



European Construction Sector Observatory

Policy fact sheet

Austria

Construction Fit

Thematic objectives 2, 4 & 5

September 2020



In a nutshell

Implementing body	The General Accident Insurance Institution (AUVA)
Key features & objectives	The Construction Fit (BAUfit) programme was developed by an interdisciplinary team with the aim of reducing the number of accidents, workload and wear and tear of the musculoskeletal system and improving cooperation.
Implementation date	1999-2000
Targeted beneficiaries	Construction employers and employees
Targeted sub-sectors	All sub-sectors
Budget (EUR)	Not published ¹
Good practice	★★★★☆
Transferability	★★★★★

Construction workers in Austria are particularly exposed to work-related accidents, with approximately 600,000 days of sick leave taken per year and up to 60% of those that retire claiming a disability pension. The main causes are musculoskeletal and movement disorders, cardiovascular problems, dermatological lesions, as well as health issues related to stress and noise in the workplace².

According to the EU Labour Force Survey (Eurostat), although the percentage of workers in Austria reporting some form of musculoskeletal disorder (MSD) did not significantly increase between 2007 (66.3%) and 2013 (66.6%), it is higher than the EU average (60.1%)³ over the same period⁴.

Tackling the high prevalence of MSDs is a therefore a priority in Austrian occupational safety and health (OSH) strategies⁵.

Austria has launched several programmes and initiatives on MSD prevention, some of which are strategically focused on the most affected sectors. Some of these programmes are implemented by AUVA, which is the largest statutory accident insurance provider in Austria. AUVA provides social insurance against occupational risks for more than 3.7 million employees and 1.4 million students⁶.

In 1999, AUVA launched the Construction Fit (BAUfit) Programme. Developed by an interdisciplinary team, it aimed to improve cooperation and reduce: i) the number of accidents that occur in the construction sector; ii) the workload stress that employees in the sector have to deal with; and iii) wear and tear on the musculoskeletal system.

Specifically designed for the construction industry, Construction Fit provided employers and employees with occupational, psychological and ergonomic advice and support. It also helped them to measure and evaluate workloads. The programme’s primary focus was on training and education, with emphasis placed on physical aspects related to movement, lifting and posture (focusing especially on the back), and on psychological health issues and coaching⁷.

A structured set of test phases were implemented. They demonstrated the ability of Construction Fit to successfully improve participants’ quality of sleep and self-awareness at work, and reduce their stress levels.

With the support of a holistic series of OSH training modules, Construction Fit delivered tangible and visible results that lowered the number of accidents at work and the number of days of sick leave taken in the participating companies.

1.

General description

Construction Fit (BAUfit) was launched in 1999 by an interdisciplinary team in response to the high number of work-related accidents in the construction industry. Work on a construction site is not only physically demanding. Construction workers are also exposed to harmful environmental effects including noise and dust, as well as the stress of having to meet tight deadlines.

Construction work can often lead to early physical wear and tear, as well as permanent stress. Taking medication regularly to be able to work is a reality of life for many construction workers on construction sites. Many qualified workers therefore change sector, resulting in a loss of knowledge and experience for construction companies and the industry⁸.

To improve working conditions in the sector, experts from different disciplines collaborated to develop and trial the Construction Fit Programme. A holistic approach was adopted to help change work patterns, and prevent accidents and long-term health damage.

Coordinated by AUVA, Construction Fit aimed to reduce both the number of accidents at work and the number of people taking sick leave by providing occupational, psychological and ergonomic advice and support.

As part of the Construction Fit Programme, construction workers were able to learn how to assess and tackle OSH issues and risks, such as how to correctly lift and carry objects by practicing physical exercises developed by specialised trainers⁹.

Construction Fit developed training programmes to tackle difficult working conditions on a construction site, while ensuring a minimal level of workflow disruptions. Training activities included:

- **Coaching, communication skills training and consultation sessions for managers and site foremen.** The aim was to raise awareness about OSH issues and risks, improve the work environment and reduce the causes of stress in the workplace;
- **Sessions to practice correct movements and postures;**
- **Complementary exercises** for participants to do as they work or during a break to develop a better perception of their own body;
- **Eurythmy training sessions** to improve each participant's perception of body and space, as well as their ability to work as a member of a team. These sessions provide a non-verbal, kinetic experience of working together with a group of colleagues. They improve coordination and cooperation, and they help to reduce stress levels and prevent accidents¹⁰.

As part of Construction Fit, construction workers were primarily taught how to work in a physically appropriate manner using ergonomic processes. An example is shown in Figure 2. Participants learned from experienced AUVA trainers how to relax their muscles using simple movements.

Figure 1: Correct movement and posture

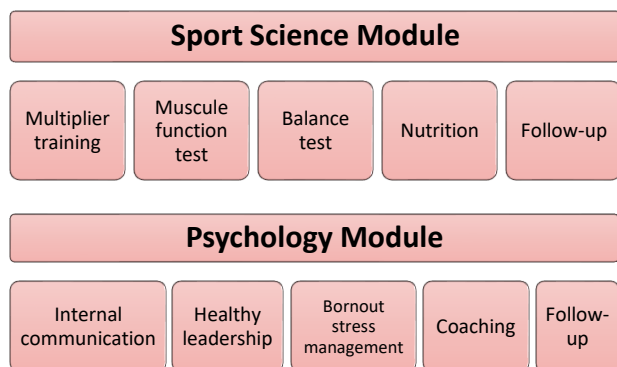


Source: Scheibenpflug, 2013¹¹

In 2013, Construction Fit expanded its range of training modules, as shown in Figure 1, by including

support for physical and psychological exercises to help reduce stress in the workplace.

Figure 2: Construction Fit Modules



Source: *Fital Gesundheit am arbeitsplatz, 2013*¹²

The basic module included 14 half days of training, 12 of which were dedicated to movement, ergonomic and balance exercises and two half days focused on psychological matters. The AUVA security check was an integral part of the basic module. After completing the basic module, a maximum of three advanced modules on sport and psychology (with a duration of four half days) were also provided¹³.

The duration and cost of each training module are presented in Table 1.

Table 1: Construction Fit modules, durations and costs

	Costs
Trial day (2 half days)	EUR 1,080
Basic module (14 half days)	EUR 7,560
Advanced module (4 half days)	EUR 2,160

Source: *BAUfit, AUVA, 2020*¹⁴

AUVA covered 80% of the costs for companies with up to 50 employees and 60% of the costs for those with more than 50 employees. All companies that joined the Construction Fit Programme were able to benefit from an initial trial session free of charge¹⁵.

2.

Achieved or expected results

Construction Fit implemented a phased approach to test its training programmes. Test phase 0 was conducted in one organisation to serve as a baseline. Test phases 1, 2 and 3 then repeated the training programme trials at an increasing scale:

- 2 companies in test phase 1;
- 14 companies in test phase 2;
- 32 companies in test phase 3.

In each phase of testing, Construction Fit training exercises were performed twice a week, for up to 12 weeks.

As part of the training programme trials, the Construction Fit project team sought to test the impact of reduced stress and improved sleep quality on the test participants.

Accidents often result from a lack of attention¹⁶. The Construction Fit project team hypothesised that high rates of accidents might be due to poor quality of sleep and/or a lack of sleep. Improved quality of sleep should therefore lead to a reduction in work-related accidents.

To test this hypothesis, the team used small, portable high precision heart rate meters, which also measured circadian heart rate variability and respiration, stress levels and the autonomic quality of sleep were assessed.

Construction Fit was able to prove that improved sleep and stress reducing exercises have the potential to reduce the frequency of accidents. Similar programmes could also be applied in different workplace environments, including office environments, factories and agricultural environments¹⁷.

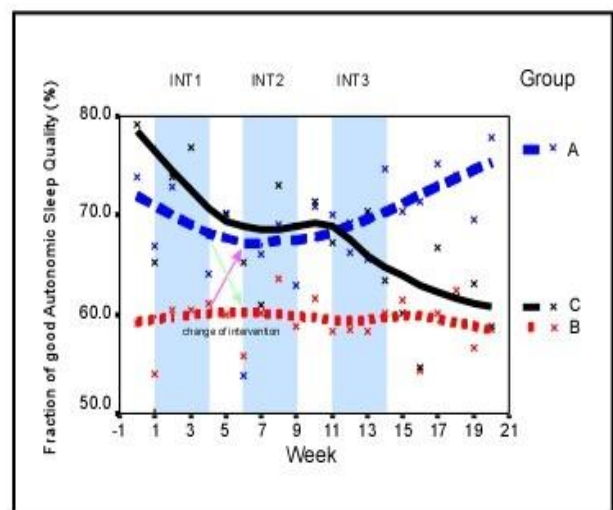
Figure 3 shows the sleep recovery performance of three distinct test groups over the six-month trial period:

- The group that did not receive eurythmy training (black line) experienced a steady decline in their quality of their sleep during the trial phase;
- The group that received 2 months of eurythmy training (blue) experienced an improved quality of sleep;
- The group that received some compensatory exercises, different from eurythmy training (red line), did not experience any noticeable difference in their quality of sleep.

The relationship between sleep quality and the amount of training received also reveals a response pattern:

- The more training interventions they took part in, the more the participants improved their quality of sleep, from the beginning to the end of the observation period;
- Participants that did not receive any training all failed to maintain a good quality of sleep;
- Participants that took part in more than 12 training interventions actually managed to improve their quality of sleep over a six-month timeframe¹⁸.

Figure 3: Efficient recovery during the night

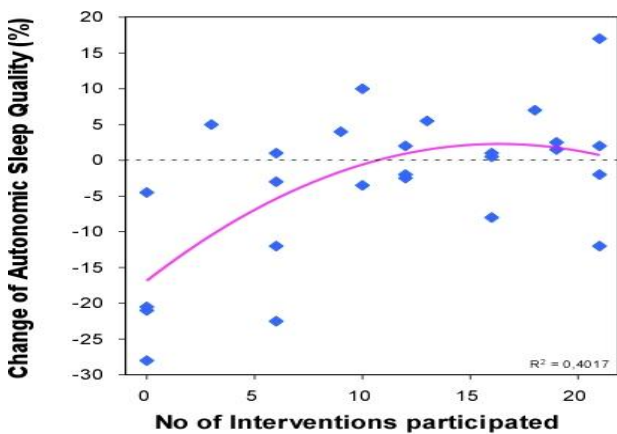


Source: BAU fit, Final report¹⁹

The group that participated in eurythmy training for two months experienced an improvement in their sleep quality, as shown in Figure 4. In contrast, the group that did not receive any training showed symptoms of ‘burn out’ and a worsening quality of sleep towards the end of the year.

The eurythmy effects on quality of sleep appeared to be more pronounced than the effects of a two-week vacation, which also resulted in a small improvement to quality of sleep, some weeks after²⁰. During the eurythmy intervention period, sleep architecture, as seen from the periodic 90 min change of autonomic tone, continuously improved. Although this effect faded away as eurythmy intervention stopped, it reappeared a few weeks later and occasionally stabilised, similar to the health effects associated with long-time cures.

Figure 4: Change of autonomic sleep quality



Source: BAU fit, Final report²¹

Table 2 shows the number of accidents and days of sick leave recorded at participating companies three months prior and three months after Construction Fit interventions in each of the programme’s test phases.

Following Construction Fit interventions, the number of accidents encountered by participating companies was reduced in all phases of the programme by at least 25%, and up to 100% (Phase 0). Importantly, the reduction in the number of accidents recorded before and after interventions was notably higher in test phase 3 than in test phases 1 and 2. Given that the number of companies involved increased significantly from one phase to another, this result is an indication of

the progress made by Construction Fit in its outreach and impact. Overall, the programme helped to reduce the total number of accidents by 32%.

The impact of Construction Fit on the number of days of sick leave taken is even more noticeable. Sick leave was reduced by 74% in Phase 1, albeit with only two companies involved in that phase.

As the number of participating companies grew in the following test phases however, Construction Fit succeeded in reducing the number of sick leave days taken by 38%. This is a considerable achievement given the larger number of companies participating in the later phases.

Table 2: Number of accidents and days of sick leave recorded in the participating companies

	Phase 0	Phase 1	Phase 2	Phase 3	Total
Companies participating	1	2	14	32	49
Construction workers participating	42	47	245	593	927
Number of accidents					
3 months prior to intervention	1	4	12	24	41
3 months after intervention	0	3	9	16	28
Difference	-1	-1	-3	-8	-13
Percentage difference	-100%	-25%	-25%	-33%	-32%
Sick leave taken (days)					
3 months prior to intervention	69	62	411	1513	2055
3 months after intervention	41	16	210	926	1193
Difference	-28	-46	-201	-587	-788
Percentage difference	-41%	-74%	-49%	-39%	-38%

Source: BAU fit, Final report²²

From an initial average of 5% of accidents per quarter in the first four years, the accident count reduced to 3% to 4% in the following year (with higher rates in summer and autumn). During the follow-up period, no more accidents were observed. In a subsequent study involving 85 construction companies, accidents were reduced

by 27%, even one year after interventions. 67 follow-up studies using interventions were also carried out with construction workers in Austria in four additional phases.

During Phases 0 to 2 of Construction Fit, all costs were supported by AUVA. In Phase 3, the companies were required to pay their share of 40% of the total costs²³.

Construction Fit achieved significant reductions in the number of accidents at work and the number of sick leave days taken. It helped construction workers to reduce their stress levels and improve their quality of sleep. Construction Fit demonstrated a successful approach and model to improving occupational health in the construction sector²⁴.

3.

Perspectives and lessons learned

Construction workers are the main beneficiaries of the Construction Fit Programme. Following their participation, construction workers noticed a significant improvement in their sleep quality, their ability to concentrate, and their ability to communicate and cooperate with other workers on site²⁵.

Sick leave is an important factor, especially in the construction industry. Many days of sick leave are due to the consequences of heavy physical work – especially if the principles of physical work are not observed, or if no measures are taken to counter stress²⁶.

According to the Programme Coordinator at AUVA, the accident insurance provider that implemented the Construction Fit Programme in Austria, participating construction companies succeeded in reducing the number of accidents at work and the number of days of sick leave taken. Their success was visible to all²⁷.

One of the main strengths and success factors of the Construction Fit Programme is that it was initially trialled and tested with construction companies. The expected results were then confirmed by concrete scientific measurements²⁸.

The trial implementation of the Construction Fit programme produced positive results. To achieve sustained success however, companies need to instil an OSH culture throughout their organisation. This applies to all personnel (at all levels) within an organisation – such a mainstreaming is the only way to effectively implement the knowledge acquired through Construction Fit²⁹.

Construction companies are often affected by challenging time constraints imposed by their clients. This is a potential barrier to the uptake and implementation of programmes such as Construction Fit³⁰.

According to a study carried out by the scientific project team, there were 21,183 accidents in the Austrian construction sector in 2007. The total cost of those accidents was EUR 337 million. The average cost was EUR 15,900. According to AUVA, there were 272,000 workers employed in the construction sector in 2007, of which 7.9% suffered a serious accident at work³¹.

A professor at the Human Research Institute for Health Technology and Prevention Research (participant in the scientific project team) says that a reduction of the number of accidents by 38% in the construction sector would reduce the cost of accidents in Austria by EUR 128 million in just the first year. In the longer-term, there is the potential to achieve even greater reductions³².

Respecting agreed deadlines is a typical challenge that construction companies face. Time constraints may therefore limit the appeal of a programme such as Construction Fit, because companies often lack the time to organise training exercises during working hours. They may also be concerned that time dedicated to training may damage their relationship with their clients, if it impacts their deadlines. The key therefore is to ensure that companies understand the value of Construction Fit to their employees and business, and to provide them with sufficient flexibility to carry out the training without impacting their deadlines (or with limited impact)³³.

Financial sustainability was one of the success factors of Construction Fit. The programme was able to adapt its business plan to meet the demand for training, to address the needs of beneficiaries, and to incorporate new training modules.

4.

Conclusion and recommendations

Construction Fit is an important instrument for the construction sector. It has reduced the number of accidents at work and the number of days of sick leave taken by employees in the companies that participated. It helped to improve the quality of sleep and reduce the stress levels of those that participated. The programme achieved visible results and received positive feedback from participating construction employers and employees.

The test phases proved that the correct work posture, coordination and stress avoidance, combined with specially designed training exercises, can deliver significant benefits to both employers and employees. Improved quality of sleep helps employees to be more self-aware at work. Improved ergonomics in the workplace also helps employees to work with heavy loads in a manner that is safer and healthier.

Together, these improvements provided a significant net benefit to both employers and employees. Healthier employees working more safely and with lower stress levels help reduce the number of accidents at work and the number of days taken as sick leave. Fewer accidents at work and fewer days taken as sick leave help employers save what would otherwise be significant costs.

The success of the Construction Fit Programme also contributed to the expansion of its training scope. In spite of its initial success however, there is room to improve its impact and to re-adapt the programme to meet current needs and conditions.

Looking forward, two recommendations are suggested to help improve the impact of Construction Fit:

- AUVA (the programme coordinator) should consider focusing more effort on promoting and

disseminating the programme to make companies more aware of it. More detailed information on Construction Fit should be made available to help construction companies better understand the programme concept and its potential impact and benefits;

- To support the expansion of the Construction Fit programme, greater investment will likely be needed. National government and/or alternative funding options should be explored.

Overall, Construction Fit is rated as a '4-star good practice measure' on a scale of 1 (low) to 5 (high).

This score is based on the tangible and visible benefits that Construction Fit has provided to construction employers and employees. Improved health and working conditions clearly translated into a lower rate of work-related accidents and sick leave. However, there is room for improvement. With a more effective expansion strategy, there is potential for Construction Fit to achieve a 5-star 'good practice' score.

Construction Fit is rated as a '5-star transferable measure' on a scale of 1 (low) to 5 (high).

This score is based on the fact that Construction Fit has proven to be an effective OSH solution for the construction sector. Developed by an interdisciplinary team, the programme was carefully trialled with scientific support and at increasing scale. This suggests that it has considerable potential as a transferable measure. In addition, the nature of the programme, the problems it addressed and the solutions it provided are relevant and applicable to all construction sector employers and employees, irrespective of their location.

Endnotes

- 1 A free “trial day” is available that includes a basic AUVA inspection (security check), after which a fee is payable based on the size of the company. 80% of the costs are covered by AUVA for companies up to 50 employees and 60% of the costs are covered for those with more than 50 employees. The trial session is free of charge for all companies that are adhering for the first time to the Construction Fit programme.
- 2 Interview with Prof. Moser Maximilian, Institute of Health Technology and Prevention Research, project partner, 23 June 2020.
- 3 Work-related musculoskeletal disorders: why are they still so prevalent? Evidence from a literature review. European Risk Observatory Report, 2019:
<https://osha.europa.eu/hu/publications/work-related-musculoskeletal-disorders-why-are-they-still-so-prevalent-evidence>
- 4 (Eurostat, 2015), Final statistical report on the quality assessment and statistical analysis of the 2013 Labour Force Survey ad hoc module:
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=EU_labour_force_survey_-_ad_hoc_modules#Overview_of_the_ad_hoc_modules
- 5 (EU-OSHA, 2020), Austria: AUVA support schemes – AUVASICHER and AUVAFIT and other initiatives tackling MSDs., Policy case study:
<https://osha.europa.eu/en/publications/austria-auva-support-schemes-auvasicher-and-auva-fit-and-other-initiatives-tackling-msds/view>
- 6 (AUVA, 2020), Everything from one source. Services provided by AUVA:
<https://www.auva.at/cdscontent/load?contentid=10008.734250&version=1585313765>
- 7 Baufit mit erweitertem Konzept:
<https://www.auva.at/cdscontent/?contentid=10007.671322&portal=auvaportal>
- 8 Erich Bata, (AUVA, 2015):
https://www.gesundearbeit.at/cms/V02/V02_7.12.3.a/1342554566939/service/aktuelles/2015/bau-fit-sicher-und-gesund-am-bau
- 9 Interview with Matthias Frühwirth, Institute of Health Technology and Prevention Research, project partner, 23 June 2020.
- 10 BAUfit. Work stress in the construction industry: listen to your heart beat:
<http://www.ecswe.eu/wren/documents/Work-Stress-in-the-construction-industry.pdf>
- 11 Erfahrungen aus BAUfit, 2013:
<http://www.scheibenpflug.at/baufitnachlese.htm>
- 12 Fital, Gesundheit am arbeitsplatz:
http://www.fital.at/?page_id=776
- 13 AUVA, BAUfit:
<https://www.auva.at/cdscontent/load?contentid=10008.544345&version=1461236997>
- 14 Ibid
- 15 Ibid
- 16 Moser, M., Grote, V., Fruehwirth, M., Goswai, N., Puswald, B., Bata, E., Kallus, W., Prevention of work-related accidents in construction workers using art therapy and exercises.
- 17 BAUfit. Work stress in the construction industry: listen to your heart beat:
<http://www.ecswe.eu/wren/documents/Work-Stress-in-the-construction-industry.pdf>
- 18 Moser, M., Grote, V., Fruehwirth, M., Goswai, N., Puswald, B., Bata, E., Kallus, W., Prevention of work-related accidents in construction workers using art therapy and exercises.
- 19 AUVA, BAUfit, Beratungs – und Trainingsprogramme für Baufirmen AUVA-Projekt 1999 - 2000 Endbericht:
<https://www.yumpu.com/de/document/view/12603694/bau-fit-report-38-auva>
- 20 Moser, M., Grote, V., Fruehwirth, M., Goswai, N., Puswald, B., Bata, E., Kallus, W., Prevention of work-related accidents in construction workers using art therapy and exercises.
- 21 AUVA, BAUfit, Beratungs – und Trainingsprogramme für Baufirmen AUVA-Projekt 1999 - 2000 Endbericht:
<https://www.yumpu.com/de/document/view/12603694/bau-fit-report-38-auva>
- 22 Ibid
- 23 Moser, M., Grote, V., Fruehwirth, M., Goswai, N., Puswald, B., Bata, E., Kallus, W., Prevention of work-related accidents in construction workers using art therapy and exercises
- 24 Interview with Matthias Frühwirth, Institute of Health Technology and Prevention Research, project partner, 23 June 2020.
- 25 Interview with Prof. Maximilian Moser, Institute of Health Technology and Prevention Research, project partner, 23 June 2020.
- 26 AUVA, BAUfit mit erweitertem Konzept:

- 27 <https://www.auva.at/cdscontent/?contentid=10007.671322&portal=auvportal>
BAUfit: Sicher und gesund am Bau:
- 28 https://www.gesundearbeit.at/cms/V02/V02_7.12.3.a/1342554566939/service/aktuelles/2015/baufit-sicher-und-gesund-am-bau
Interview with Prof. Maximilian Moser, Institute of Health Technology and Prevention Research, project partner, 23 June 2020
- 29 AUVA, BAUfit, Beratungs – und Trainingsprogramme für Baufirmen AUVA-Projekt 1999 - 2000 Endbericht:
<https://www.yumpu.com/de/document/view/12603694/bau-fit-report-38-auva>
- 30 Interview with Prof. Moser Maximilian, Institute of Health Technology and Prevention Research, project partner, 23 June 2020
- 31 Moser, M., Grote, V., Fruehwirth, M., Goswai, N., Puswald, B., Bata, E., Kallus, W., Prevention of work-related accidents in construction workers using art therapy and exercises
- 32 Interview with Prof. Maximilian Moser, Institute of Health Technology and Prevention Research, project partner, 23 June 2020
- 33 Interview with Matthias Frühwirth, Institute of Health Technology and Prevention Research, project partner, 23 June 2020