underestimated.

In short:

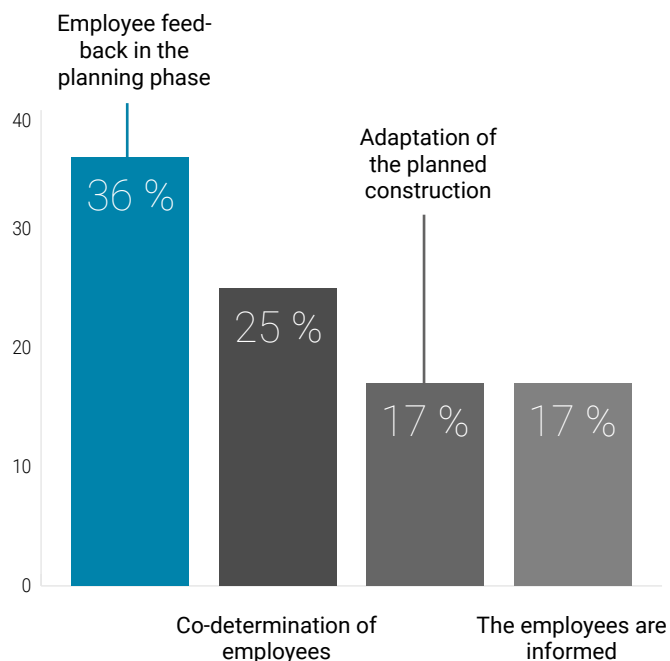
- Retaining the health of employees and thus reducing absenteeism is the single most important decision factor for ergonomic workplace systems.
- Combined with a minimized fluctuation through higher employee satisfaction, it leads to greater work efficiency.
- Ergonomics is always a fundamental strategic decision that must be supported by all levels of the organization.

The special role of the employees

A great number of businesses closely involve employees in the design and implementation of ergonomic workstations. In the case of a quarter of the study participants, employees in manual production are actively involved in the selection of providers and solutions. This value is also supported by the parallel customer survey: Here 26% of the participants stated that employees are co-decision-makers in the actual selection of ergonomic solutions.

According to [Susanne Weber](#) of ergoimpuls, it is precisely this appreciation that is an important factor in the implementation of ergonomics at industrial workplaces: "The employees themselves are decisive. They have to be able to work with the workplaces and can best describe the improvements. High acceptance can only be achieved if the employees understand and endorse a new measure as 'their idea'. Employees work with greater motivation if they are actively involved in the planning process," says the ergonomics consultant. She says that simply purchasing ergonomic workstation systems without involving employees cannot work.

Experts say that adapting the work environment is often not perceived by employees as an improvement to their working environment. Rather, they see the restructuring of the work area as an attempt to demand even more performance from employees through faster manual production cycles. The objective win-win situation for the company and employees must be clearly communicated in an early planning phase. "Ergonomics in industry works best through multipliers. Some selected employees are sensitized and trained and



convey the topic to your teams. Sustainability is important here – in other words, annual training and refresher courses with the multipliers," says [Susanne Weber](#).

In short:

- 83% of companies involve employees to varying degrees in the planning and implementation of ergonomic workstations.
- Early involvement at an early stage helps to prevent employees from rejecting the changed work environment.
- Employees who are committed to ergonomics are important multipliers within the company.

Training and control of correct application

The clear majority of participants see safety officers and occupational safety specialists as the first point of contact for instruction in the correct use of ergonomic solutions. Their typical area of responsibility has the greatest degree of overlap in companies without their own ergonomics officers.

In addition or alternatively, company physicians are also involved in numerous organizations for instruction in the optimal use of ratio-ergonomic solutions. Approximately one third of the participants consider instruction in the optimal use of workplace systems to be the duty of the providers.

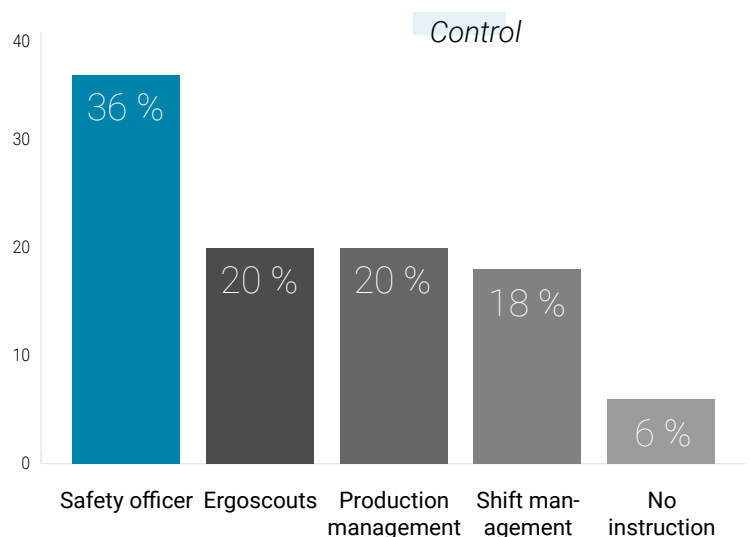
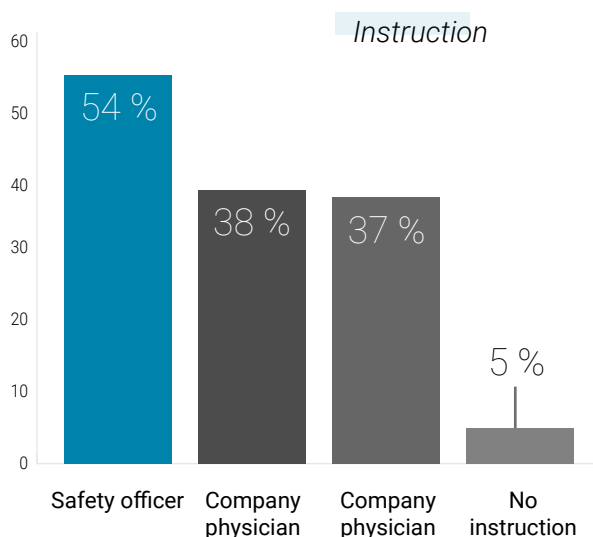
An awareness of the merits of ergonomic workplace systems and the willingness of industrial companies to invest does not mean that the skills needed to train employees are already available. For many companies, instruction in the correct settings on delivery is therefore an important criterion when deciding on a supplier.

– Prof. Dr. M. Schmauder, TU Dresden

In addition to the initial briefing, 90% of the companies also provide regular ergonomic training, 45% of which are supported by external service providers.

Subsequent to a training course, the question automatically arises as to how the long-term use of ratio-ergonomic solutions can be ensured. Regular checks are a suitable measure, but are viewed very differently by the participants and the experts.

In-house persons responsible for the introduction of ergonomic workstation systems

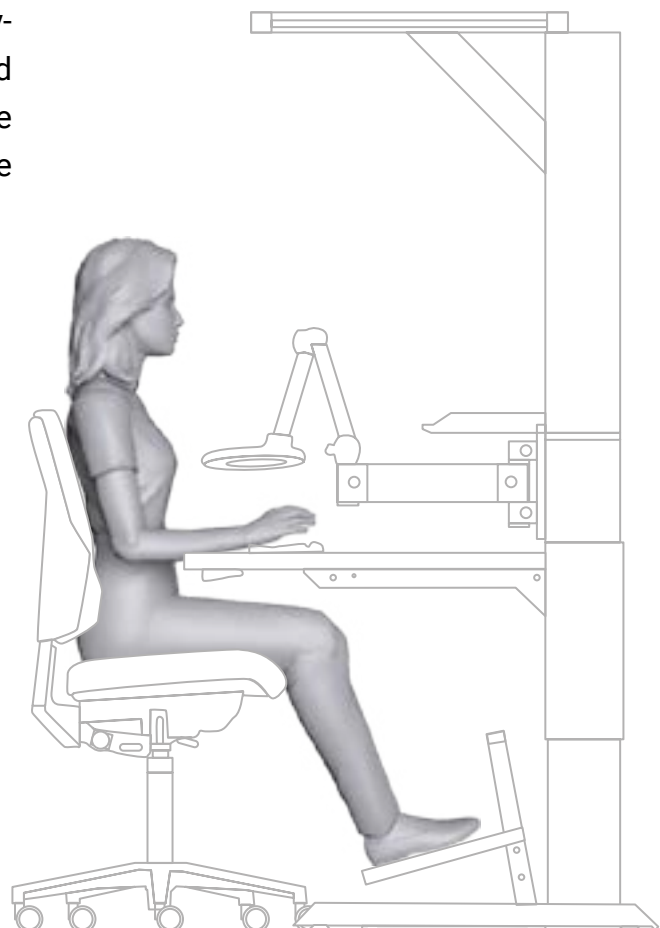


Whereas the utilization on the participant side is monitored by different responsible persons in more than 94% of the companies, most experts tend to advise against this step. Besides a potential negative response to the controls, Prof. Dr. Martin Schmauder also sees difficulties in an objective argumentation of control measures: "In comparison to occupational safety, there are no clearly defined guidelines when it comes to ergonomics. Without this support, many managers are hesitant to give workers guidelines for the design of their work processes".

As a compromise to the differentiated viewpoints, the stronger involvement of ergoscouts seems to lend itself as a good compromise. These employees, who have received special training on ergonomic matters, take on tasks in the company, both when instructing new colleagues and when carrying out monitoring tasks. The advantage of deploying ergoscouts is that they are able to respond immediately to questions from employees in day-to-day work in manual production and communicate with their direct colleagues at eye level. Instructions are therefore perceived more as a means of help than as a check.

In short:

- 32% of the participants see the instruction in the correct use of ergonomic workplace systems as a task for the manufacturer / supplier of the corresponding solution.
- Ergonomics training courses are held at regular intervals in 90 % of the companies.
- Ergoscouts (employees trained in ergonomics) are able to determine the optimal use of ergonomic workstation systems without this being perceived as control.

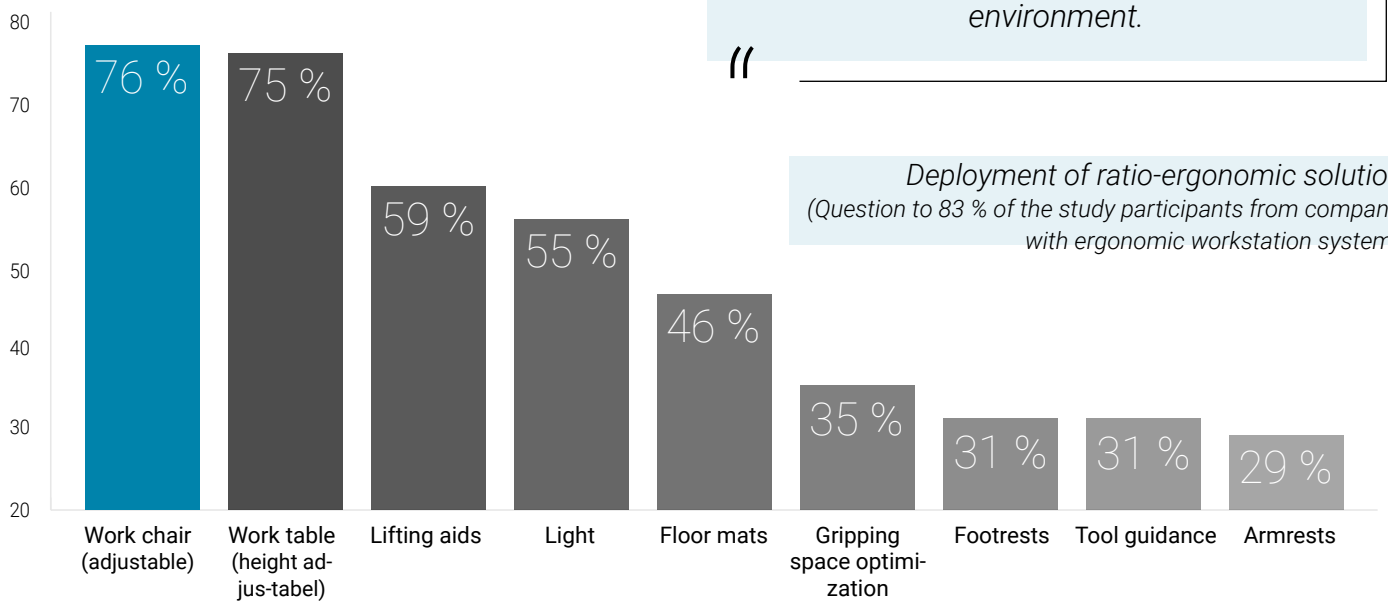


Use of ratio-ergonomic solutions in practice

As the experts tend to expect, the use of a height-adjustable work table combined with an adjustable work chair is common in the vast majority of organizations. As with the ergonomic optimization of office workplaces, this set-up is therefore one of the basic ratio-ergonomic adjustments of an industrial workplace.

For Prof. Dr.-Ing. Volker Ahrens, this positive approach also entails a risk:

The market for ergonomic workstation systems is also growing due to the increased awareness of ergonomics at industrial workstations. There are many ready-made ergonomic solutions available. In many companies, this leads to the false assumption that the topic can be simply dismissed without considering the individual requirements of their own production environment.



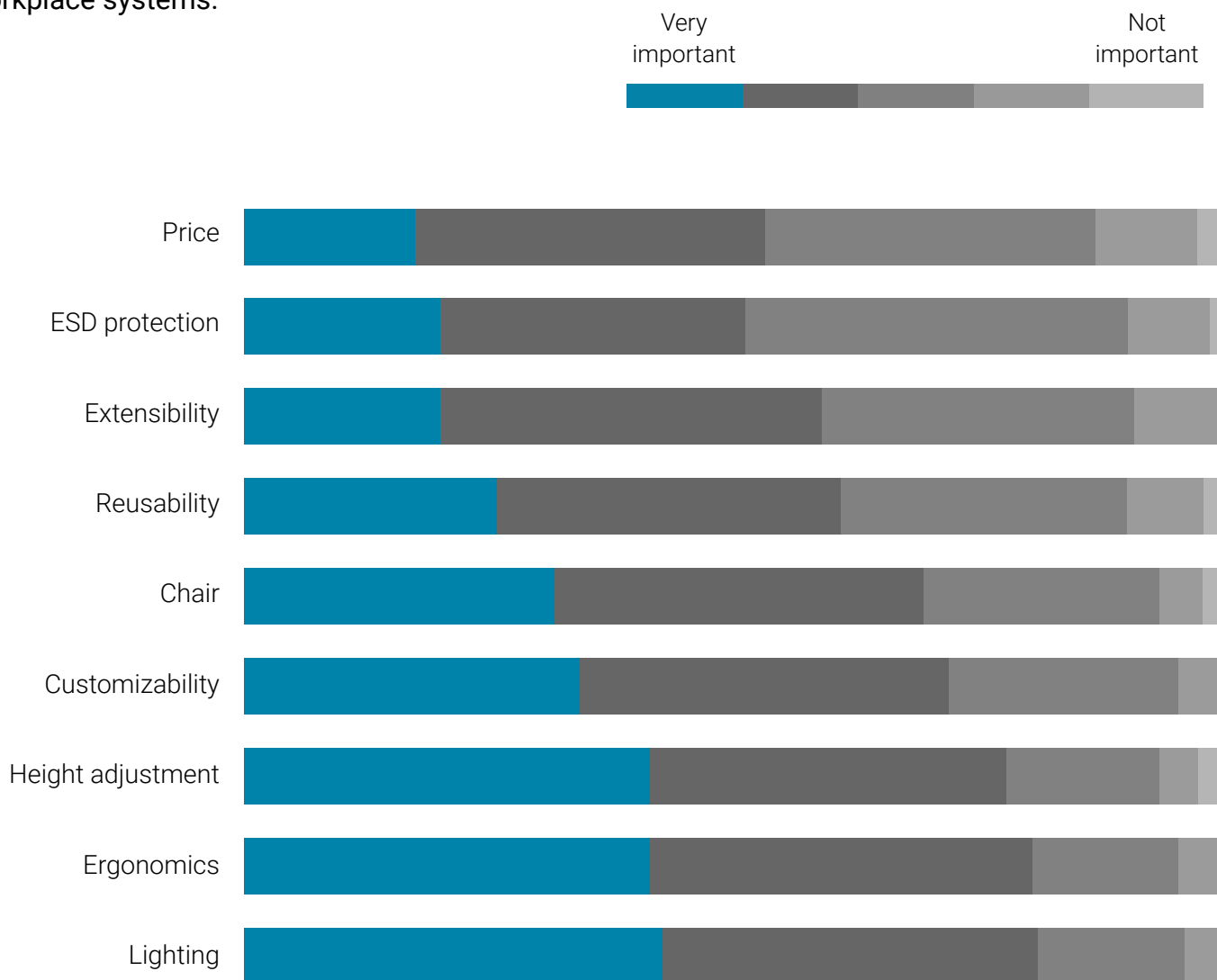
Deployment of ratio-ergonomic solutions (Question to 83 % of the study participants from companies with ergonomic workstation systems).

Experts are of the opinion that the planning and implementation of ratio-ergonomic solutions in manual production is significantly more complex than in an office environment. As a result, many companies simply overlook accessories that are necessary for ergonomically optimal workplace equipment. If only the chair is height-adjustable, a footrest for smaller employees should be provided. Altogether, it becomes apparent that there is still

plenty of room for optimization in many companies when it comes to deploying ratio-ergonomic solutions. This especially applies to the provision of materials that can be individually adapted to the gripping space of the respective employee. In the absence of this, a strong physical strain on the employee can occur despite ergonomically optimized work chairs and work tables.

Apart from the use of ratio-ergonomic solutions, all participants were also asked about their basic requirements for a workstation system. This question therefore also includes the study participants whose companies currently do not use ergonomic workplace systems.

What do you consider to be important requirements for a workstation system?

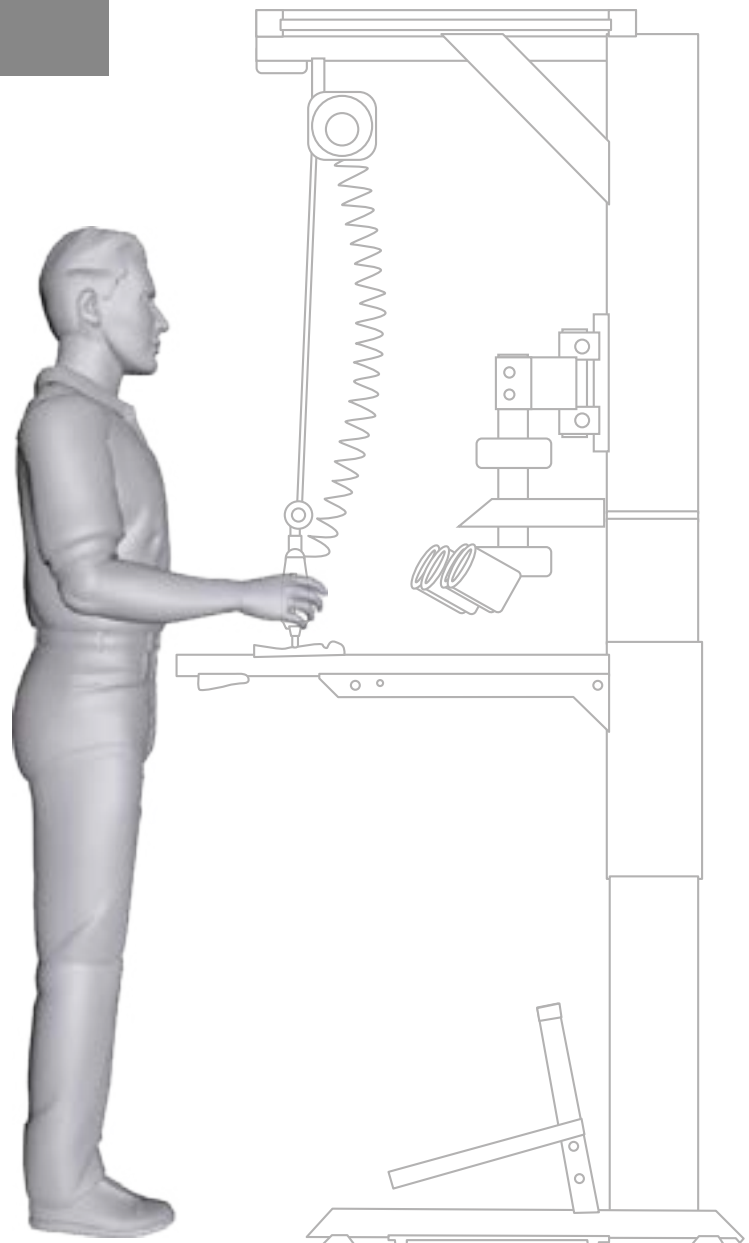


What is striking is that in this context, optimal lighting is seen as the most important factor, even before ergonomics. This can be seen as further confirmation of the expert statements that the implementation of an optimal working environment in manual production is much more complex than in the office environment. Employees tend to tire more quickly if the work area is not properly

illuminated as a result of flickering light or excessive shade. Even details such as an unfavourable colour temperature tend to impact employee performance over an entire shift. According to the experts, many companies still lack a holistic view of the topic of ergonomics in manual production. This is the only way to unleash the full potential of ratio-ergonomic solutions.

In short:

- The approach of reducing ergonomics in manual production to optimized work tables and work chairs does not go far enough.
- Ergonomics must be understood as a holistic system with many interlocking measures in order to exploit all the advantages it offers.
- In particular, the best possible lighting of the work area with the right light must be provided so that employees in manual assembly can work optimally.

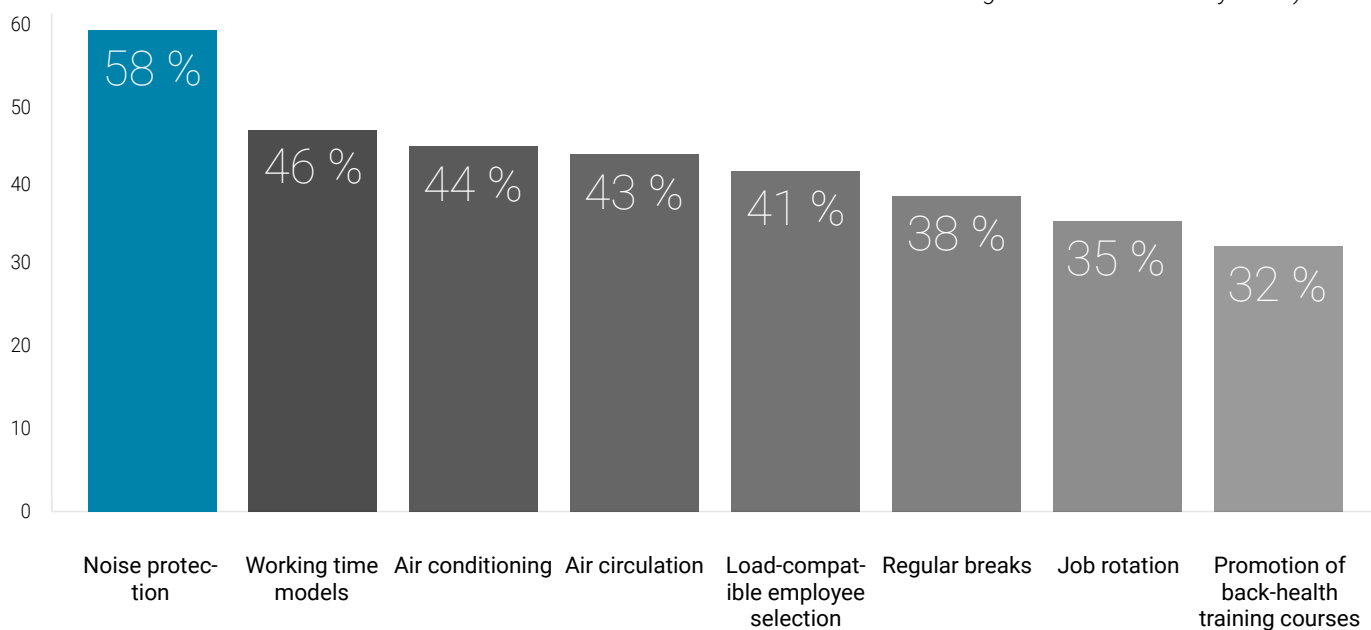


Accompanying measures

In addition to the options discussed above, businesses also have additional organizational measures at their disposal to optimize the working environment for their employees. The reduction of noise sources and special noise protection for employees are seen as effective measures in this area by both the participants of the study as well as by experts.

It reduces stress and has a positive effect on the employees' ability to concentrate. Furthermore, the effort required for this is less than that of changing working time models or selecting employees for certain work steps according to their workload.

*Complementing ergonomic workplace systems with ...
(Question to 83 % of the study participants from companies with ergonomic workstation systems).*



The more complex measures also include air conditioning in the production area. Furthermore, as with the optimization of the air circulation, it largely depends on the condition of the production hall and the requirements of the production process. Wherever the appropriate conditions are present,

the optimization of humidity and temperature is a useful measure. When combined, all improvements made to the working environment provide the basis for employees to use their full potential for value-adding activities.

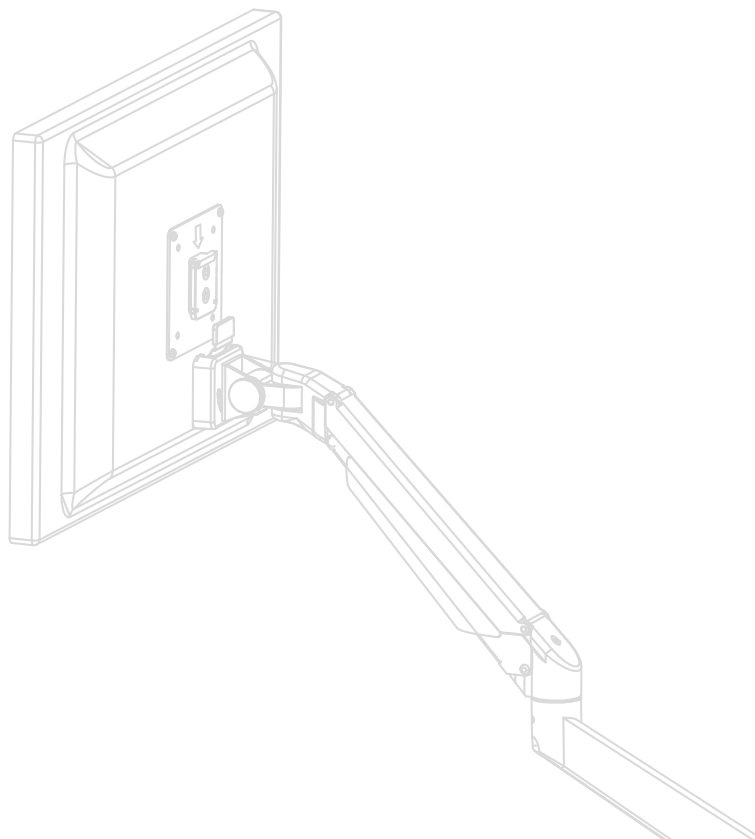
Targeted daily active breaks with selected relaxation exercises at fixed times, also in shift operation, are a sensible measure for prevention. It is important that the entire team, including foremen and also the managers, are involved. After all, back problems are not the exclusive problem of employees in assembly.

– Susanne Weber, ergoimpuls

A further accompanying factor of ergonomic work design are measures for the prevention of musculoskeletal disorders. Compared to the points already mentioned, regular breaks for compensation exercises, the promotion of back training courses or membership in fitness studios currently still play a subordinate role. The same applies to job rotation within production, although it is not possible to change the workstation in every production run.

In short:

- Every structural or organizational accompanying measure supports the creation of an optimal working environment for the employees.
- The potential of some preventive ergonomic safety measures in particular is still not fully being exploited.

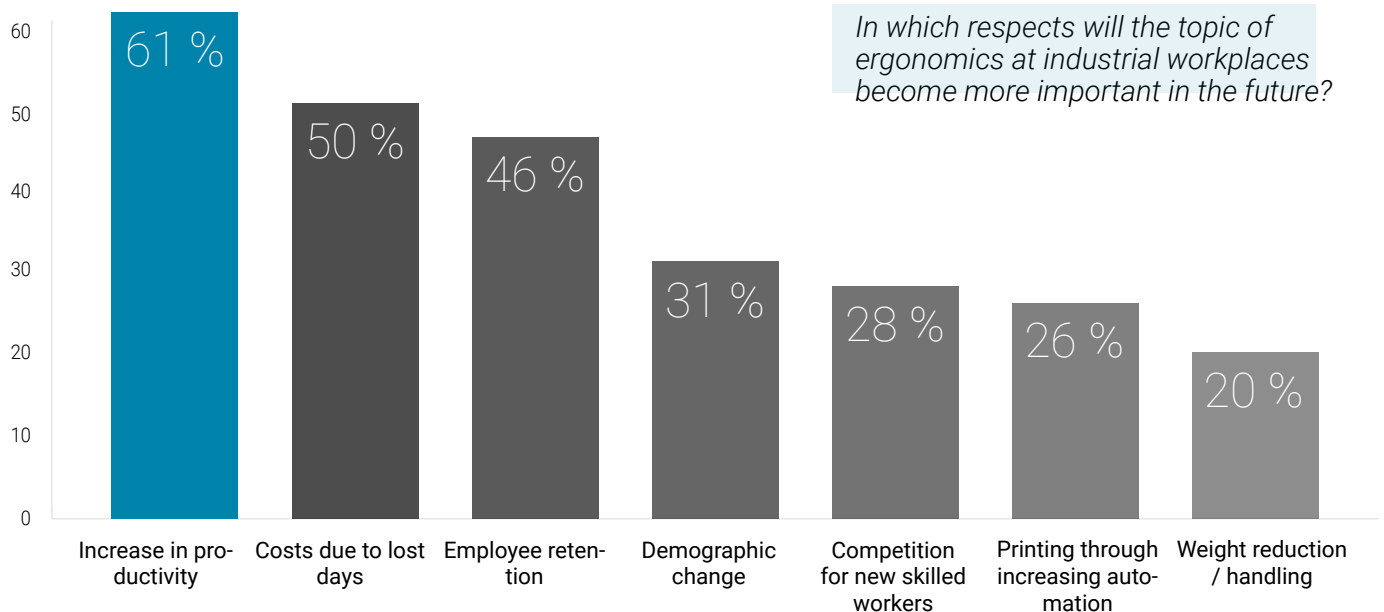


Conclusion

The results of the study show that ergonomics has now been widely adopted in manual production. However, the strong focus on ergonomically optimized work tables and work chairs also shows that many companies are still far from exploiting the full potential of ratio-ergonomic solutions.

Only once all measures in the respective manual production are combined in a targeted manner can a working environment be created in which employees can fully exploit their performance potential. To achieve this, the potential individual measures must be combined into an ergonomic overall system by those responsible.

73 %* of the study participants and 85% of the participants in the parallel customer survey believe that the consequences and risks of a lack of ergonomics at industrial workplaces are still underestimated.



The resulting best possible avoidance of ergonomic wastage in manual production automatically translates into an increase in productivity, which is becoming increasingly important especially in difficult economic times. Furthermore, the reduction of costs due to lost working days also has a positive effect on the competitiveness of the company due to the long-term health of the employees. Being a factor for employee retention, ergonomic workplace design helps to reduce employee fluctuation and thus the time and effort required to train new employees.

The findings of the study provide an opportunity for companies that have neglected or only partially established the topic of ergonomics at industrial workplaces:

Existing backlogs to competitors in the market can be compensated for with a holistic ergonomics strategy from the ground up. What is important is that such a strategy is supported by all those involved in the company. This is best achieved if employees in manual production are actively involved in the planning of adjustments and the selection of ratio-ergonomic solutions.

60% of respondents feel that businesses that ignore the topic of ergonomics will sacrifice profitability in the long term.



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