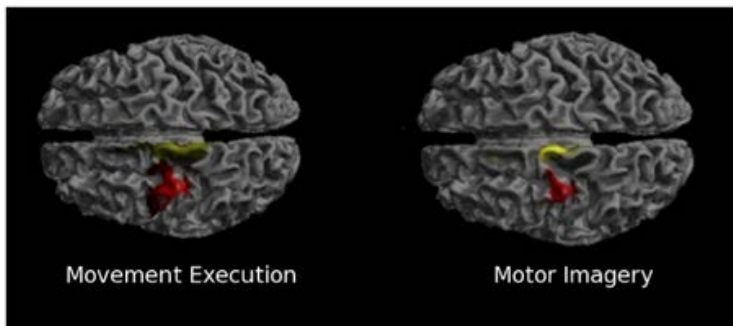
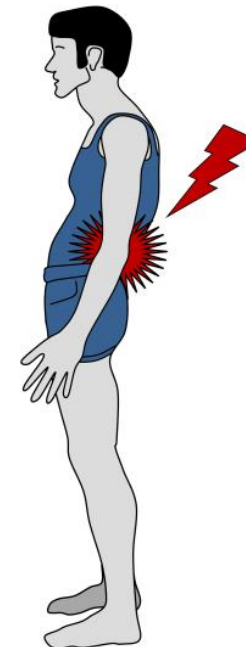
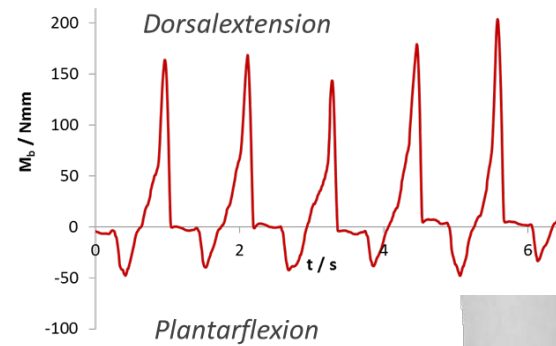
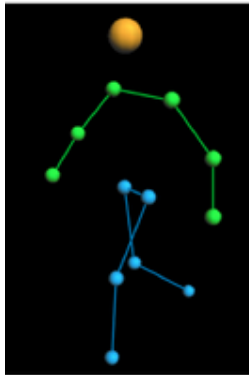
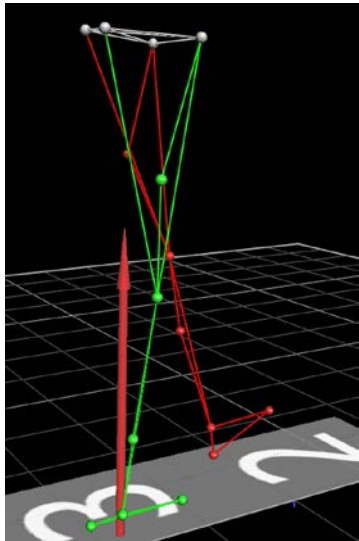
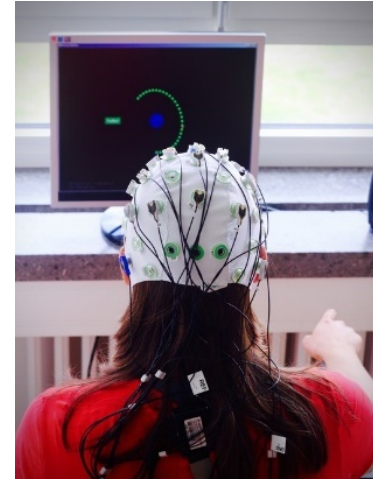


New educational system in the field of Foot Orthotics / Pedorthics in Germany

Thomas Stief

Human Movement Science and Psychology of Sport, Department of Sport Science, Justus Liebig University

Department of Sport Science Justus Liebig University



The roots of orthopedic footwear

≈ 1000 - 750 B.C.



50 year old woman

- right great toe disarticulation
- wooden prosthesis, fixed with a sleeve

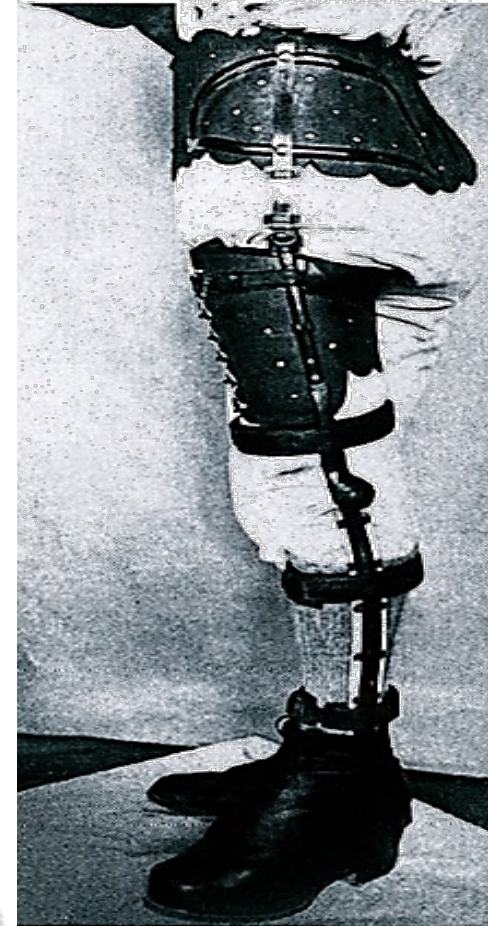
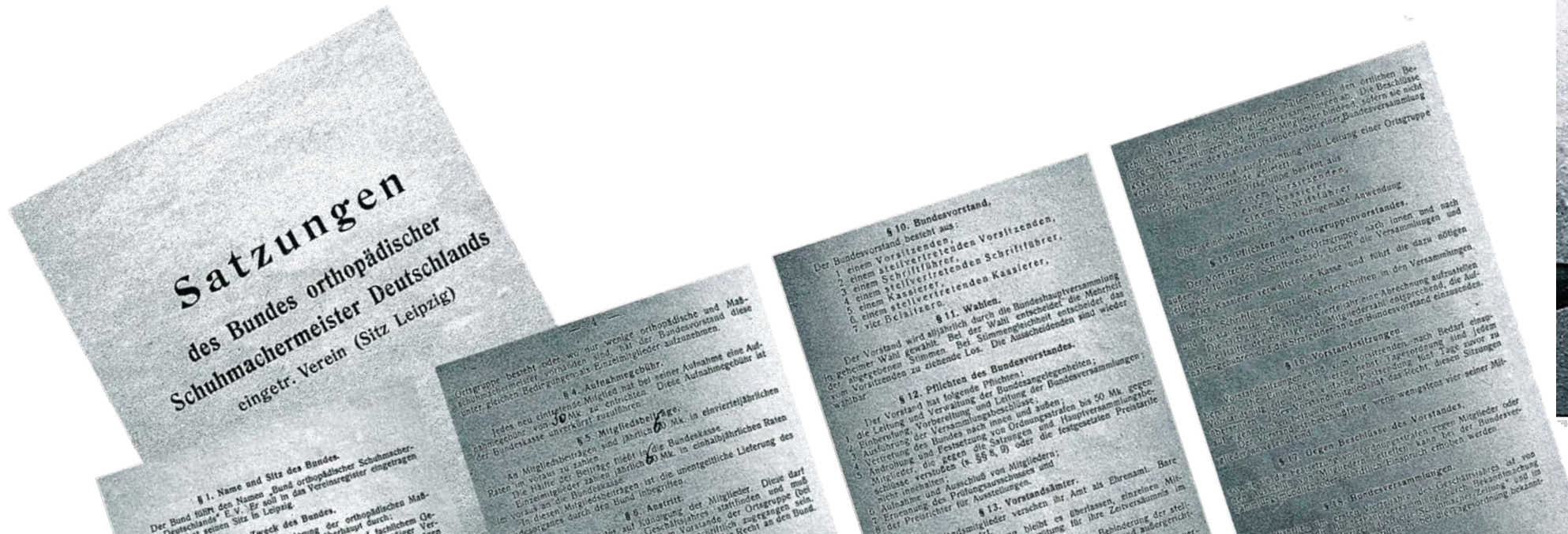


The roots of orthopedic footwear- Germany

1917

foundation of the first association in Germany:

“Registered Federation of German orthopedic shoemakers”



Breyman 2005

Products and marketing in the past

„Erkako“ Flach- u. Hohlfuss-Stütze



Erkako

bewährt sich gross-
artig, weil sie dauer-
haft, praktisch und
zuverlässig ist. Un-
entbehrlich für jeden
Platt- und Hohlfuss-
:: :: Leidenden. :: ::

Verlangen Sie Spezial-Offerte. — Hoher Umsatzbonus.

R. Kühlewein & Co., Erfurt.

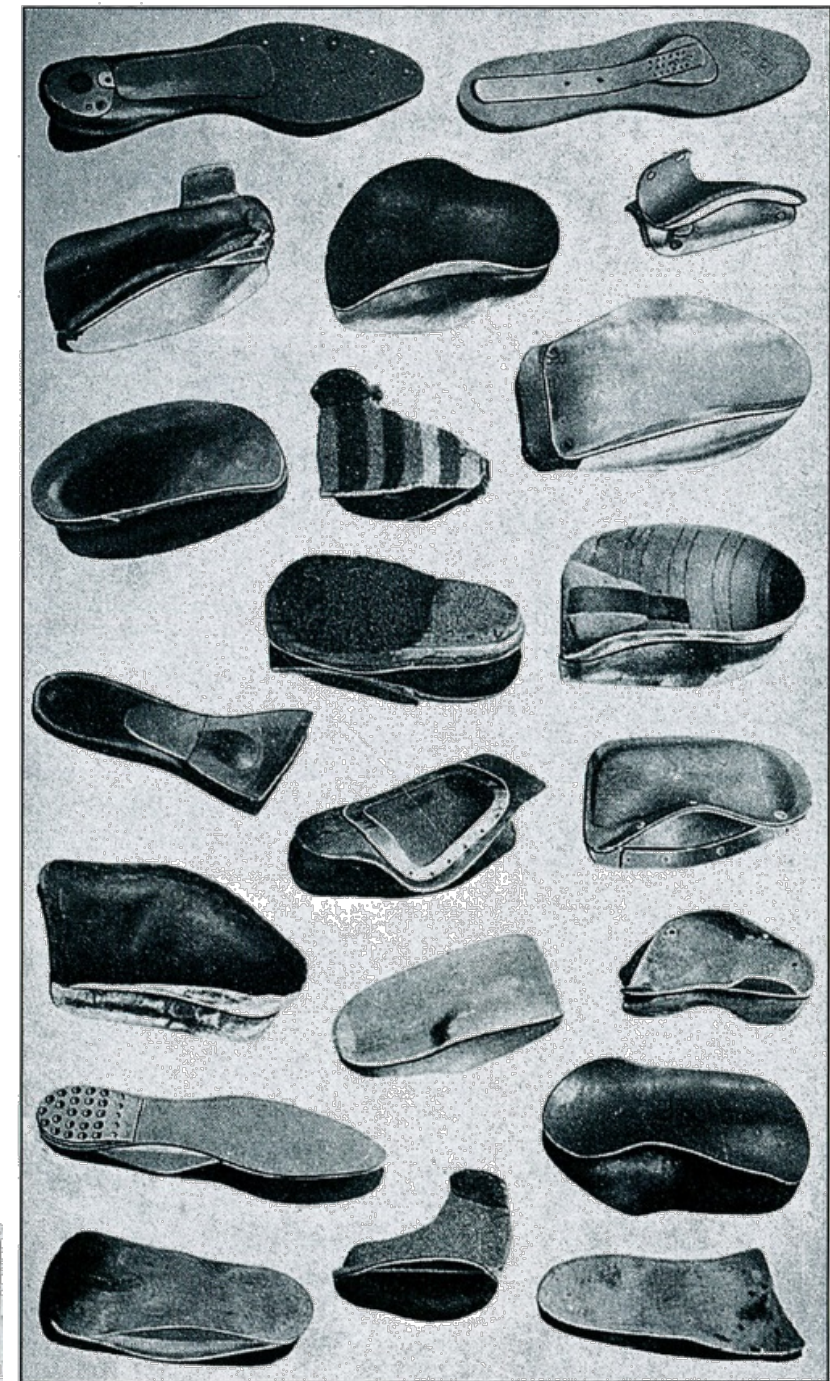
(29454)

**H. Berkemann's elastische
Platt- u. Hohlfuss-Einlagen**



sind von ersten Autoritäten als die besten anerkannt!

H. Berkemann, Hamburg 36
Prospekt franko.
Generalvertrieb durch Gebr. Perlich, Berlin SO.



Orthotic Footwear / Orthopedic Footwear

Classification and description of devices

■ Orthotic Footwear (orthopedic footwear)

- custom fabricated
- prefabricated
- adaptations (modifications) to footwear

■ Foot Orthoses

- „classical“ biomechanical
- sensorimotor stimulating (SMFO)

■ Orthoses

- Soft Orthoses
- Foot Protheses

■ ...



Orthotic Footwear / Orthopedic Footwear

Treatment objectives

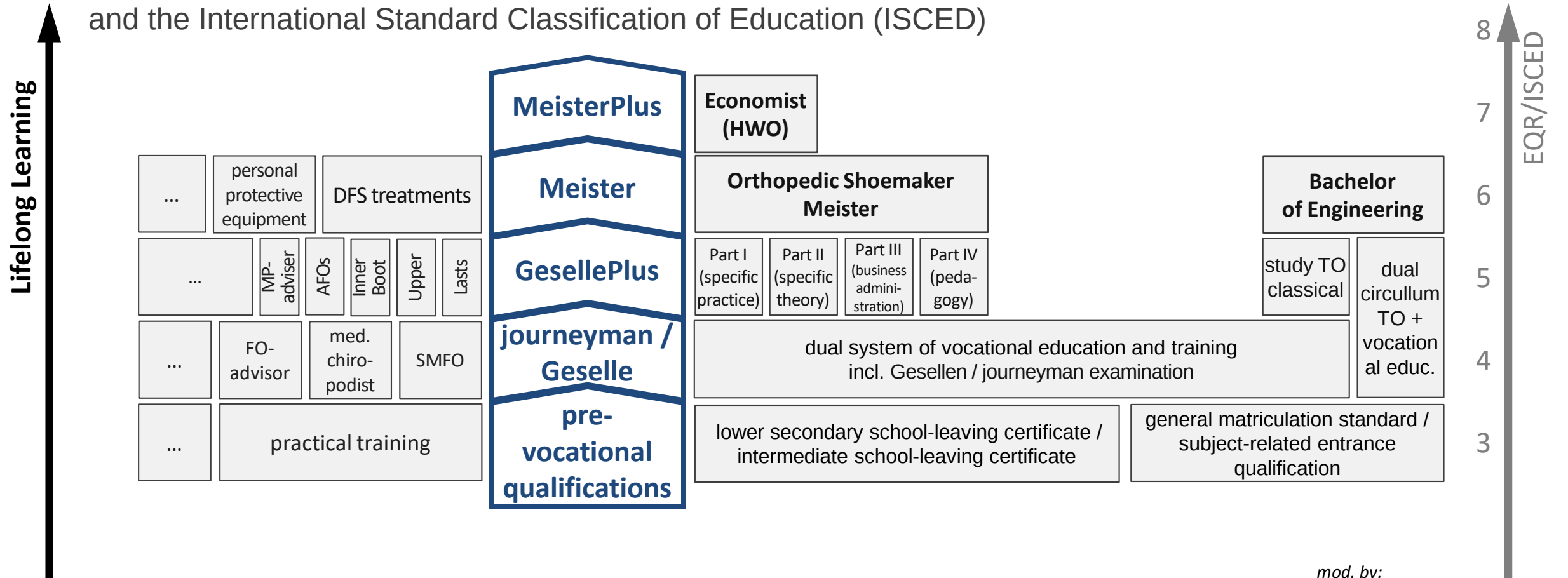
- **pain relief**
- **mechanical stress relief**
e.g. rocker soles, forefoot cushioning, shock absorbing heels;
- **management of deformities**
e.g. medial/longitudinal arch supports, extended heel cups
- **changing the range of motion**
e.g. stiffened soles, walkers
- **management of abnormal neuromuscular function**
e.g. supramalleolar heel cups, AFOs
- **stimulation of the motor-sensory feedback**
e.g. sensorimotor foot orthoses (SMFO)



**Qualified persons and a qualified
businesses are necessary to treat foot
and lower limp problems!**

Facts of the dual vocational education and training in the field of foot orthotics

according to the European Qualifications Framework (EQR)
and the International Standard Classification of Education (ISCED)



Vocational education and training – Education levels

Orthopedic Shoemaker Geselle / Foot Orthotics Technologist / ...

Person who,

- having completed an approved **vocational education and training in the dual system**,
- manufactures foot orthotics under the direction of an foot orthotist

Facts of the dual vocational education and training in the field of foot orthotics

- the **dual system of vocational education and training** is
 - unique
 - it **combines practical work and learning** in the enterprise **with theoretical education** in a vocational school during training
 - regulated by:
 - Vocational Training Act
 - and the Crafts and Trade Regulation Code
- ***training period:*** ***3.5 years***
- ***job title:*** ***Orthopedic Shoemaker Geselle***

Content of the dual vocational education and training in the field of foot orthotics

specific competencies

- manufacturing and repairing of Custom fabricated Orthopedic Footwear
- manufacturing of Orthopedic Footwear elements,
- manufacturing of Orthopedic Footwear modifications,
- manufacturing of Foot Orthoses, Ankle-Foot-Orthotics (AFO), Inner Boots, ...
- measuring and adjusting prefabricated footwear,
- measuring and adjusting of prefabricated soft orthoses, orthoses, ...

Content of the dual vocational education and training in the field of foot orthotics

general competencies

- safety and health protection at work,
- environmental protection,
- planning and preparing workflows,
- apply technical legal legislation,
- ...

Facts of the dual vocational education and training in the field of foot orthotics

- every skilled worker can take further training and sit the master craftsman's = Meister examination
- the Meister is the top specialist crafts qualification and authorizes the person to:
 - manage an enterprise
 - and to train apprentices
- skilled workers and master craftsmen can select from a wide variety of options for further training

Vocational education and training – Education levels

Orthopedic Shoemaker Meister / Certified Foot orthotist / Certified Pedorthist / ...

Person who,

- having completed an approved course of education and training,
- is authorized by an appropriate national authority to
 - assess,
 - design,
 - measure,
 - manufacture and fit foot orthotics

Vocational education and training – Education levels

Orthopedic Shoemaker Meister / Certified Foot orthotist / Certified Pedorthist / ...

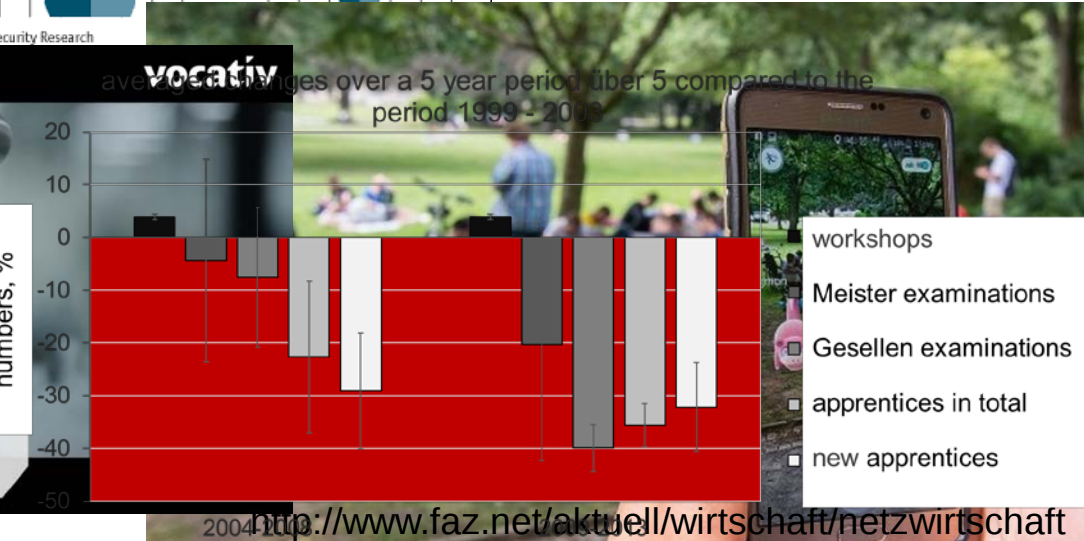
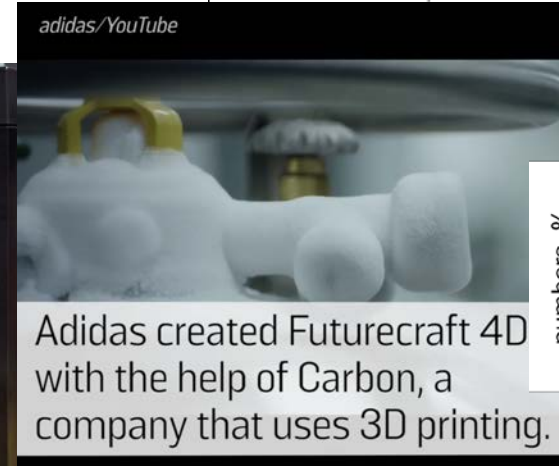
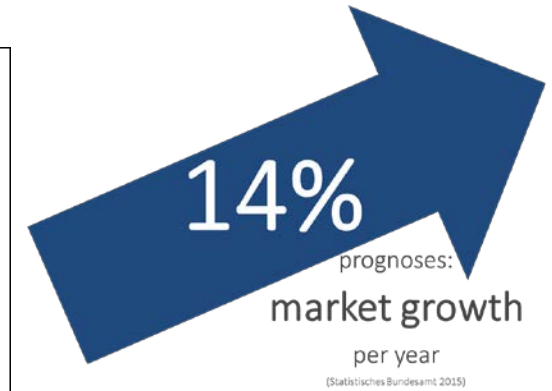
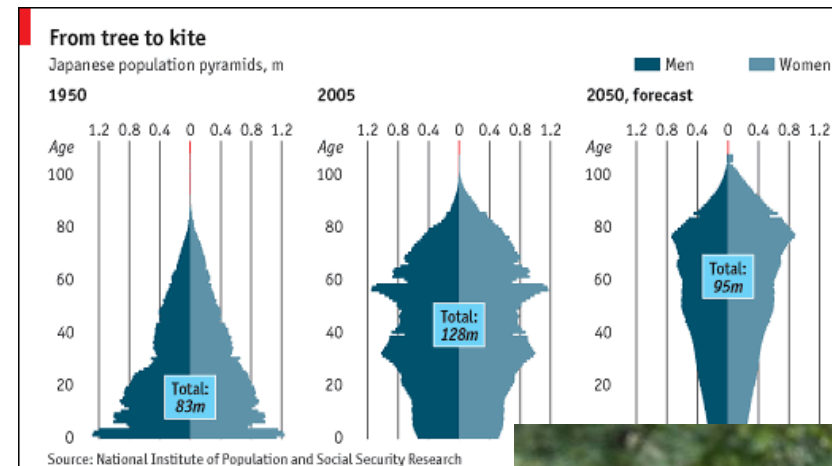
Person who,

- critically appraise a patients' footwear, biomechanics, lifestyle factors that may influence foot and lower extremity health
- synthesizes a treatment plan
- implements a treatment plan
- measures the outcome of a treatment plan, assess its effectiveness and formulate additional plans (if required)

Why changing education at all?

Reasons for changes and/or evolution in a business and education

- changes in the business, the market and the rest of the world
 - demographic changes
 - widespread diseases
→ increasing number of patients
 - relevant reduction of career interested persons*
 - changed interests in career choices
 - technical development



Orthopedic Footwear Technology

Key performance indicators 2014

companies	workshops	employees
2,120	2,492	14,492

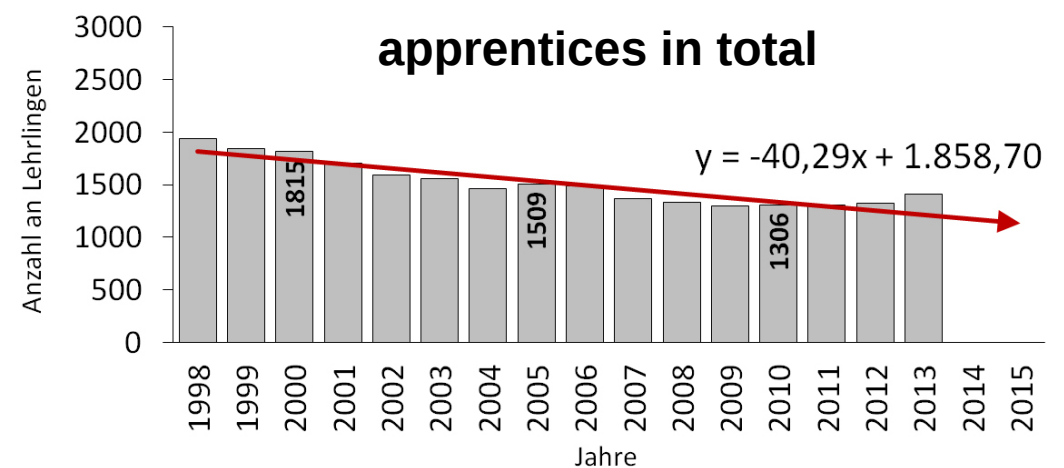
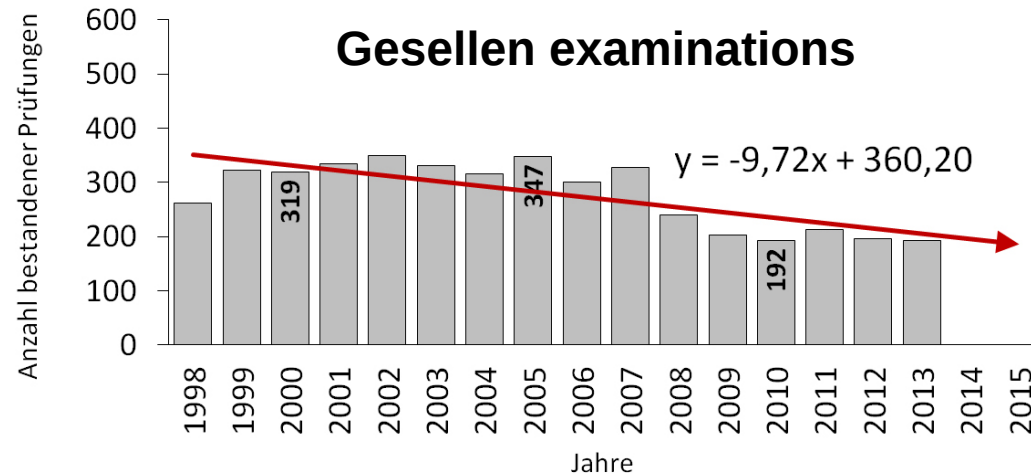
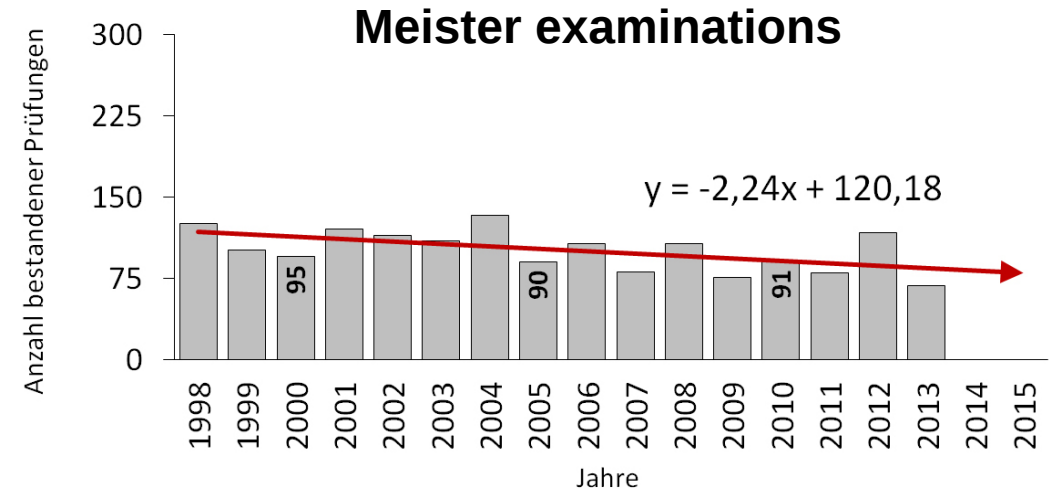
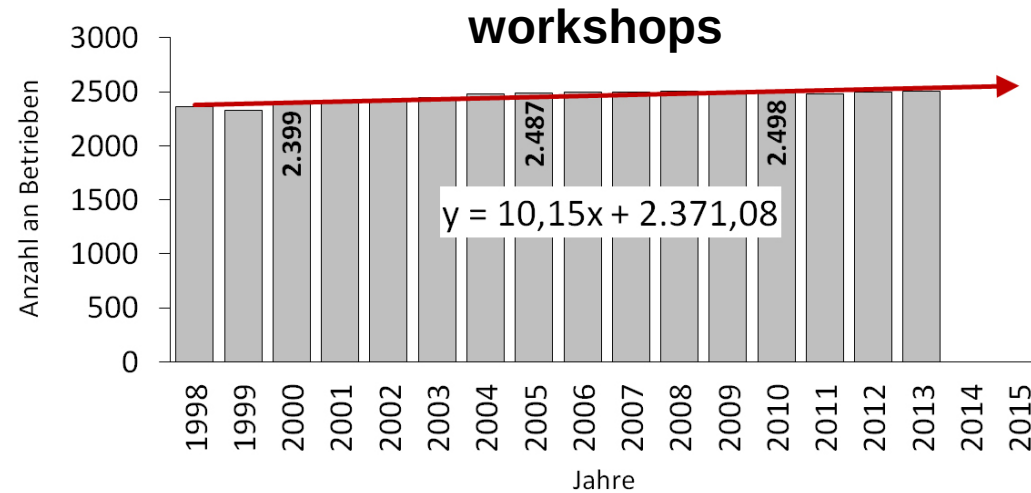
aus: <http://www.zdh-statistik.de/application/index.php>

companies sorted by sales	numbers of companies	employees by company-size
< 50,000	181	310
50,000 – 125,000	379	777
125,000 – 250,000	522	1,830
250,000 – 500,000	529	3,240
500,000 - 5 Mio.	504	7,808
> 5 Mio.	5	527

Meister examinations	journeyman examinations	apprentices in total	new apprentices
117	196	921	313

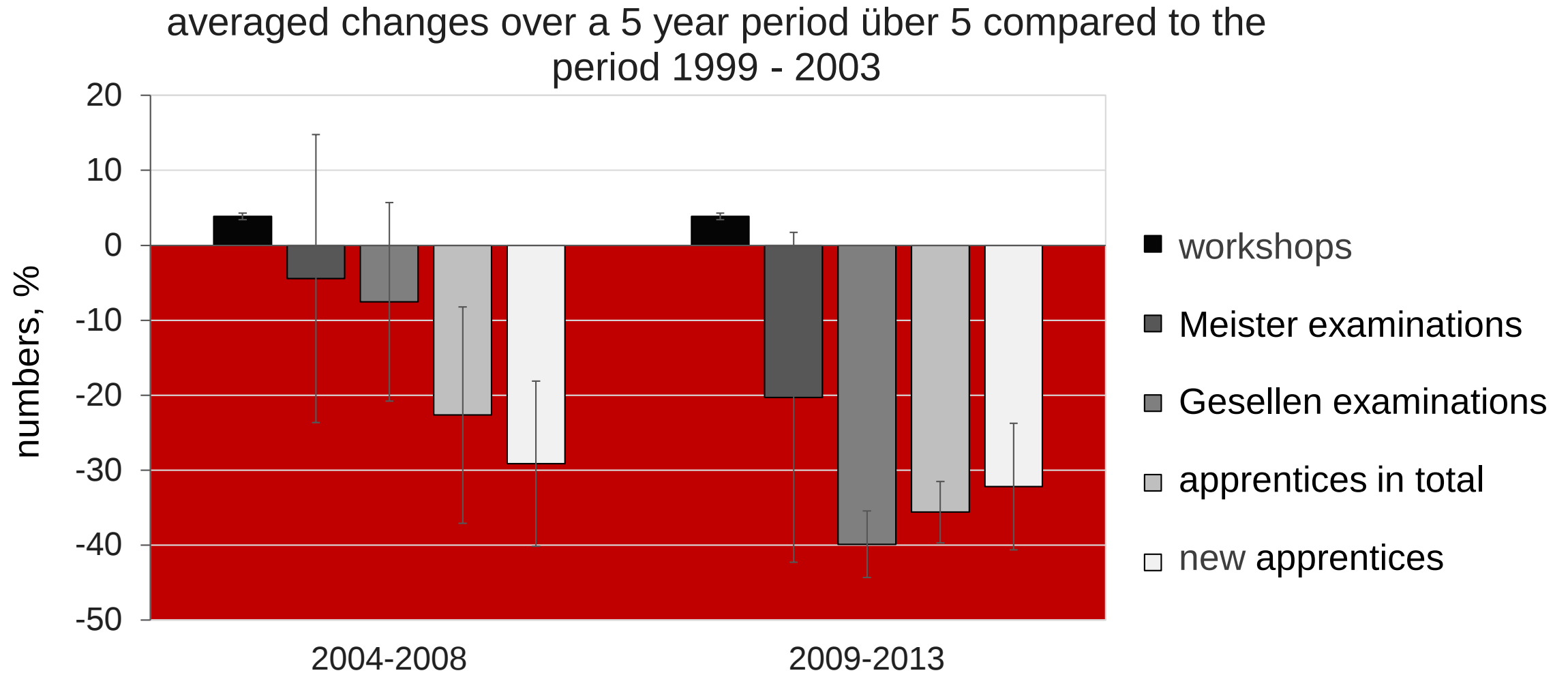
Orthopedic Footwear Technology

Key performance indicators



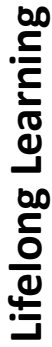
Orthopedic Footwear Technology

Key performance indicators



Lifelong Learning

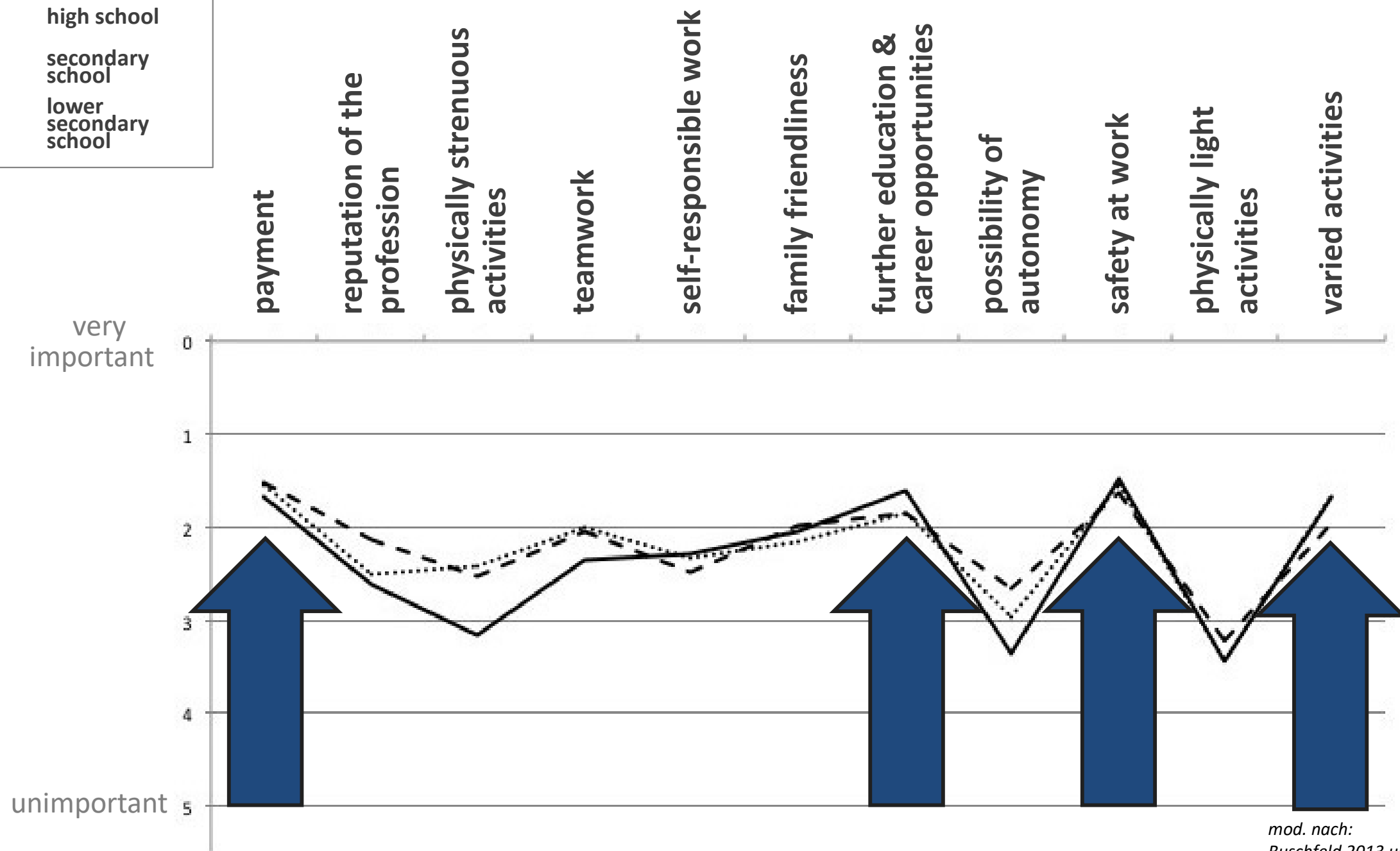
Lifelong Learning



Lifelong Learning

What motivates young, interested and career-oriented people to choose a job?

high school
secondary
school
lower
secondary
school



Which skills have to be implemented into education for the improvement of daily practice

1. Analysis and biomechanics

- data detection → measuring
- data interpretation

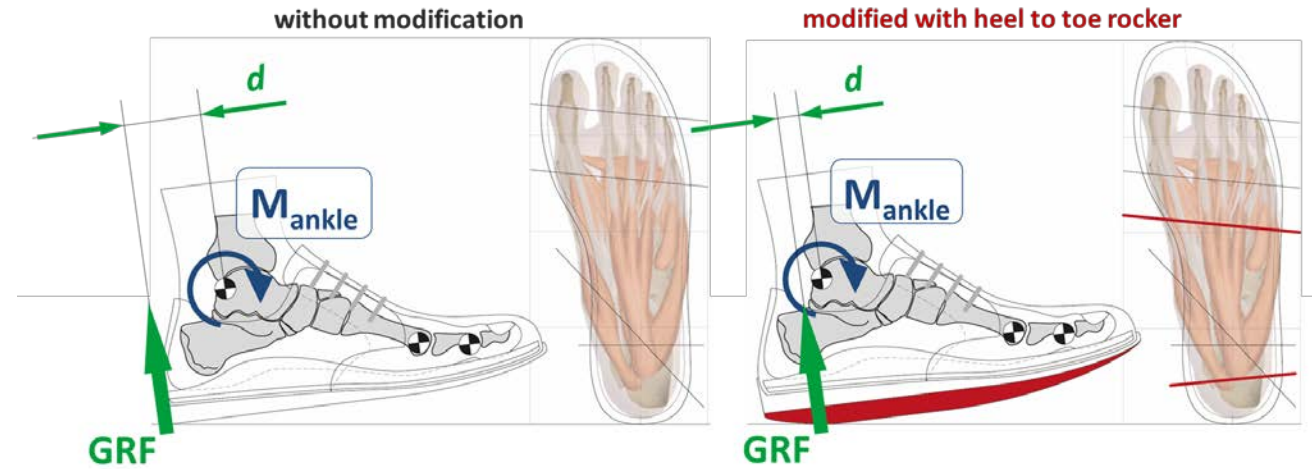
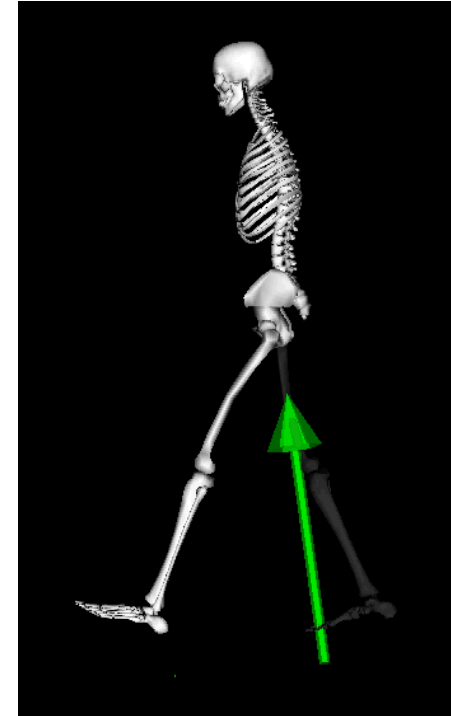
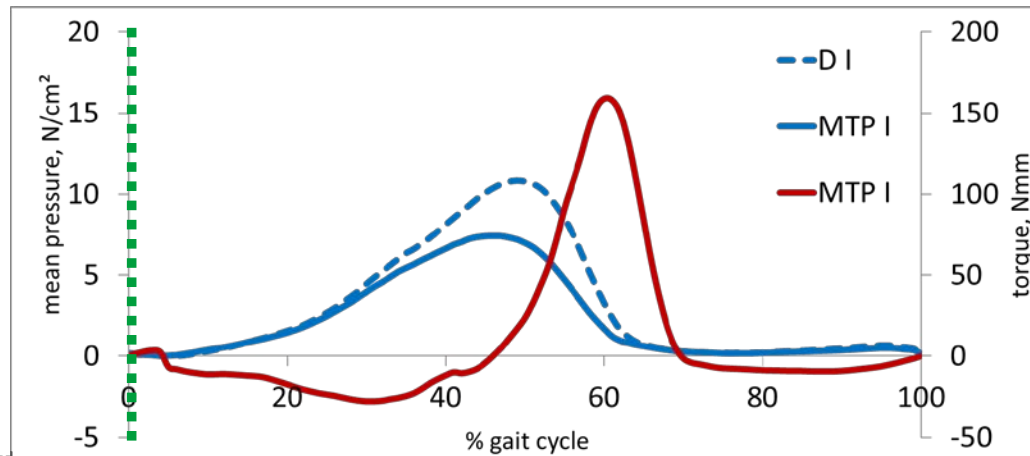


plantar pressure:

$$p = \frac{F}{A} \left[\frac{N}{cm^2} \right]$$

bending stress:

$$M_b = F_b * d = \sigma_b * W_{ax} \quad [Nm][Nmm]$$



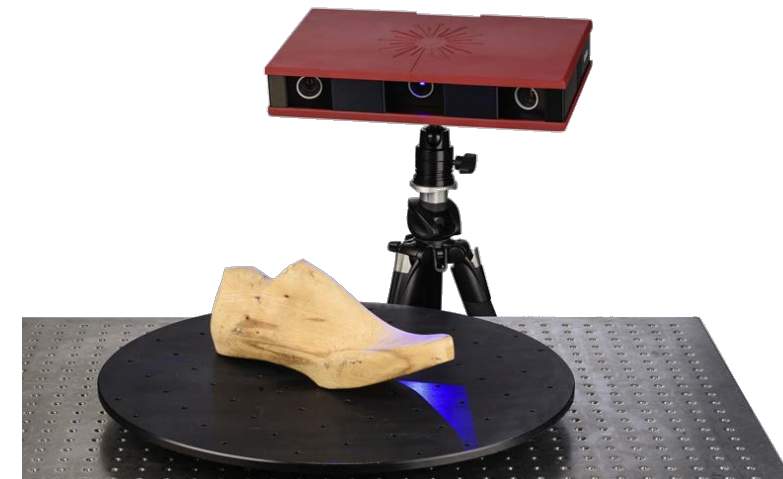
Which skills have to be implemented into education for the improvement of daily practice

1. Analysis and biomechanics

- data detection → measuring
- data interpretation

2. contemporary and innovative construction and manufacturing skills

- CAD / CAM
- adaptive manufacturing



Which skills have to be implemented into education for the improvement of daily practice

1. Analysis and biomechanics

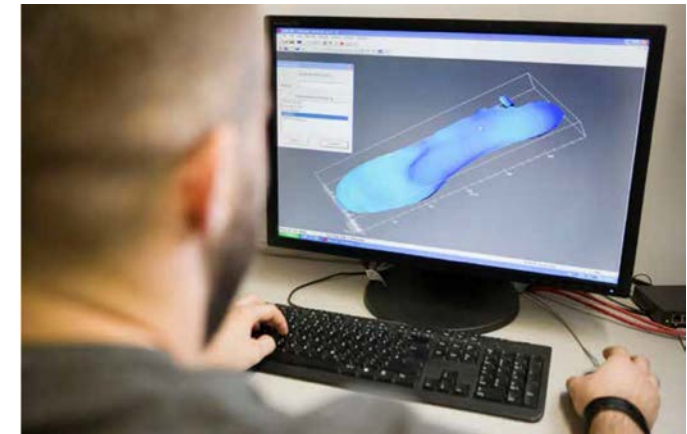
- data detection → measuring
- data interpretation

2. contemporary and innovative construction and manufacturing skills

- CAD / CAM
- adaptive manufacturing

3. business administration

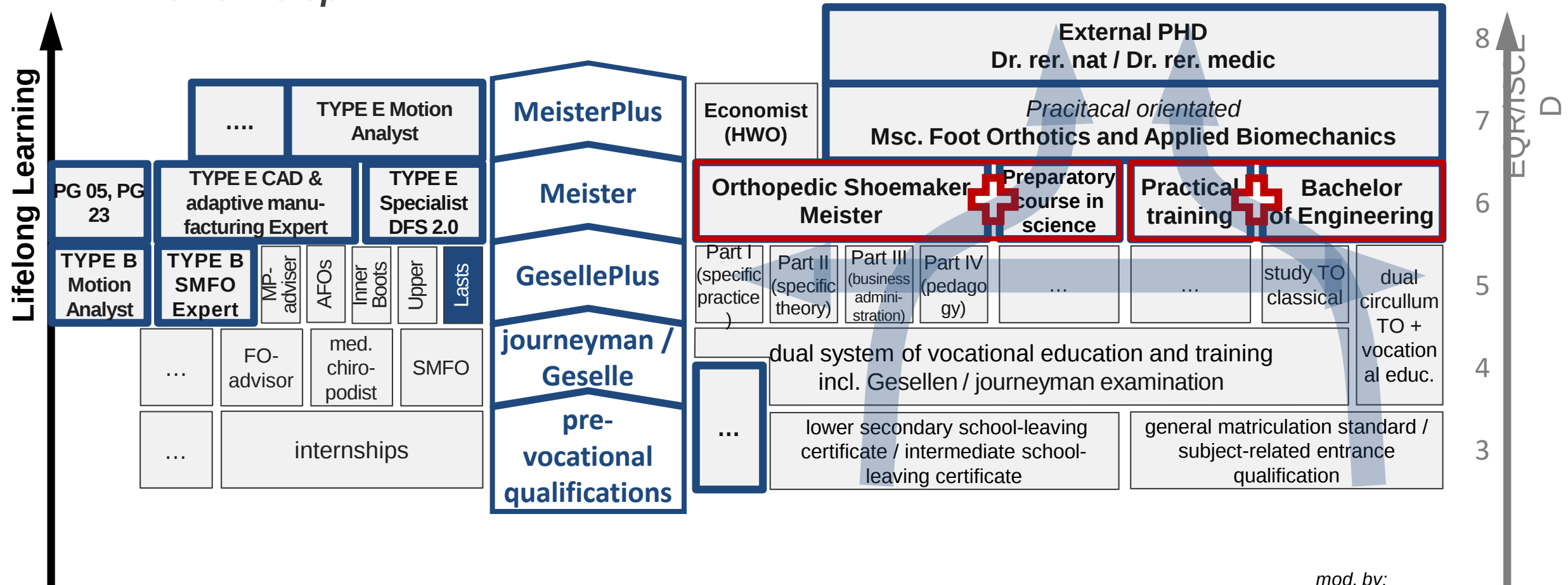
from health care provider to health care entrepreneur



→ **Orthopedic Footwear Technology today: half science, half skilled craftsmanship**

Education in the field of foot orthotics

... the next step!

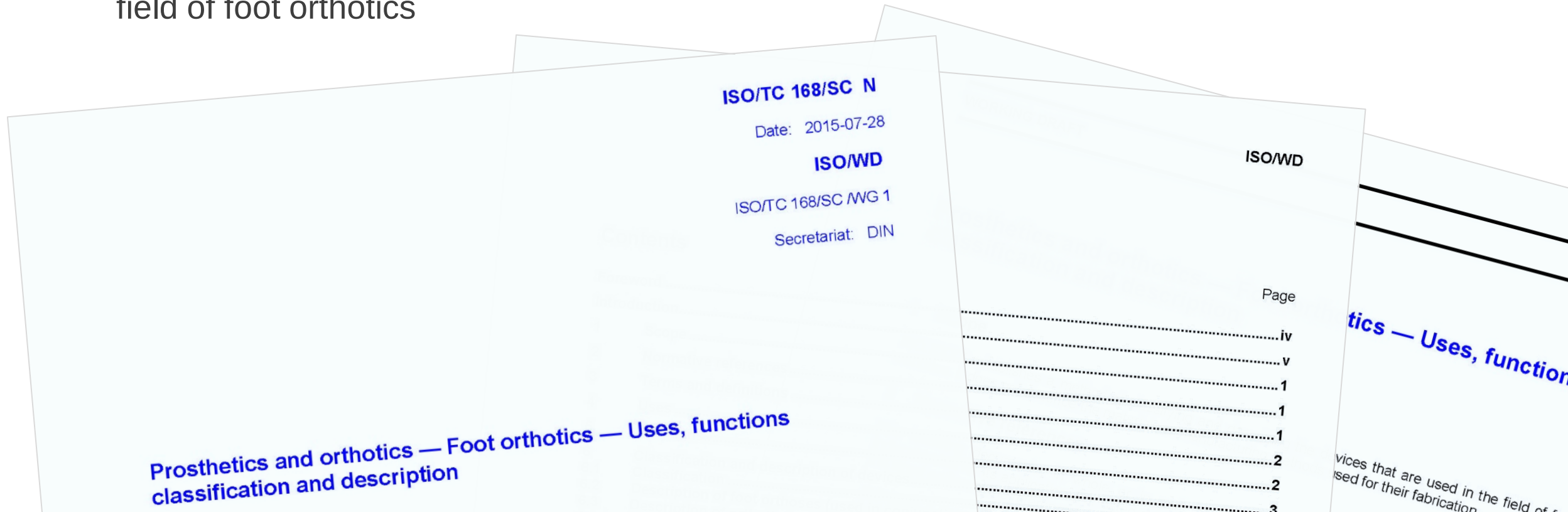


ISO 21064:2017

An international excepted Standard

= ISO Standard: **Foot Orthotics- Uses, functions classification and description**,

which establishes a method of classifying and describing the devices that are used in the field of foot orthotics





**Tack för din uppmärksamhet och jag önskar
dig en trevlig och avkopplande jul**