THE MAN

WITH FOCUS ON

A Research Approach to Ergonomic knives
Ergonomics

What is ergonomics?

Ergonomics is a science that studies and measures how we interact with the objects we use and the environments we live in. Its aim is to improve the comfort and efficiency of our lives, with particular attention to health and safety.

Do we need ergonomic hand tools?

Over the centuries mankind has used tools to accomplish countless objectives in agriculture and industry. While many tools have evolved into efficient instruments with specific uses, other tools have remained virtually unchanged since the industrial revolution.

As industry makes increasing demands for efficiency and precision, modern tools must be designed with human capabilities and limitations in mind. Only recently have we acquired the knowledge, materials and techniques necessary to begin to meet this need.

What causes Cumulative Trauma Disorders?

A combination of three main factors: Force, Repetition and Bad Posture, can cause sudden injuries such as Sprains or slow developing injuries like Bursitis and Carpal Tunnel Syndrome.

The highest risks are encountered when a job or tool requiring a combination of force and precision is used repeatedly without sufficient rest for the body to recover.

The cost of ignoring ergonomics.

As industrial work places become generally safer and violent accidents decrease, more attention is being drawn to injuries that develop slowly. Musculoskeletal Disorders (MSD’s) as they are known, have emerged as a major cause of industrial injury. MSD’s not only cause pain and disability to the sufferer, they also cost industry increasing amounts of money in lost production, sickness, insurance and legal penalties.

The need for user friendly hand tools that decrease the risk of cumulative injury is clear.

The goal of ergonomics

The goal of ergonomics is to maximise employee comfort and job satisfaction in order to obtain maximum employee productivity.
Ergonomics

Ergonomics and styling
Ergonomics and styling are often confused for one and another, but there is a vast difference. Whereas styling looks superficially at the aesthetic modelling of an object, ergonomics goes much deeper. It must take into account various hand sizes and strengths and the many ways that a tool might be held to do specific jobs. Forms, materials and textures all have a function to perform. The Bergo ergonomic knives are shaped to allow the hand to remain in a natural position during the majority of work.

What are ergonomic hand tools?
Ergonomic tools are designed to meet the demands of the professional user.

They reduce musculoskeletal stresses and strains and enable an efficient use of our limbs.

They are proportioned to the dimensions of the user and are efficient in the use of human energy.

Ergonomic tools suit the strength and work capacity of the user.

A large body of research and literature provides a scientific basis for ergonomic design. Bergo Tools work closely with ergonomic designers at Ergonomic Design Group of Stockholm and professional knife users.

Assessing the risk of cumulative stress
Tools can be positioned in a 3D graph to help assess their risk factor. A knife can demand rather low force, but when cutting is done repeatedly increases the risk for carpal tunnel syndrome.

(A cube model for the classification of work with hand tools and the formation of functional requirements. Applied ergonomics, 1982/34 Spering L, et al.)
Ergonomics

Tendon sheaths
The tough and gristly tendons transfer muscle movements to the bones through sheaths lubricated by synovial fluid. With over-use the sheath can become dry causing friction and inflammation. It can also be flooded with synovial fluid causing ganglionic cysts.

The carpal ligament
The carpal ligament is a band of tough tissue that encircles the wrist. The finger and thumb tendons pass through lubricated sheaths beneath this flexible protective cover.

Carpal Tunnel Syndrome
When the hand is opened and closed in the relaxed neutral position the tendons slide easily through the sheaths at the wrist. As soon as the hand is angled, however, the tendons are squashed into a smaller space and the risk of friction dramatically increases.

When friction inflames the tendon sheaths, they swell and put pressure on the median nerve which runs through the same tunnel space. This, in turn, causes pain and problems in the hand itself. Rest is then required to allow the initial inflammation to heal.
Skin, muscles and Tendons

While our skin seals and protects us from the outside world, our muscles and tendons provide us with the ability to bend and manipulate the rigid skeletal structure beneath the surface.

Typical illnesses affecting the skin, muscles and tendons

Problem: **Cuts**  
Causes: Sharp edges and unprotected blades.  
Symptoms: Bleeding, possibility of infection.  
Ergo remedy: Rounded contact areas protective shields.

Problem: **Blisters and Calluses**  
Causes: Constant rubbing and pressure in one spot, pinching.  
Ergo remedy: Increase traction to avoid rubbing spread loads over larger areas of skin.

Problem: **Bruising**  
Causes: Hard blows caused by tool slipping: badly aimed blows, pressure points.  
Symptoms: Pain, rupturing of blood vessels, swelling.  
Ergo remedy: Tolerances that are more accurate. Guards spreading loads over larger area, reduce need for sharp movements.

Problem: **Carpal Tunnel Syndrome**  
Causes: Repeated pressure and stress on tendons in the carpal tunnel, especially if hand is bent at the wrist.  
Symptoms: Pain, tingling and numbness caused by swollen tendon sheaths pressing on the median nerve.  
Ergo remedy: Tools that can be used with the hand in the neutral position.

Problem: **Sprains**  
Causes: Excessive stress, often caused by sudden force combined with bad posture.  
Symptoms: Pain and disablement of the limb.  
Ergo remedy: Reduce need for jerk forces, design handles to improve posture.

Problem: **Tennis Elbow (Epicondylitis)**  
Causes: Repeated stresses. Tearing of the unsheathed tendon attached to the lateral epicondyle of the elbow.  
Symptoms: Pain from elbow through forearm.  
Ergo remedy: Reduce forceful grasping and lifting with palms down. Avoid using the arm for impact.
Professionals used to be satisfied with durable steel hand tools.

Nowadays, users are more demanding.

Why should a tool be either/or? Why not both/and? Both strong, durable, reliable and functional, ergonomic, and user friendly? The truth is, these two aims are not mutually exclusive. As a matter of fact, growing number of professional users now demand hand tools that meet the highest standards of performance and simultaneously reduce the risk of injury in the short- and long-term.

In the meat an poultry processing industry the knife is the most used hand tool of all:
8 hours a day.
40 hours a week.
1800 hours a year.

However, highly repetitive motions can be destructive to hand, arm, and shoulder, muscles, joints and sinews.

Butchering work is one of the branches in most risk of direct injuries. These injuries are mostly caused by wrongly designed hand tools.

A good ergonomic design reduces the risk of direct injury.

Correct handle angle
The angle between handle and blade has been thoroughly tested so that you can work with a straight wrist to a greater extent. Reduces injuries to the carpal tunnel.

Two different handles
Two handle types for each type of blade. M for soft and P for hard plastic. Both types with 13 different blade designs.
To be slip resistant, the M handle is made of two kinds of plastic. A hard core of polypropylene covered with a layer of soft, non-slip thermoplastic elastomer.
The P of hard plastic.

The knives conform to the requirements of both EU and FDA standards.
### Ergonomic knives

#### Universal knives, ergonomic
- 8427 M-150
- 8427 P-150

#### Boning knives, ergonomic
- 8429 M-140
- 8429 P-140

#### Cutting-up knives, ergonomic
- 8414 M-150
- 8414 P-150

#### Filleting/sorting knives, ergonomic
- 8417 M-130
- 8417 MF-130 FLEXIBLE
- 8417 P-130
- 8417 PF-130 FLEXIBLE

#### Filleting/sorting knives, Scalloped edge, ergonomic
- 8417 MC-130
- 8417 MFC-130 FLEXIBLE
- 8417 PC-130
- 8417 PFC-130 FLEXIBLE

#### Filleting knives, ergonomic

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BERGO TOOLS AB continues a more than 100 years tradition by manufacture and marketing the well-known Bahco knives. Our aim is to continue to offer the market the best possible service with a high degree of delivery service and to be responsive to the changes and needs of the market. The knives, with the well-known shark trademark, stand for tradition and new thinking. Quality has always been our guiding star, not only for our products, but also for our customer service.

GUARANTEE
Our shark-marked products carry full guarantee covering defects in materials and workmanship.