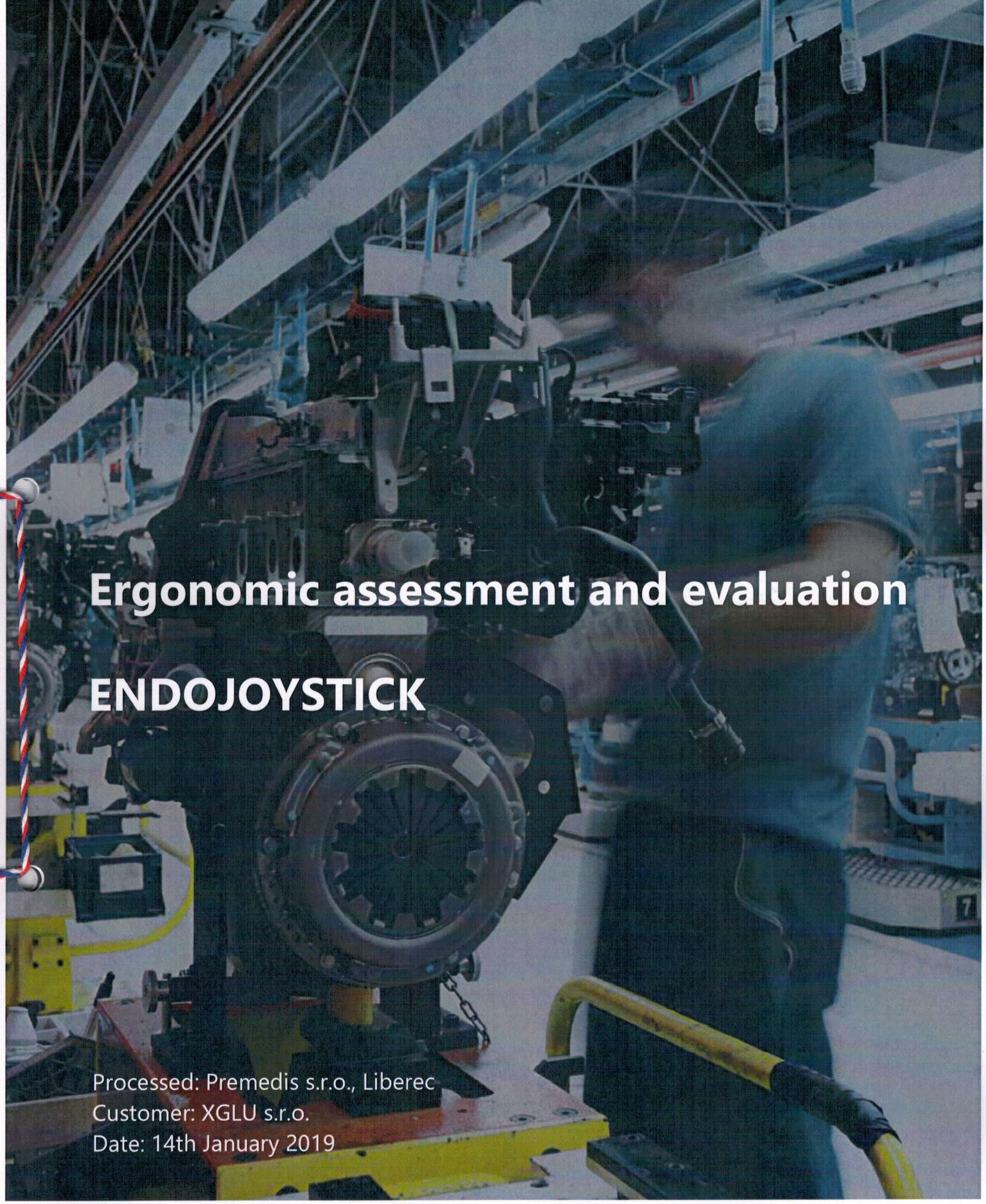

Ergonomic assessment and evaluation

ENDOJOYSTICK

Processed: Premedis s.r.o., Liberec
Customer: XGLU s.r.o.
Date: 14th January 2019

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ERGONOMIC ASSESSMENT AND EVALUATION

1. Evaluation aims and purpose

- to assess and evaluate current endoscopic procedures and new method of applying the ENDOJOYSTICK
- professional evaluation of efficiency and benefits of ENDOJOYSTICK for decreasing the muscle load and eliminating the risk of MSD's

2. Methodology

- Biometrics DataLite EMG measurement and synchronization with video records
- comparison of different working procedures – current situation x new equipment

3. Synchronization video records and DataLite EMG measurement

- date of measurement: 7. December 2018
- video documentation is an integral part of this report

1) Professional assessment was performed by „practical simulation" of typical endoscopic procedures
2) Evaluation was performed with Biometrics DataLite EMG System and combined with synchronization EMG and video records
3) Measurement and analysis was divided into 3 phases (current practice, ENDOJOYSTICK in central position and ENDOJOYSTICK in lateral position)
4) In each phase the minimum of 3 measurements were taken and we compared the results and output of these assessments

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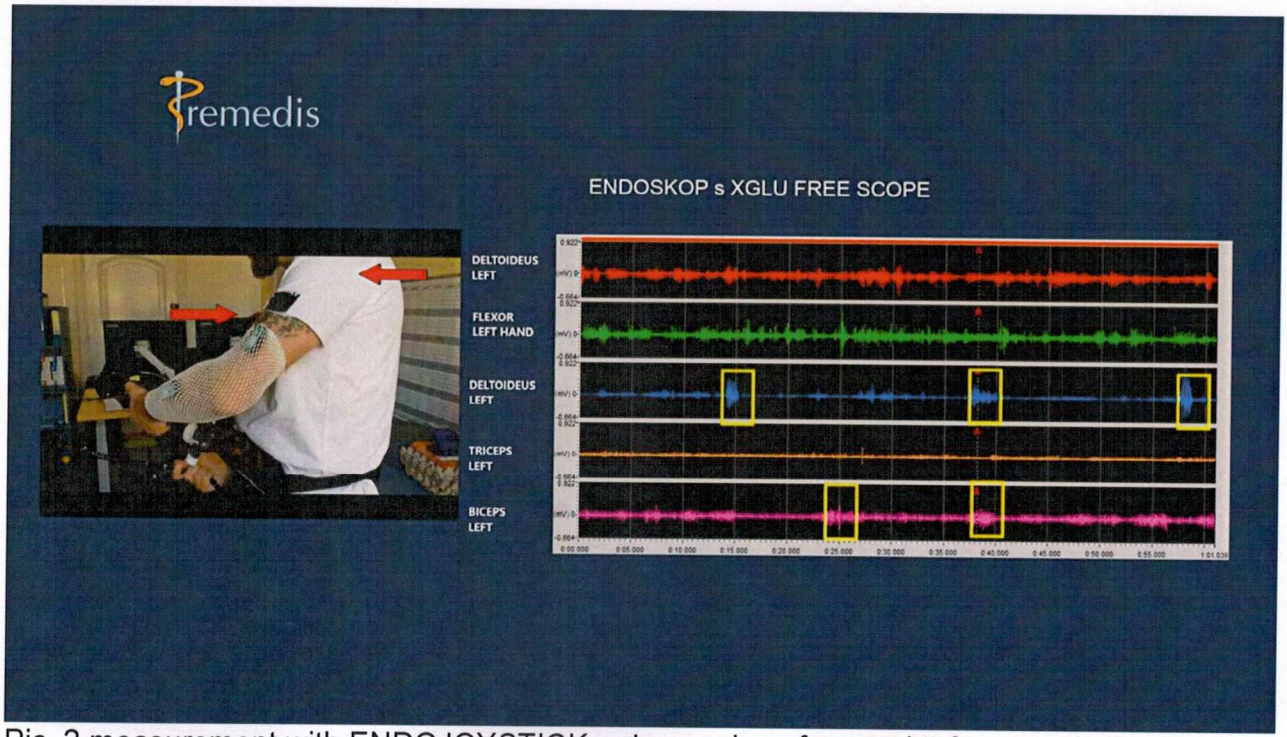
4. Comparison of current practice and new endoscopic approach using ENDOJOYSTICK

Pic. 1 measurement without ENDOJOYSTICK



Pic. 2 measurement with ENDOJOYSTICK – decreasing of muscular force, higher level of micro breaks during muscular activity

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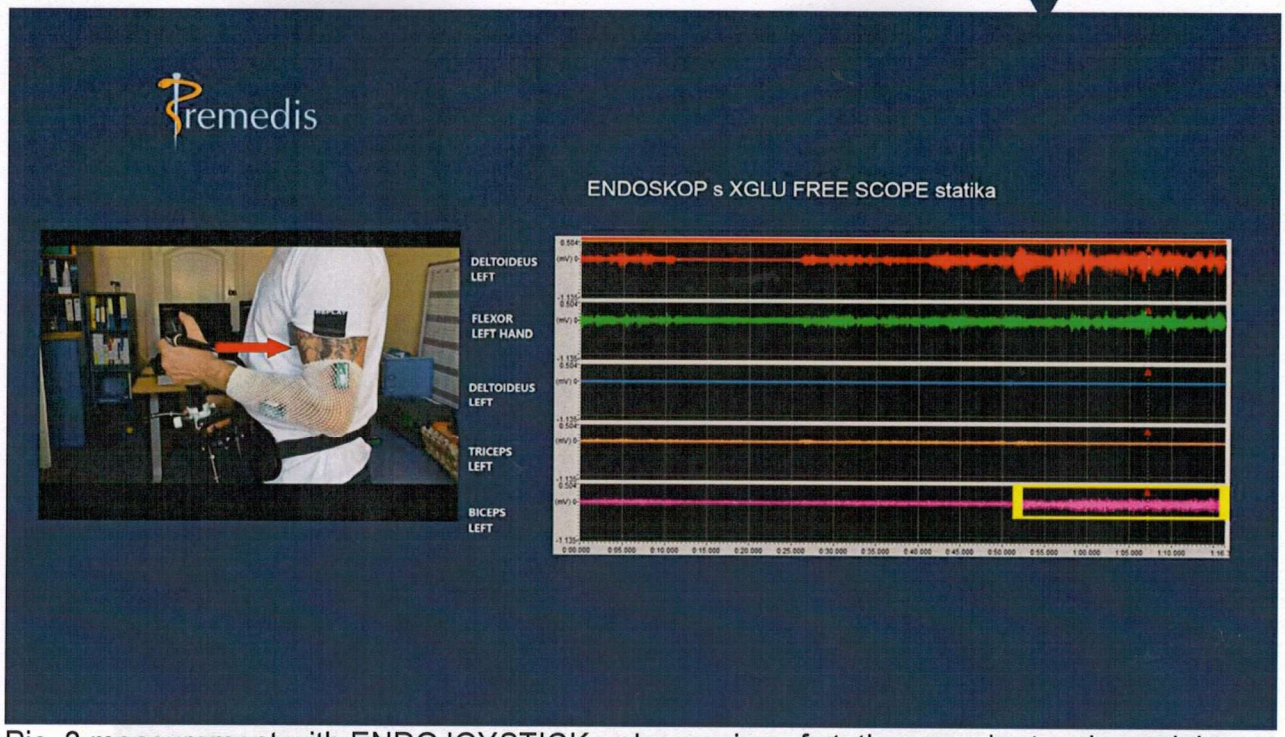

Pic. 3 measurement with ENDOJOYSTICK – decreasing of static muscular tension, minimum muscle force during first phase of holding

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5. Professional comments and conclusions

1) According to our evaluation we can say, the ergonomic holder ENDOJOYSTICK significantly decreased muscle load of the left upper limb, shoulder and cervical spine.

2) According to ergonomic standards and recommendations the best practice of using ENDOJOYSTICK is in the lateral position. Application in the central position is also beneficial and the final decision is dependent on individual preferences of the endoscopists.

3) Key ergonomic benefits of ENDOJOYSTICK:
   a) significantly decreases muscle force and load during endoscopic procedures
   b) crucially increases frequency of micro breaks during muscular activity
   c) high efficiency of manipulation with endoscopic joystick and lower number of movements
   d) minimizing the risk of over loading the cervical spine, shoulder, elbow, forearm flexors and extensors and wrist.
   e) lower probability of occurrences of musculoskeletal disorders
   f) lower level of muscle force during static holding of endoscope
   g) general improvement of ergonomic working procedures and lower level of long-term overloading of upper limbs

4) Expert's conclusions: special ENDOJOYSTICK definitely improves ergonomic performance and work efficiency and offers up many advantages for endoscopists. Ergonomic equipment ENDOJOYSTICK, we thoroughly recommend the application in real time practice.

Liberec 14th January 2019
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