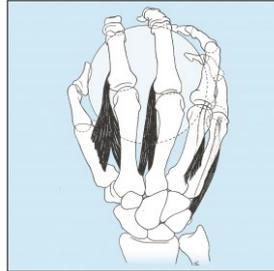


The importance of palmar support when using a mouse

It is useful to know that solutions can be provided for certain mobility restrictions of the upper extremity. This with the advantage that people who could otherwise not perform their daily tasks can now do so. Herewith we provide some examples as reference.

An IT specialist has been treated for quite some time by a physiotherapist. His impairment, diagnosed as Repetitive Strain Injury (RSI), although a significant restriction, could be alleviated. By providing palmar support muscle activity required to control the hand can be significantly reduced, see following images.



Classical drawings from Landsmeer Atlas of Anatomy of the hand, 1976

Hand Shoe Mouse

For example the patient can still move forearm and hand. He can therefore control a hand supporting body and slide it over the desk top. In this fashion he can control the cursor of a computer. The above shown mouse body also allows the fingers to be relaxed.

This means the user does not have to hover the fingers over the buttons. In other words, without the necessity of neural activity other than lightly squeezing the switches he can operate this mouse. It is therefore an important asset for somebody with the above mentioned impairment to have access to such a solution. In this case the resulting curative effect meant that after about one year the patient could also work with a regular mouse without too much of an inhibition, complaints did not return. It should be noted that even his insurance company had a positive attitude towards the application of this supportive solution. The use can and must be assumed selective depending on the complaints of the patient.

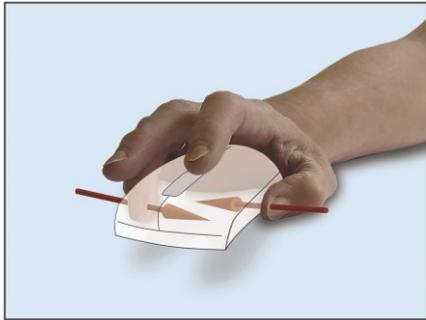
A similar type of functional support of the hand proved a solution for a graphic designer, who mentioned having had wrist and hand complaints for years.

He stated that these issues were becoming debilitating up to a level that he sometimes could not even open a door, he mentioned “the pain was intolerable”.

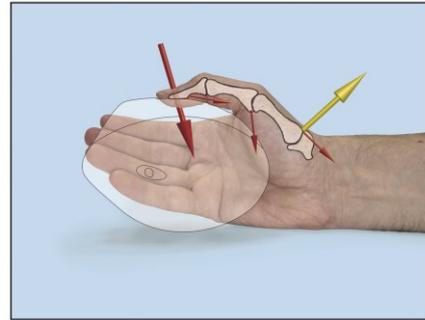
Various computer mice as possible solutions were tried to relieve hand and wrist pain. This to no avail. For example a vertical mouse worked for a while but created its own problems with the thumb cramping; a joystick type mouse proved to be impractical for graphical design work. A rollerball proved to be “a nightmare” due to aches in his thumb joints.

The following images show why.

The loads exerted on these vulnerable joints of thumb and fingers due the use of a regular and / or vertical mouse may be major sources of these complaints. These mice have to be gripped to be able to work with.



Grip forces with a regular mouse



Grip forces with a vertical mouse

The designer was even considering moving into a new line of work because apparently he could not continue his work without “destroying” his hand.



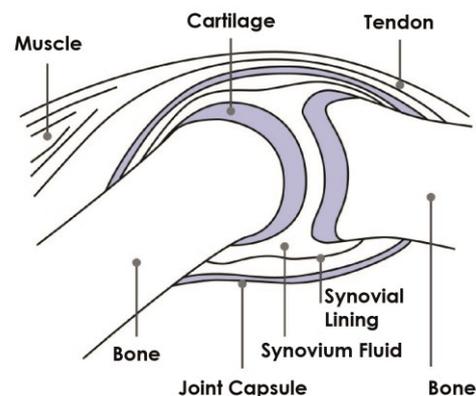
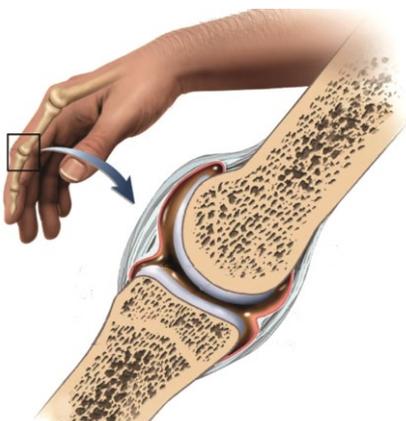
Also in this case palmar support and thus relief from stresses and strains due to gripping and pinching proved to be the solution.

Finally, studies at Hasselt University Medical Faculty show that forces as a result of gripping and pinching can even cause inflammation of specific synovial tissues. The following is an example.

The index finger is generally used a lot and inevitably its Proximal InterPhalangeal (PIP) joint.

One should understand that the PIP joint includes collagenous fibers or bands which are practically non-elastic. Any load exerted by the finger tips while gripping an object or scrolling, will therefore result in reaction forces in these bands.

These forces must be assumed to also have a possible damaging effect on the synovial tissues.



Index finger and PIP joint

Inside PIP joint

We therefore warn the user against excessive gripping and pinching.
Scientific studies suggest that this may result in (Reumatoid) Arthritis.
Experience of the HandShoe Mouse team, based on fundamental studies at several European Universities and field studies by Paul Helder as well as user contacts during daily practice, shows that the above is a significant issue to be reckoned with.