



## EXOLIGAMENTZ – A NEW TYPE OF GLOVE FOR ATHLETE FINGER AND HAND PROTECTION

### Introduction

Gripping is a vital aspect in combat sports such as Brazilian Jiu-Jitsu, judo, grappling, and in many ball sports. However, it often leads to finger and hand injuries caused by abnormal motion of the joints. The common taping approach has various limitations and requires an alternative solution.

An initial communication around Exoligamentz in the sports communities has resulted in positive feedback from people worldwide. In addition, a digital survey (February 2019) was recently launched and showed an enormous response worldwide (> 800 participants over 49 countries in 4 days) and urgent need for the solution to be offered.

### Technology

Exoligamentz is a finger-protective sports glove which includes distinctive joint protection techniques resulting in a new concept of a functional orthosis.

The core concept consists of **reinforcements** in the form of ligaments onto a **compression glove**. The product must not contain any hard material to ensure safety in contact sports and must therefore be made entirely of **soft materials** (i.e. textile based).

Features	Benefits
Cruciate pulley system lateral to each finger joint	Minimizes collateral ligament ruptures and provides additional stability to the joints
Broad annular band around the metacarpals	Supports the integrity of the glove and provides counter-pressure on tendons
Supportive structure at the base of the thumb and connective ligament	Supports the metacarpophalangeal joint and prevents ulnar collateral ligament injury of the thumb
Additional wrist band	Additional wrist protection
No textile at the fingertips	Preserves sensation at the fingertips
No textile above the joints	Minimal restriction of hand movement during exercise
Compression garment	Enables a good fit

Exoligamentz aims to have a societal impact, in particular by improving the protection of (young) athletes against repetitive finger injuries that may lead to irreversible damage and dysfunction of the hand over time.

### Applications

The application of this product is mainly found in **athletes** as a new sports glove for injury prevention and joint support during recovery on training.

In contact sports with a notably higher frequency of finger injuries e.g. **combat sports** with usage of a kimono (training suit) such as Brazilian jiu-jitsu, judo, grappling, wrestling, etc., due to grip fighting. Other sport activities include **ball sports** with high prevalence of hand injuries e.g. volleyball, handball, American flag football, rugby, etc.

In the future this new type of glove may impact **various markets and end-users**. In particular, for patients in the form of the first functional finger brace for post-injury rehabilitation (after the phase of immobilization) and pain relief during everyday activities by providing support to the joints (e.g. elderly with advanced stage of osteo-arthritis).



## Advantages

Contrary to sports tape:

- **Time-saving:** the glove is re-usable resulting in a great time-saving during training and competitions.
- **Unrestricted movement:** care has been taken to enable any kind of finger and hand movement required during sports.
- **Joint protection:** The unique design ensures an enhanced joint protection by restricting abnormal movement of the fingers or hand joints.
- **Continuous reinforcement**
- **No need for specialized medical assistance** for applying the glove.

## State of development

In collaboration with Prof. Van Langenhove and the textile department of Ghent University, the **feasibility** of the design was demonstrated with current textile technologies.

**Prototype I and II**, produced within the textile department, have resulted in improvements of both the designed material selection as well as the test method used. Following this, a final **Prototype III** resulted in the current methods of choice being lamination or embroidery on a pattern of a compression glove.

Consequently, the preliminary Exoligamentz prototypes (lamination and embroidery-based) are **ready for further industrialization** and testing.

## Partnership

Ghent University is seeking an industrial partner for licensing and collaboration (prototyping, testing, validation) and commercialization.

## Intellectual property

International patent application WO2018154062. Title: Protective device for human joint. International filing date: 23 February 2018.

## References

P. Strasser., M.Hauser., et al. Traumatische Fingerpolyarthrose bei Judo-Sportlern: Eine Verlaufsuntersuchung, Zeitschrift für Rheumatologie 56, 1997, 342-350.

M. Avery III, D., M. Rodner, Craig., & M. Edgar, Cory. Sports-related wrist and hand injuries: a review. Journal of Orthopaedic Surgery and Research, 2016; 11:99.

## Keywords

**sports glove, hands, fingers, injury, prevention, textile, industrial testing**

## Contact

Ashkan M.H. Joshghani, Project Leader Exoligamentz, Ashkan.MohammadHassanJoshghani@ugent.be, +32 492 85 30 66

Kristof De Mey, Business Developer, [Kristof.demey@ugent.be](mailto:Kristof.demey@ugent.be), +32 9 264 6369

Ewout Vansteenkiste, Business Developer, Ewout.Vansteenkiste@ugent.be, +32 498 76 96 43



Figure

