

LAPARO ANALYTIC

laparoscopic trainer
with full training analysis

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The Laparo Analytic is a trainer device for laparoscopic training. It was designed to significantly improve the learning process by introducing an automatic assessment of the conducted training and a ability to track the learning curve.

This device is devoted mainly for the multi-user work in Medical Simulation centres.

The Laparo Analytic allows to conduct training with a full analysis thanks to the electronic sensors found in the Device and the laparoscopic tools. As a result, we have the first in the world trainer which allows complex and precise monitoring of the training parameters from the moment of the insertion of tools until their removal and completion of work.



- training analysis and automatic assessment
- multi-user network work
- user accounts
- learning curve
- precise sensors
- trainings creator with a tutorial
- touch screen
- FullHD mobile camera with blockade
- eight trocars
- electric regulation of the post
- easy placement of the training modules
- external light does not get through
- mobility
- simple handling
- support

1. Multi-user work

Laparo Analytic Trainers can work independently or within a common network. Using a global database, we can make training history and accounts available to users inside our network. Thanks to this network, it is also possible to work with a Mentor. In such a case, the users conducting the training can see a window with a preview from the Mentor's camera. This allows

the student to do the exercise step by step together with the Mentor. When equipping the training room, it is convenient to use the "Master" stand in the form of a separate trainer or a PC. The "Master" stand becomes a server with the database of all users. Moreover, the "Master" unit gives the administrator the following abilities:

- preview of images from all stands at the same time, in real time,
- analysis of the users' training history,
- analysis of the learning curve of the users,
- adding custom training modules,
- adding/editing users' accounts,
- adding/editing comments to the conducted users' trainings.



2. Precise sensors

The Laparo Analytic utilizes dedicated tools which have a set of electronic sensors. Using data from the camera, the tools can make precise measurements of training parameters. The device distinguishes left and right tools and checks the following parameters independently:

- visibility of the tool in the operating field (100 % means that the tool was always visible through the cameras),
- quality of tool introduction (analysis of movements from the moment of passing through the trocar to the moment the tool is visible in the camera - the less "wandering" the better the result),
- covered distance,
- speed,
- acceleration,
- trembling of the hand,
- number of grip clampings
- speed of grip clamping,
- training time.



3. Analysis of the conducted training

The in-built algorithms make an automatic analysis of the conducted training. A large number of data collected by the sensors and the cameras, is transformed into a user-friendly report. The application automatically shows spots where the values of the measured movement parameters exceeded the limits of a given training. When playing the video from the conducted training, the user can quickly find the moments where the defined limits were exceeded. The application automatically provides the assessment of the training in the 0-100% scale and provides assessment of every parameter. The device independently analyzes the left and the right laparoscopic tool, making it possible to compare them. Every conducted training can be saved in the memory of the device or on a remote server. It can be replayed and reanalyzed any time. Additionally, comments can be added to every saved training. Data export to Excel file is also available.

OPERATION RESULTS:

Summary for LEFT and RIGHT hand

54%

46%

DISTANCE TRAVELLED

41%

59%

CLAMPS COUNT

49%

51%

USAGE TIME

6.7/10

SYMMETRY

Overall result

5.4/10

ECONOMY OF MOVEMENT

TRAINING TIME: 00:03:15 / 00:03:30 [hh:mm:ss]
 DISTANCE TRAVELLED: 5.83 / 5.00 [m]
 CLAMPS COUNT: 21.11 / 20.00 [count]

SMOOTHNESS

6.2/10

Acceleration

6.7/10

Velocity

8.3/10

Hand oscillation

7.2/10

Clamps speed

OTHER

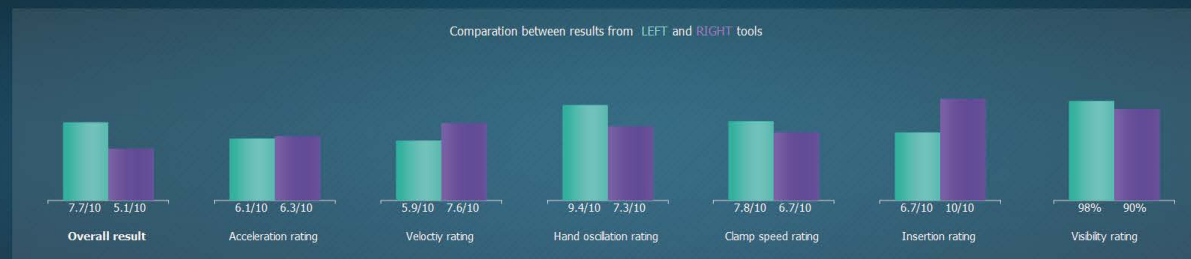
3.9/10

Visibility

8.4/10

Insertion

ADD COMMENT



	overall result	acceleration rating	velocity rating	hand oscillation rating	clamp speed rating	insertion rating	visible / invisible
 GRASPERS total distance: 2.92 m clamps count: 8	7.5 / 10	6.1 / 10	5.9 / 10	9.4 / 10	7.8 / 10	6.8 / 10	<p>98% / 2%</p>
1 insertion time: 00:00:01 extraction time: 00:01:17 total distance: 1.82 m clamps count: 4.77197	7.1 / 10	5.0 / 10	6.0 / 10	9.3 / 10	6.4 / 10	6.4 / 10	<p>98% / 2%</p>
2 insertion time: 00:01:25 extraction time: 00:02:17 total distance: 1.10 m clamps count: 3.82474	8.8 / 10	7.7 / 10	5.9 / 10	9.6 / 10	10 / 10	7.3 / 10	<p>100% / 0%</p>

	overall result	acceleration rating	velocity rating	hand oscillation rating	clamp speed rating	insertion rating	visible / invisible
 DISSECTORS total distance: 2.52 m clamps count: 12	4.8 / 10	6.3 / 10	7.6 / 10	7.3 / 10	6.7 / 10	10 / 10	<p>90% / 10%</p>
1 insertion time: 00:00:02 extraction time: 00:01:17 total distance: 1.48 m clamps count: 6.7	5.2 / 10	7.2 / 10	9.8 / 10	9.6 / 10	7.6 / 10	10 / 10	<p>88% / 12%</p>
2 insertion time: 00:01:20 extraction time: 00:02:17 total distance: 1.03 m clamps count: 5.8	5.1 / 10	5.2 / 10	4.9 / 10	4.4 / 10	5.7 / 10	10 / 10	<p>94% / 6%</p>

BACK

EXPORT

ANALYZE TIMELINE

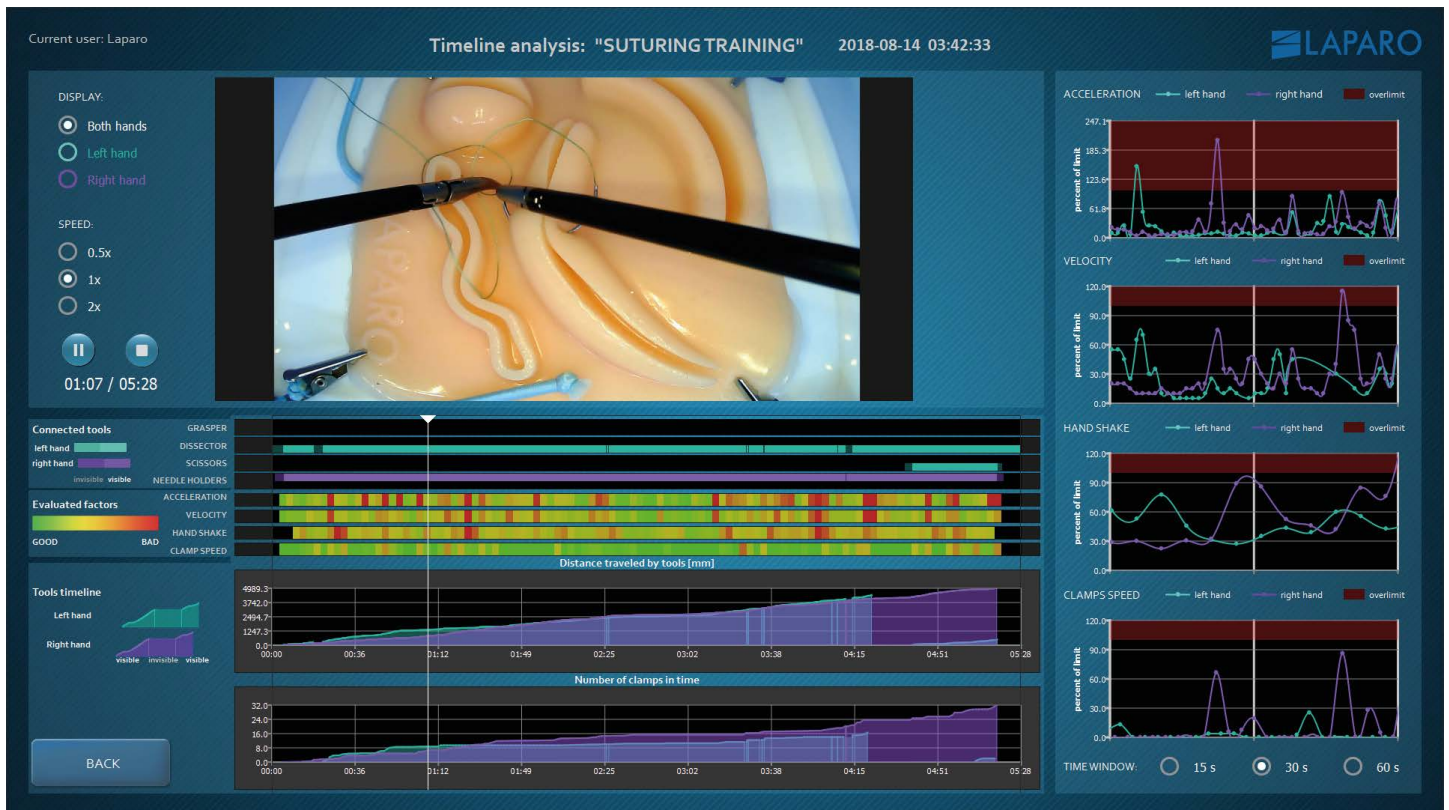
Preview of the programme's window - training summary

In the Summary of the training we can easily find out about the result of the conducted exercise.

We can divide it into 4 modules:

- the first one shows the main assessment of the training,
- the second one shows the comparison of working with different types of tools,
- the third one shows the comparison of working with left and with right hand,
- the fourth one shows the exact parameters of working with each tool.

Every parameter is measured within the 0% to 100 % scale where 100% is the best result.



Preview of the programme's window - analysis of the conducted training

An Analysis of the conducted training gives an advanced preview of the conducted exercise. The whole training is presented on a diagram which is a timeline at the same time. Every spot where the movement parameters were exceeded (e.g. too intense hands trembling) are marked with red. This way we can get to the part of the recording where we can see the errors made and have a careful look at them.

The video from the exercise can also be viewed in slow motion, frame by frame, observing only the chosen parameters alongside the video. Functionality allows also a separate study of the left and the right hand movements as well as working with a given tool.

The whole application has standard colours which clearly define the type of tool and distinguish left and right hand.

4. Learning curve

Every training saved in the database has a final assessment. The user has a ability to preview their own learning curve. The user also has a possibility to check the learning curve for a specific training and for specific parameters (e.g. only hands trembling). The administrator has a ability to analyze the learning curves of every user.

5. User accounts

The device's application allows to create the user accounts. The accounts are secured with passwords. Every user has an access to their own training history and their learning curve. The Administrator's account allows to access the database of all users.

6. Possibility to add your own trainings with a tutorial

The device has an intuitive creator of your own training sessions. This allows to create your own laparoscopic training together with a tutorial which will instruct how to conduct it. The creator allows to set independent limits for tool movement parameters, for every created training.

7. Touch screen

The whole application interface was created in a way to enable easy and intuitive control of the device with the use of the all-in-one computer, equipped with a touch screen. The control of the stand does not require keyboard or a mouse.

8. FullHD mobile camera with blocking option

The device is equipped with a full HD camera with a 1920x1080 definition. The camera can make full movements in any direction which allows to conduct training with an assistant. At the same time, the camera can easily be locked in a chosen position which allows an unassisted training.

9. Eight trocars

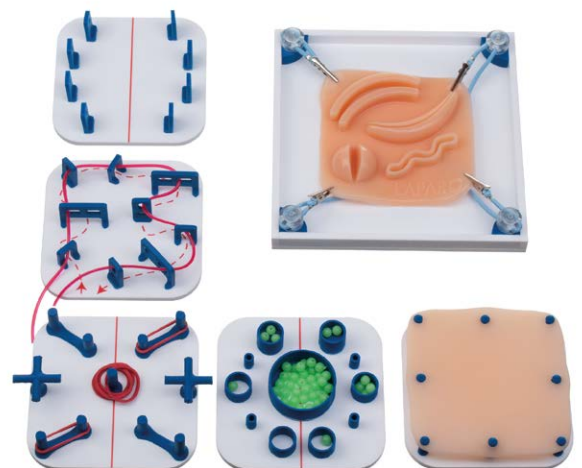
The user can use 8 tool inlets (4 on the left and 4 on the right). It allows to choose an appropriate inlet during the laparoscopic training.

10. Electric regulation of the stand's height

The device has an electric column which allows to adjust the height of the training table. The remote control is located in front and allows to save three heights in the memory of the device.

11. Quick and easy placement of the training modules

The dedicated training modules are fixed magnetically in 6 available positions and allow a turn every 90 degrees. It allows to easily adapt the working field to the training. The available modules allow to conduct various exercises, from the basic manual skills to the advanced suturing.



12. External light does not get through

The device has an enclosed working area which prevents the external light from getting inside. This allows to eliminate unwanted shadows and imitates the conditions of a real operation.

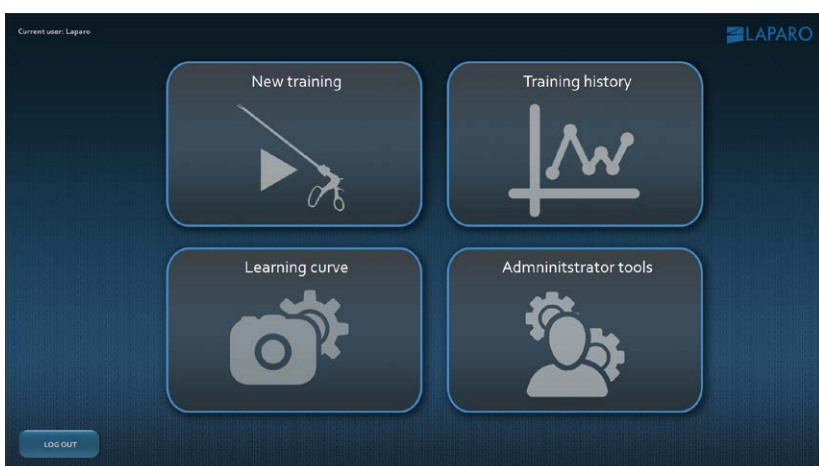


13. Mobility

For easy transport and stability, the stand is equipped with wheels which can be locked.

14. Simple handling

Despite advanced technology applied in the device, its handling is simple and intuitive. Time-consuming training sessions are not necessary so work with the device is a pleasant experience. Additionally, the application supports 6 languages. It makes the work with the device a pleasant experience.



view - main menu

15. Support

The LAPARO team guarantees full support for the products. Customer service will answer any questions and the technical support is always ready to help. Moreover, any software updates can be installed remotely.



CONTACT

sales@laparo.pl
+48 790 879 306

Laparo Sp. z o.o.
Plac Wróblewskiego 3A
50-413 Wrocław, Poland
VAT UE: PL8971818380