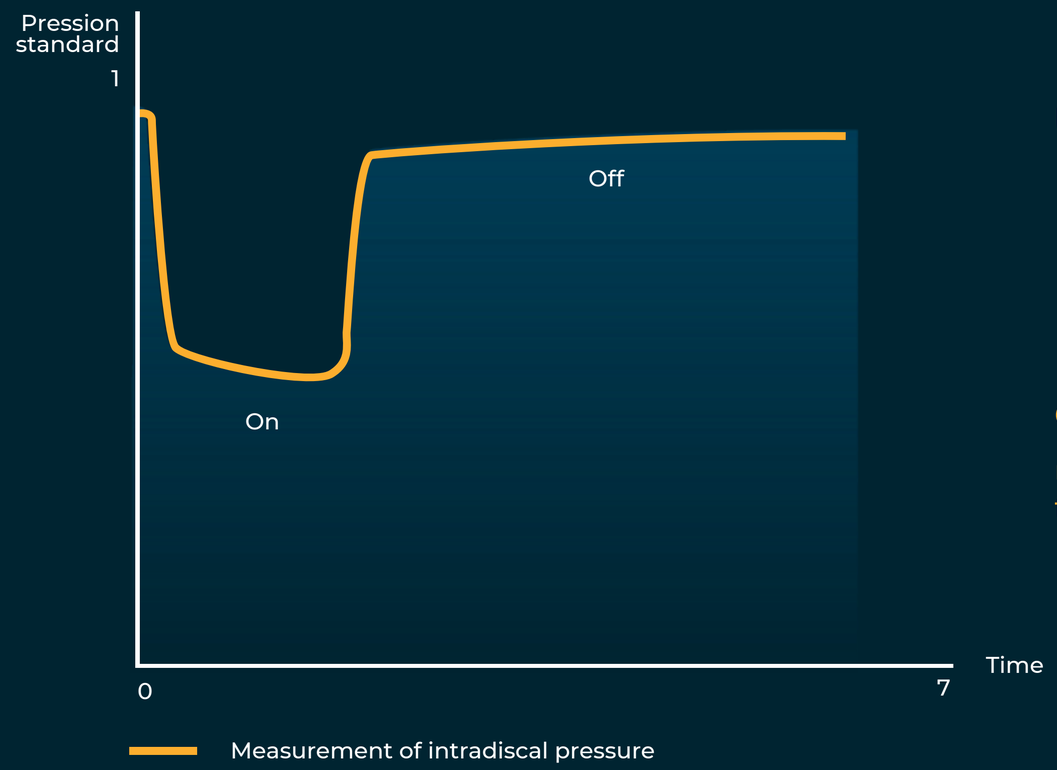
Collection of studies.

Exoskeleton Japet.W+

REDUCTION OF INTRADISCAL PRESSURE



Up to

40%

decompression

resulting in a shock-absorber effect for the spine's intervertebral discs.

Clinical study.

Study.

Zaïri F, Moulart M, Fontaine C, Zaïri F, Tiffreau V, Logier R. Relevance of a novel external dynamic distraction device for treating back pain. Proc Inst Mech Eng H.

Context.

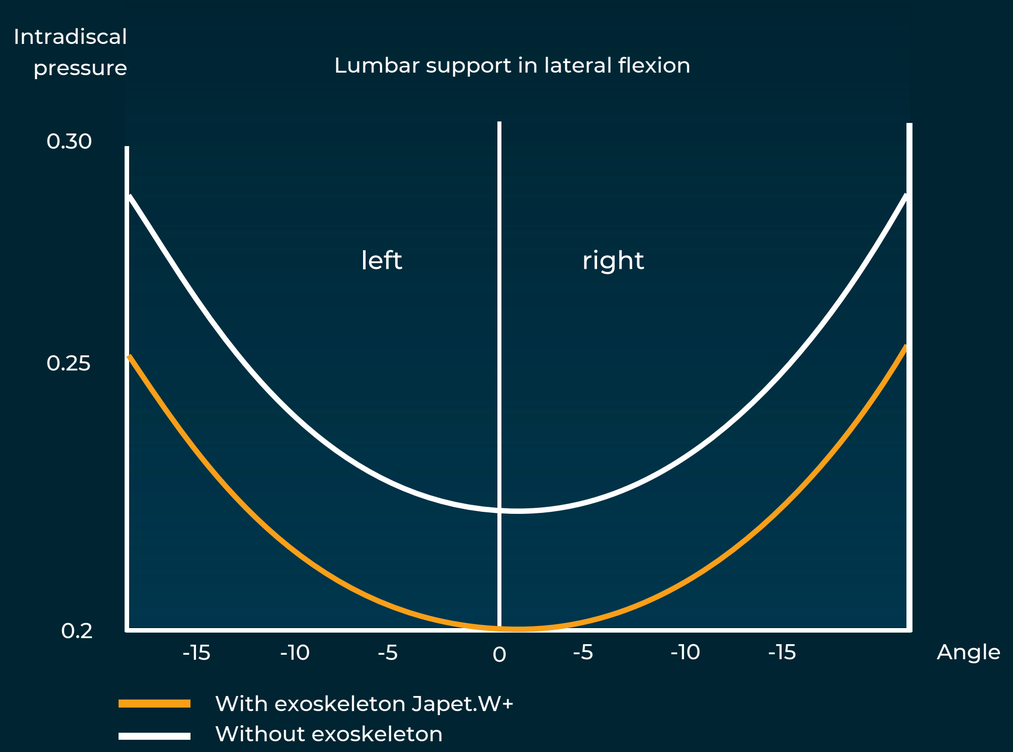
To assess the impact of the exoskeleton on lumbar pressure, intradiscal pressure measurements were taken on an inert subject wearing the exoskeleton.

Method.

A pressure sensor was placed in the lumbar intervertebral discs to enable continuous measurement of intradiscal pressure. The recording started with the exoskeleton turned off. After a few seconds, the exoskeleton was turned on and remained active for 2 minutes before being turned off again. Measurements were taken five times per sensor location.

Consult study

MAINTAIN REDUCTION OF INTRADISCAL PRESSURE IN MOTION



Continuous lumbar support for all upper body movements

Scientific study.

Study.

Study report on the impact of the exoskeleton on the L4L5 disc during handling movements - Musculoskeletal simulation.

Context.

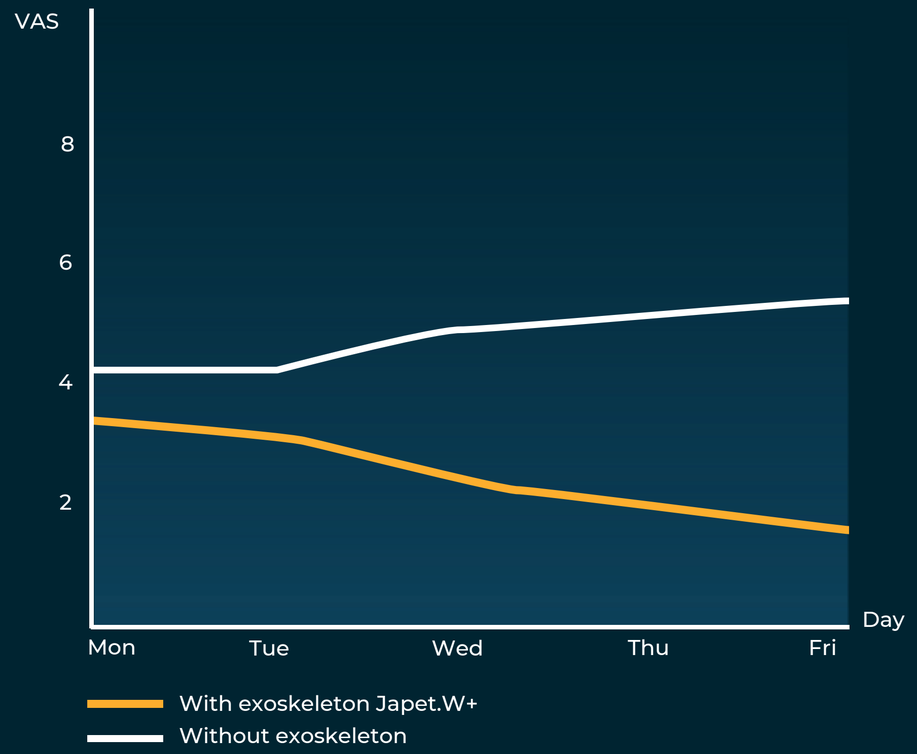
In order to analyse the impact of the exoskeleton on intradiscal pressure in a moving subject, the exoskeleton is modelled in a simulation of the human body.

Method.

Intradiscal pressure was calculated using the Anybody Modeling System musculoskeletal simulation software. Calculations were carried out with and without the exoskeleton during movements in the three anatomical planes.

Consult study

REDUCTION OF PAIN AT WORK AMONG USERS WITH LUMBAR PATHOLOGY



85%

of users with lumbar pathology experience a significant reduction in pain with Japet.W+.

Clinical study.

Study.

Moulart M, Olivier N, Giovanelli Y, Marin F. Subjective assessment of a lumbar exoskeleton's impact on lower back pain in a real work situation.

Context.

The aim of this study is to analyse the impact of the exoskeleton on the pain experienced by operators suffering from mechanical injuries over the course of a working week.

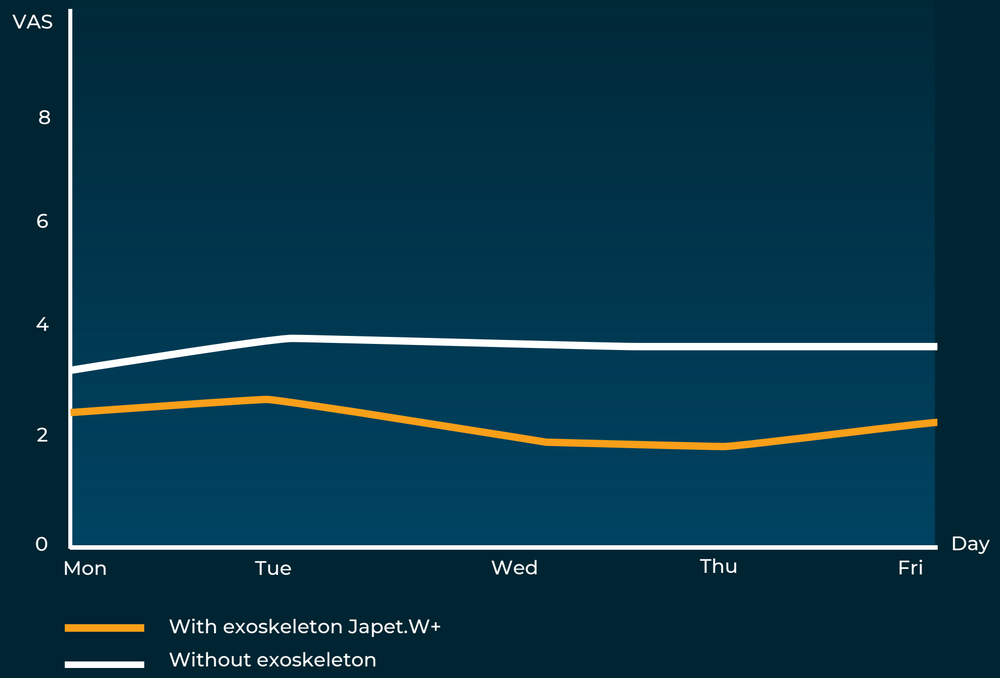
Method.

To do this, 20 operators assessed their pain levels during three weeks of work with and without the Japet.W+ exoskeleton. Each day, their pain level was recorded using the Visual Analogue Scale (VAS) at the end of the day (data collected by the occupational health departments of the participating companies).

Consult study

Scientific study.

REDUCTION IN PAIN AT WORK AMONG USERS WITHOUT LUMBAR PATHOLOGY



50%

reduction in lower back pain experienced by operators without lumbar pathology.

Study.

Analysis based on data from the study ‘Subjective assessment of a lumbar exoskeleton's impact on lower back pain in a real work situation’.

Context.

The aim of this study is to analyse the impact of the exoskeleton on the pain experienced by operators not suffering from lumbar pathology over the course of a working week.

Method.

To do this, 10 operators assessed their pain levels during three weeks of work with and without the Japet.W+ exoskeleton. Each day, their pain level was recorded using the Visual Analogue Scale (VAS) at the end of the day (data collected by the occupational health departments of the participating companies).

REDUCTION OF FATIGUE AT WORK AMONG USERS WITHOUT LUMBAR PATHOLOGY

86%

of nurses experienced a reduction in back fatigue at work.

Scientific study.

Study.

Farah L, Roll D, Sorais A, Vallée A. Assessment of Exoskeletons on Nurses' Quality of Work Life: A Pilot Study at Foch Hospital.

Context.

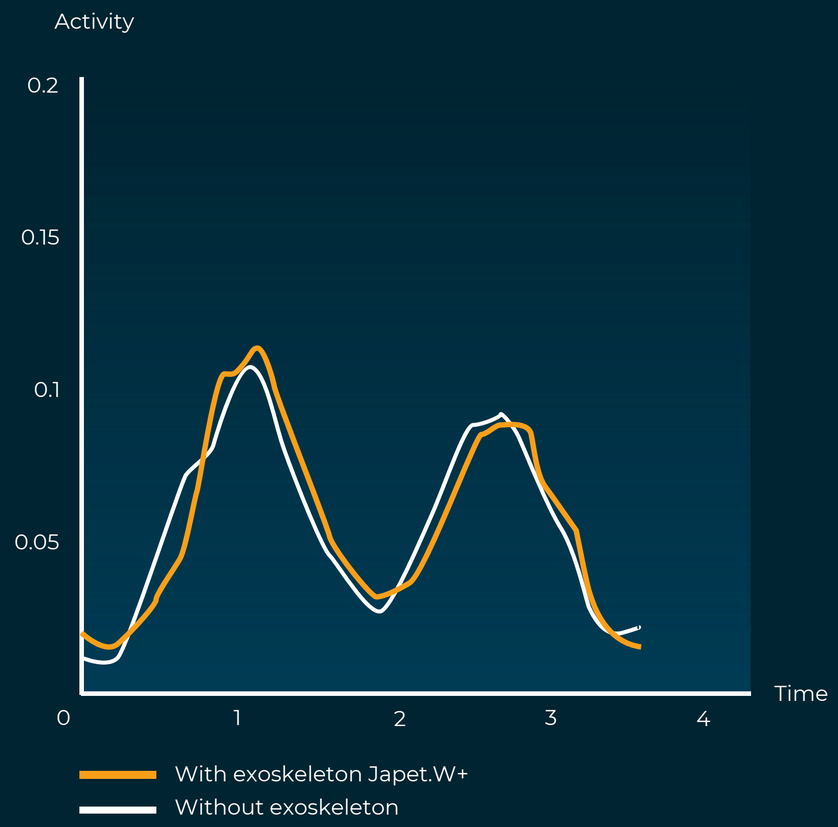
The aim of this study is to identify an exoskeleton that is suitable for the nursing profession and meets the nurses' expectations. The Foch Hospital wanted to combat MSDs by finding a solution to maintain posture and reduce lumbar pain and lumbar fatigue.

Method.

14 nurses then participated in the study, wearing the exoskeleton for numerous hours during their work shifts. Afterwards, they completed a questionnaire to assess a numerous factors, including lower back fatigue and pain.

Consult study

MAINTAINING MUSCULAR ACTIVITY



Muscles function normally while wearing the exoskeleton.

Scientific study.

Study.

Moulart, M., Acien, M., Leonard, A., Loir, M., Olivier, N., & Marin, F. Investigating Kinematics and Electromyography Changes in Manual Handling Tasks with an Active Lumbar Exoskeleton.

Context.

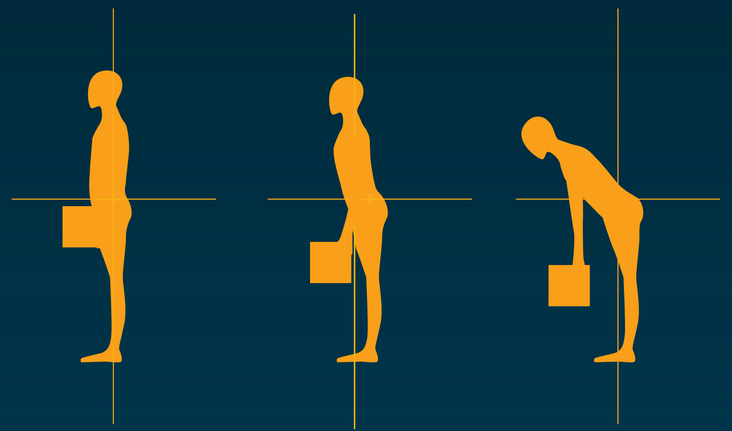
The aim of this study is to analyse the impact of the Japet.W+ exoskeleton on the muscles of the abdominal and lumbar region.

Method.

Electromyograms were placed on the abdominal, external oblique and lumbar muscles to measure muscle activity in the abdomino-lumbar region. Participants simulated handling movements both with and without the Japet.W+ exoskeleton.

Consult study

REDUCTION OF RISKY POSTURES WHEN CARRYING LOADS



	0 to 20° little risk	20 to 60° medium risk	more than 60° high risk
With Japet.W+	42.2%	56 .6%	1.2%
Without exoskeleton	40.6%	44.7%	14 .7%

85%

less time spent at dangerous angles (>60°) when carrying loads.

Scientific study.

Study.

Moulart, M., Acien, M., Leonard, A., Loir, M., Olivier, N., & Marin, F. Investigating Kinematics and Electromyography Changes in Manual Handling Tasks with an Active Lumbar Exoskeleton.

Context.

The aim of this study is to analyse the impact of the exoskeleton on the operator's posture during handling movements.

Method.

Measurement using a motion capture system with 36 cameras to analyse the kinematics of the back and an EMG measurement for muscle activity. The RULA method was used to identify the angles at risk.

Consult study

IMPACT ON THE SICK LEAVES

Examples of parameters taken into account

Cut by 2 the cost of sick leave caused by back injuries

by reducing low back disorder risk factors

Statistical study.

Study.

Analysis of the impact of the Japet exoskeleton on 500 jobs identified as high risk for low back pain in France, using the Japet diagnostic tool.

Context.

The aim of this study is to measure the impact of Japet.W+ on the frequency of sick leave associated with low back disorders in high-risk jobs involving bending, repetitive movements, and carrying loads.

Method.

The study used a predictive statistical reference model* that incorporated parameters such as bending posture, bending speed, weight handled and lifting distance, to assess changes in the frequency index of low back pain disorder before and after the integration of the Japet exoskeleton. The results show that the sick leave frequency index is reduced by half when using the Japet.W+ compared to not using it.

*Marras WS, Lavender SA, Leurgans SE, Rajulu SL, Allread WG, Fathallah FA, Ferguson SA. The role of dynamic three-dimensional trunk motion in occupationally-related low back disorders.

USER SATISFACTION

‘Every time I talk about the exoskeleton, I tell people to try it out, because personally, I can't live without it.’

Guillaume Garcia - Order picker at Pierre Martinet

8/10

Average user satisfaction, 20 days after the device’s implementation

Post-market clinical study.

Study.

French post-market clinical study conducted since 2019: evaluating user satisfaction after 20 days of using the Japet.W+ exoskeleton in sectors such as agri-food and industry, for handling activities, repetitive movements and awkward postures.

Context.

The aim of this study is to assess user perceptions of comfort, ease of use, perceived support, and overall satisfaction in physically demanding work environments.

Method.

The data was collected by a third party, independent of the Japet team, using integration follow-up questionnaires. These questionnaires make it possible to evaluate various aspects of the user experience after 20 days of use in real working conditions.

More research on this subject.
When used to simulate patient transfers by handling loads at bed height, Japet significantly reduces the perception of effort and is preferred by healthcare professionals.

External study.
Guittienne M, Forestier N. Differentiated effect of 3 types of exoskeleton and handling height on the activity of the flexors digitorum communis, deltoideus and longissimus during a mobilisation task in bed.

CLIENT SATISFACTION

‘Working with Japet to integrate the exoskeleton has proved to be a major asset to the success of our project.’

Julien Notari -
Technical Manager at
Maison Gabriel Meffre

8.1/10

Average satisfaction rating of companies that have been implementing Japet exoskeletons for more than 5 months.

Quality study.

Study.

Satisfaction study conducted with French companies from various sectors (agri-food, industry, crafts, etc.) that had been implementing Japet’s solutions for more than five months.

Context.

This study aims to evaluate the perception of Japet’s customer companies regarding the usefulness and effectiveness of the Japet.W+ exoskeleton in the context of their operations, particularly for jobs involving repetitive physical constraints.

Method.

The data was collected from the exoskeleton project managers at each customer company that had been using the Japet.W+ exoskeleton for more than five months.

Japet.W+

Collection of studies.

Studies carried out with Japet.W+ or earlier versions. As the results remain valid, we only use the new name of the product throughout this collection.

en.japet.eu
147 avenue Pierre Mauroy, 59120 Loos, France

Japet.W+ is indicated for people suffering from chronic and acute low back pain. The device is designed for ambulatory distraction of the lumbar spine. The device can also be used by people in good health who carry out tasks involving heavy strain on the lumbar spine. Japet.W+ is a class IIa medical device manufactured by Japet Medical Devices. CE conformity assessment has been carried out by BSI Group - The Netherlands B.V (CE 2797). Read the user guide carefully. @ 2025 - Japet Medical Devices - Collection of studies EN - V.04