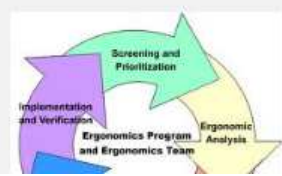
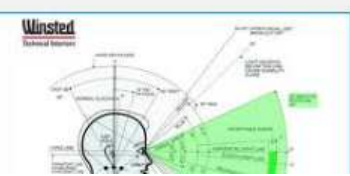
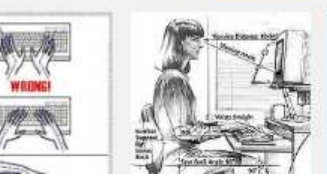
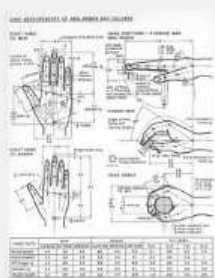
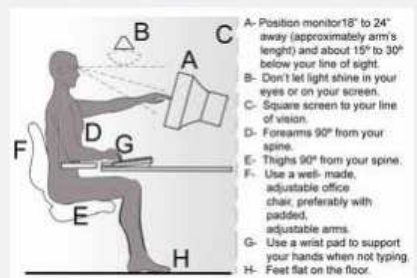
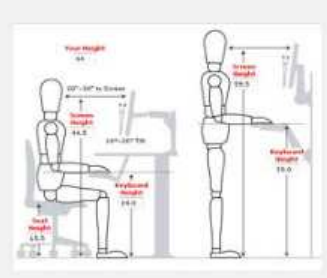
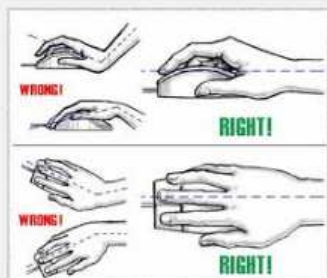
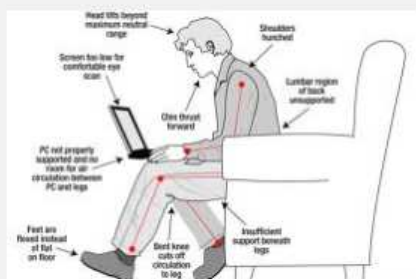
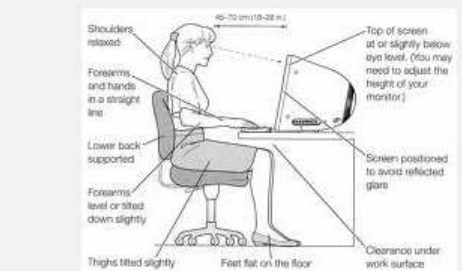
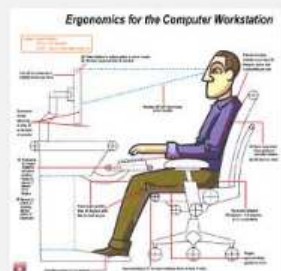
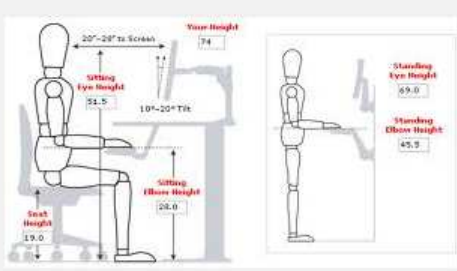
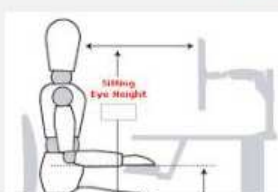
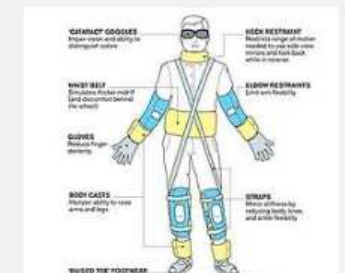
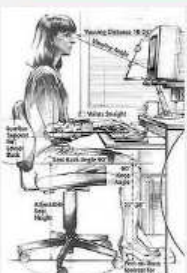
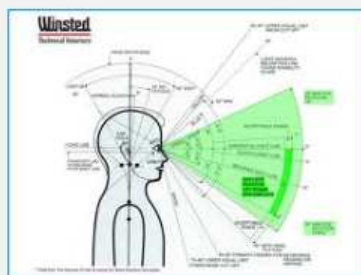
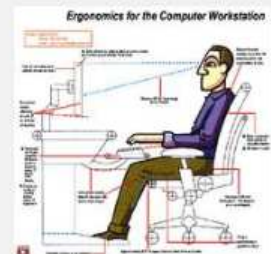
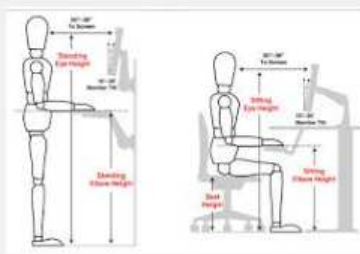


Future of Ergonomics In Europe

from knowledge to impact □ □ Ernst Koningsveld Eur.Erg.

TNO





Ergonomists idea of ergonomics differs from that of the rest of the world!

- › How comes?
- › Is that what we want?
- › Is it acceptable?
- › Can we change it?

History of ergonomics in Europe

Two backgrounds:

- › Protection of workers' health (occupational health sciences)
- › Human performance improvement (labour & organisational sciences)

- › Ergonomics dates back to the 1950's.

History of ergonomics in Europe

Two backgrounds:

- › Protection of workers' health
- › Human performance improvement

- › Those are not conflicting
- › In many cases those are two sides of the same coin.

- › **It is a challenge for ergonomists to prove this!**

To be successful as an ergonomist

One needs:

- › To be convinced that the basis of our discipline is good
- › To be convinced of the added value of our discipline
- › To be proud of what you are doing
- › And show this in your behaviour, what you say and how you act.

To be convinced of the basis of our discipline

This could be difficult, as:

- › Knowledge does not always provide answers to the questions
- › There is no real education to be an ergonomist (in many countries)
- › There are many different routes to become an ergonomist
- › Ergonomists are good in competition:

“If you meet two ergonomists, you get three opinions”

To be convinced of the added value of ergonomics

- › Many ergonomists find it difficult to prove the added value of what they do
- › Most ergonomists are not competent to make cost benefit analyses
- › And if ergonomists do, they feel uncertain.

To be proud on what you are doing

- Hal Hendrick (1996):
 - ‘Ergonomic’ solutions: examples of bad ergonomics
 - Ergonomics is considered as ‘common sense’ and not as a science and a profession
 - Ergonomists do not justify their activities
 - There is a lack of cost-benefit data on interventions
- How often do you read ergonomics successes in your newspaper?

**“BE PROUD EN SHOW IT”
IT”**

Successes of ergonomics

Question per e-mail to Dutch European registered ergonomists:

- ›“Give spontaneously one real societal success of ergonomics”.
- ›72 e-mails, 20% response

Successes of ergonomics

- › Most ergonomists give more than one example
- › Most cases are a specific project with a limited reach, like:
 - A specific control room
 - Baggage handling at a major airport (without physical strain)
 - A lifting sheet allowing to lift only once from place accident – surgery table
 - Signposting in a hospital
 - Car interiors
- › One excellent idea, however developed without input from an ergonomist: the wheel

Successes of ergonomics

- › More generic:
- › Now it is common sense that humans cannot lift any weight. The introduction of force limits.
- › Introduction of ergonomics standards
- › 4,500 industrial designers and thousands of other students have been educated in the basics of ergonomics
- › Excellent software is introduced (unfortunately next to poor software)

But: is that visible to the general public?

**The problem might be:
It is much harder to experience the comfort of
a sound ergonomics design
than to experience the discomfort of poor ergonomics.**

Disasters: that's news

- › And sometimes ergonomics plays a large role

Disasters that ergonomics could have prevented

- › Three Miles Island nuclear power plant (USA, 1979)
- › Chemical factory explosion in Bhopal (India, 1984)
- › Tsjernobil nuclear power plant (Ukraine, 1986)
- › BP's Deepwater Horizon offshore platform's oilspill (USA, 2010).

In all four cases there was a similar follow up of events:

- › An unusual failure
- › Based on the available information, control room staff comes to wrong conclusions
- › Their actions are wrong, resulting in even more unexpected process reactions
- › This loop reiterates till the disaster happens

Disasters that ergonomics could have prevented

- › Analyses by Najmedin Meshkati (USA) show that:
- › The design of the control rooms was poor
- › There was a mismatch between design specifications and the educational level of the staff that was actually employed → system ergonomics failure
- › Damage of BP's Deepwater disaster: 8,000,000,000 Euros!
- › Could we have developed an excellent ergonomics design for 0,01% that damage?
- › Or: could we have guaranteed the ergonomics quality for 0,1% of the total investment in the power plant?

NB Both amounts are 800,000 Euros

The benefits of ergonomics

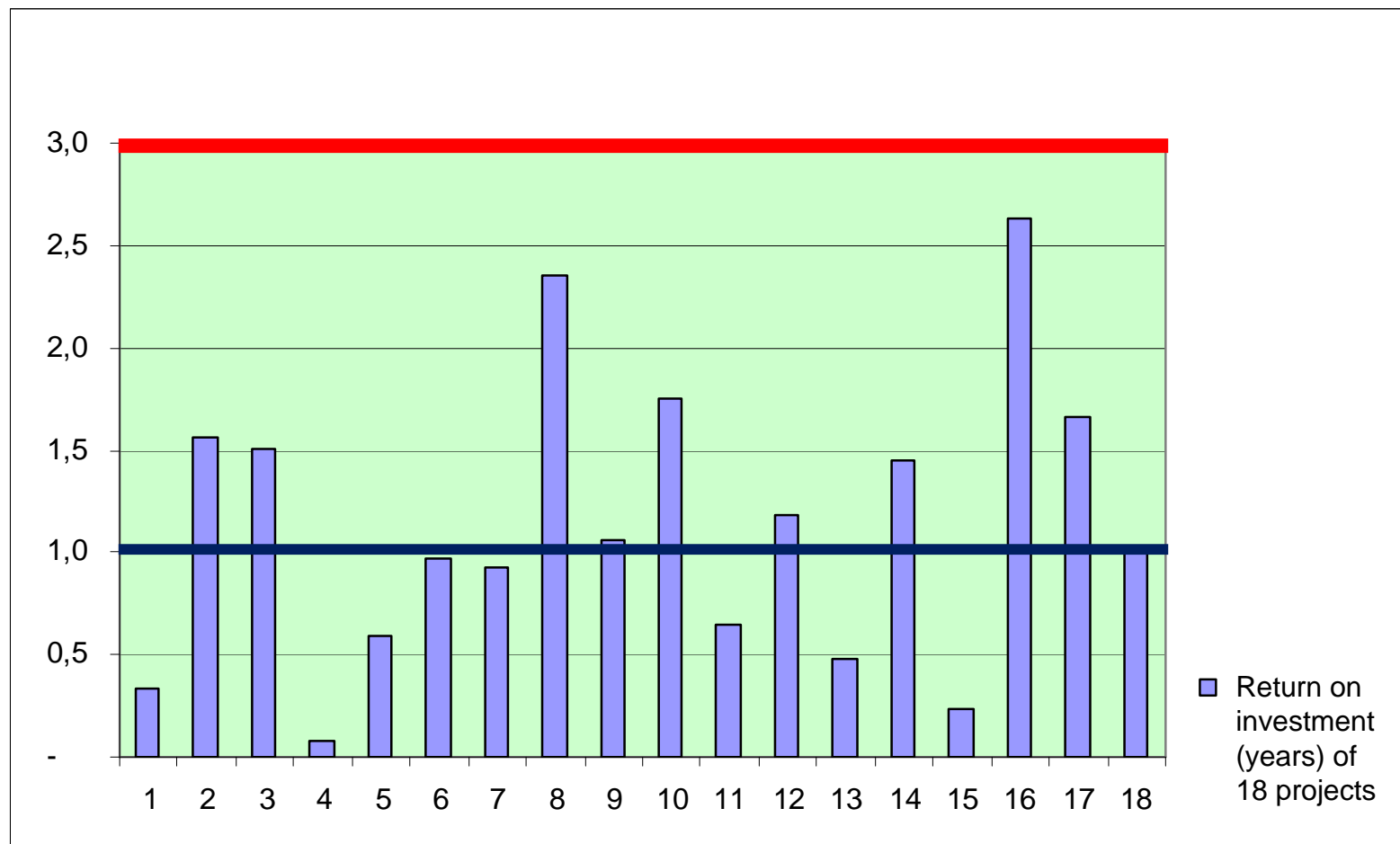
- › An attempt to prove that ergonomics pays

18 projects analysed

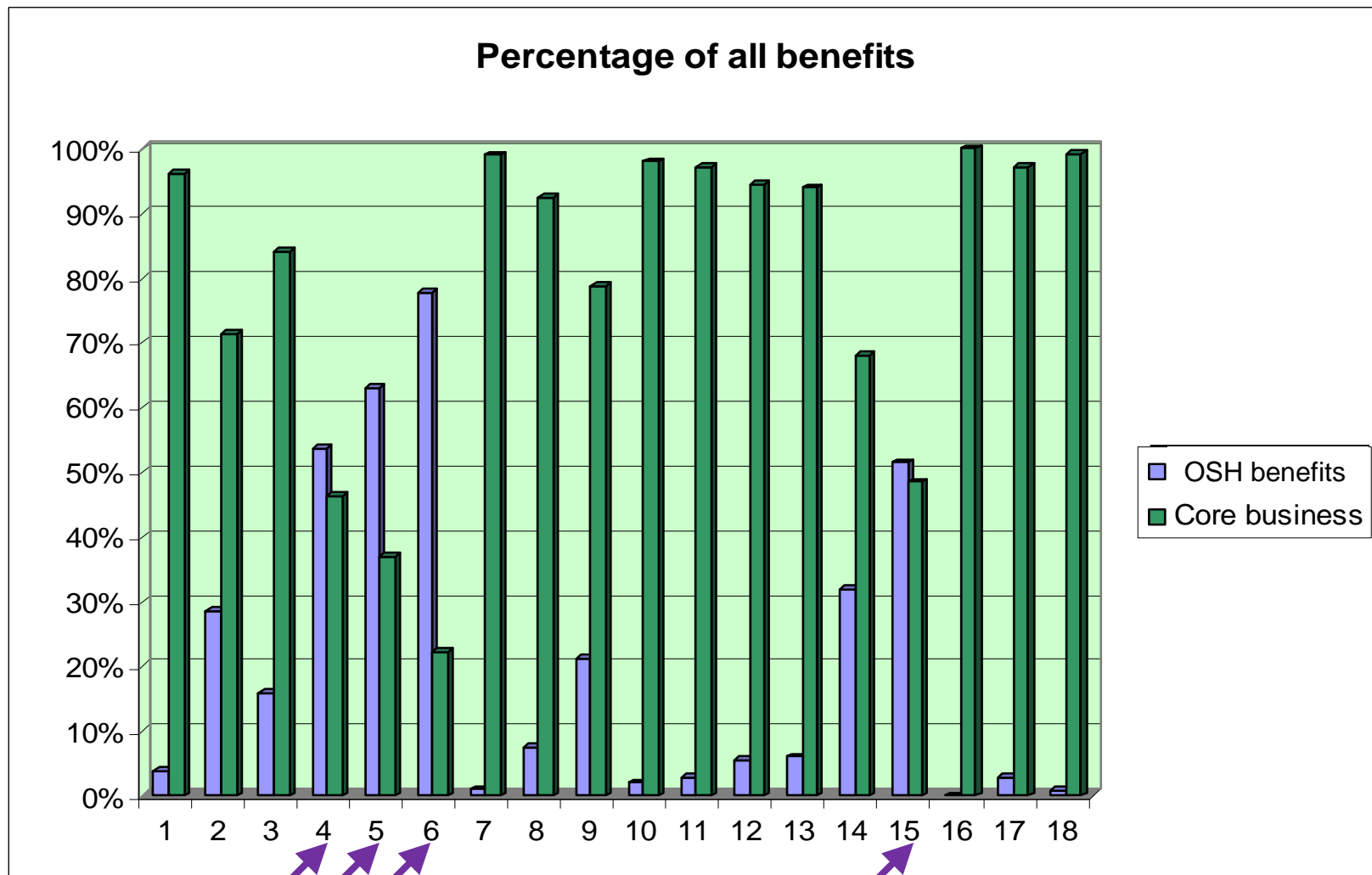
- › Own TNO-cases, but a reliable trial of ergonomics consultancy
- › Examples of these 18 projects:
- › Ergonomically designed tram cabin
- › Assembly of self-propelled grass mowers
- › Better ergonomics in quality control of micro chips using microscopes
- › Job enhancement for house painters (more diversity in tasks)
- › Sit-stand-tables for office work
- › Safe and non physically straining road blocking (for maintenance work)
- › Detection of wandering demented elderly in a nursing home
- › Ergonomically designed vacuum cleaners in professional cleaning

Source: Pot FD & Koningsveld EAP. Quality of working life and organizational performance - two sides of the same coin? Scand. J Work Environ Health 2009;35(6):421- 428

Results: return on investment



Results of 18 projects



Conclusions of 18 ergonomics projects

- › 18 satisfied clients (100%)
- › Interventions have positive effects on different aspects
- › All projects are cost effective
- › Core business values exceed the traditional occupational health and safety values



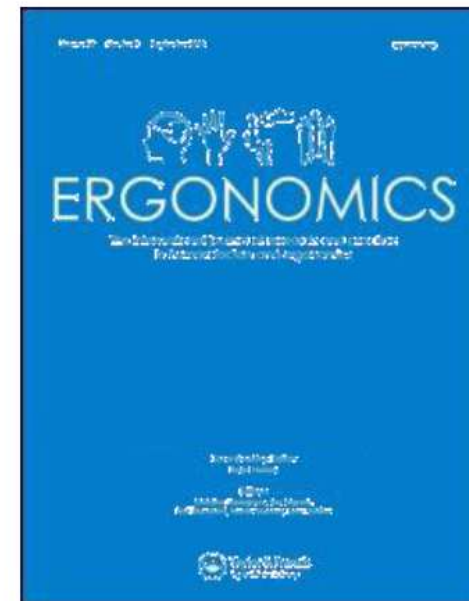
Taylor & Francis Group
an informa business

On behalf of the

**Institute for Ergonomics and
Human Factors**

and the

Editors of *Ergonomics*



We are delighted to present the following paper:

**A strategy for human factors/ergonomics: developing the
discipline and profession**

Success factors for ergonomics (1)

- › Be proud and show it, there is enough evidence of the benefits of ergonomics
- › However, be selective on:
 - › what you do and what you don't (stick to your expertise)
 - › and how you do your work
- › Take care to be involved in the earliest stage of a new process
- › Focus at system level, rather than at details
- › Take care to understand the system in all its extent
- › Do (re)design, rather than (only) investigate

Success factors for ergonomics (2)

- › Enhance your collaborative competencies; experts who are merely convinced of being right, will not be successful
- › Always keep the importance for the end users in mind + those of management
- › So: combine health protection and performance improvement
- › Dare to make cost benefit analyses; do this in close collaboration with all stakeholders

Success factors for ergonomics (3)

- › Communicate about your projects/successes in all kinds of media
- › And so: do benefit to the importance of ergonomics.
- › Suggestion: consider to become a European Registered Ergonomist

**Be proud being
an ergonomist
and
show that!**

Köszönöm a figyelmet

Thank you for your attention