



## Instruction Manual

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# Introduction

- This model is designed to assess simple interrupted skin suturing quantitatively, and teaching yourself.

- **Manufacturer's note**

Read this manual carefully before use and follow all instructions. This model is designed for assessing the simple interrupted skin suturing quantitatively. Any other use, or any use not in accordance with the enclosed instructions, is strongly discouraged.

Kyoto Kagaku Co., Ltd. cannot be held responsible for any accident or damage resulting from such use. Please use this simulator carefully and refrain from subjecting it to any unnecessary stress or wear. Should you have any questions or concerns regarding use of this simulator, please contact the distributor you purchased from or Kyoto Kagaku Co., Ltd.

- **Features**

- Simple interrupted skin suturing can be evaluated quantitatively.  
(See "Suture Evaluation Simulator Help" for details)

For self learning with evaluation

- The all movies and assessment data of registered user can be stored for review.  
The assessment scores can be shown as a chart with the user's learning curve.  
(Each user can review his/ her own data only.).  
(1GB memory can store the data of approx 200 sessions.)

- Administrator can register assessment data as "good example" 's so that all users can see.

For clinical skills assessment

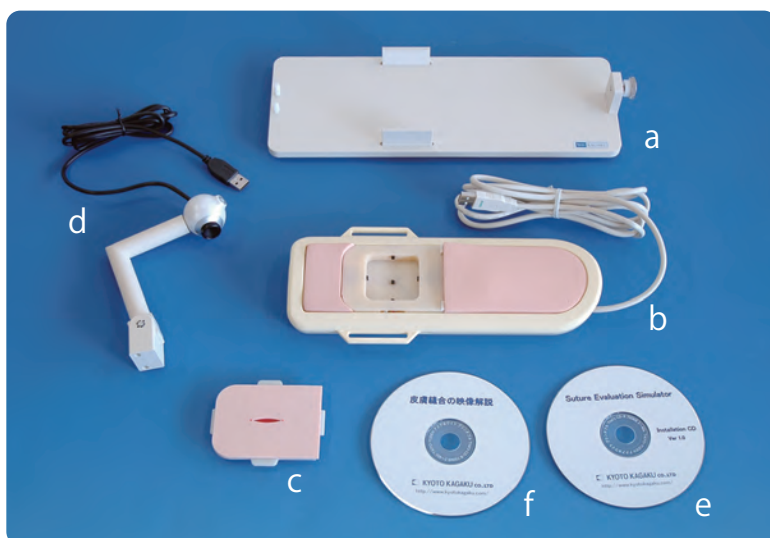
- "Examination mode" can be used for evaluating students' assessment.

This simulator was developed by Kyoto Kagaku Co., Ltd. with Takanishi laboratory, Faculty of science and Engineering, WASEDA University as joint research.

The project was supported by "Gifu and Ogaki Robotics Advanced Medical Cluster," which forms a part of MEXT-Japan (Ministry of Education, Culture, Sports, Science and Technology.)

## Set includes and part names

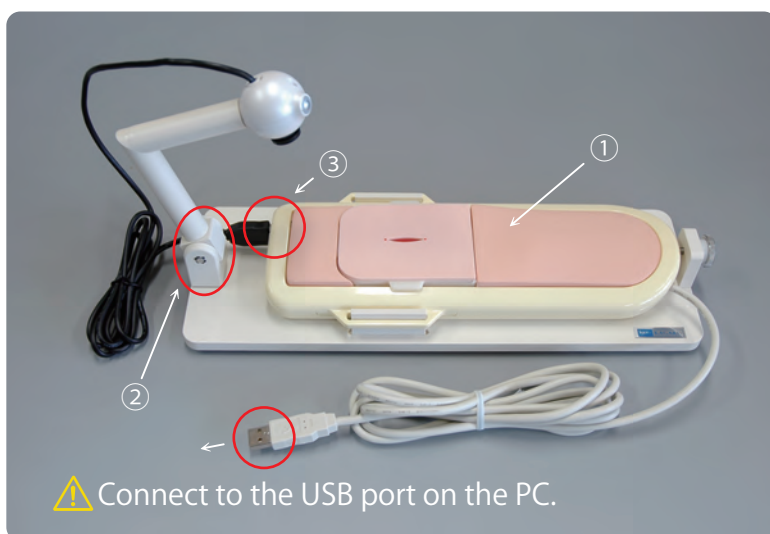
Before your first use, ensure that you have all components listed below.



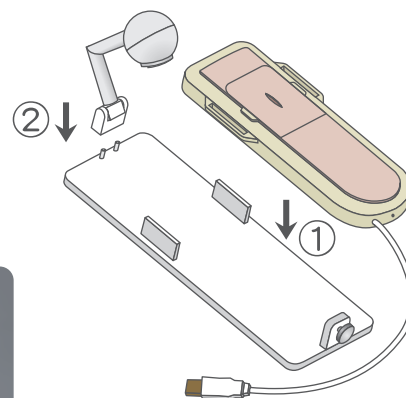
- a. Unit base..... 1
- b. Skin suturing unit..... 1
- c. Simulated Skin..... 40 pcs
- d. USB unit ..... 1
- e. Software (CD) for setup ..... 1
- f. CD ..... 1
- g. Lap Top PC..... 1  
(software pre-installed)
- Instruction Manual ..... 1

※At the time of delivery a, and b, are already assembled

Put together or connect the components as shown below.



⚠ Connect to the USB port on the PC.



- ① Put the Skin Suturing unit on the Unit base.
- ② Put USB camera unit on the Unit base.
- ③ Put the USB cable of the camera into USB port on the frame of the Skin Suturing unit.
- ④ Attach the Simulated Skin into the Skin Suturing unit.  
(See the page 20.)



- Ensure to install the USB camera driver before connect the simulator with PC.

### Platform Information

It is prerequisites for using suture evaluation simulator.

#### ● OS

Microsoft Windows Vista XP (Over SP2)

Microsoft Windows Vista (Over SP1)

#### ● Hardware

CPU: Intel Pentium III Over 1G Hz

Memory: Over 512 MB

Hard disk: Over 1GB

Display: High Color (Over 16 bit)

Desktop: Over 800×600 (Recommended : over 1024×768)

Drive: CD-ROM Driver (For Installation)

Interface: USB 2.0 Port (For Connection of the Suture Simulator)

#### ● Software

Windows Media Player over 9

Internet Explorer over 6

### DOs and DON'Ts

#### DOs

##### ● Operate the system under the designated circumstances

Power input: AC100V~230V plus or minus 10%, 50Hz/60Hz  
Temperature range: between 0 degrees C and 40 degrees C (no congelation)  
Relative humidity; between 0%to 80% (no condensation)  
\*Connecting to power source outside of the designated range may lead to fire.

##### ● Safe disposition

To avoid short circuit, do not run the simulator set above a power receptacle.

##### ● Handle the power plug and cord observing following precautions

1. Clean the head of the plug periodically.
2. Plug in the plug to the outlet firmly to the end.
3. Always hold the plug when unplugging. Do not pull the cable.
4. Do not force to bend, twist the cable and avoid scratching or cutting on it.

Failing to follow the above precautions can result in damage in the plug and the cable, constituting risk of fire or shock.

##### ● When the electric parts get warm or produce smoke, immediately turn off the power and unplug from the power source

Risk of fire. Contact your distributor or the manufacturer for repair.

##### ● Handle with care

The materials for the models are special compositions of soft resin.  
Please handle them with utmost care at all times and use the Simulator carefully and refrain from subjecting it to any unnecessary stress or wear.  
Clean the surface of the skin or the simulator with wet, soft and mildly soapy water.

##### ● Storage

Store the simulator at room temperature, away from heat, moisture and direct sunlight.  
Storage under the temperature above 50 degrees C may reduce the performance quality of the simulator.  
Never store the Simulated skin in piles or stress.

#### DON'Ts

##### ● Do not disassemble or open electric or precision components

Do not open up or disassemble the housing for electric parts or precision components.  
Refrain from opening up any lids, caps or covers for such area, and never run the system while any of such covers are open.  
\*Never disassembling the electric components, power plug and cable as it may create a risk of fire, shock or injury.  
Contact your distributor or the manufacturer for repair.

##### ● Never wipe the product and components with thinner or organic solvant

##### ● Ink marks on the soft surface won't be removable

Don't mark on the product and components with pen or leave any printed materials in contact with their surface.

##### ● Do not give shocks

The electric components are precision instruments.  
Strong shocks or continuous vibration may cause breakages of its internal structure.

##### ● Do not run the system continuously over 2 hours

Take at least 30 minutes shutdown, turning off the power, every 2 hours.

##### ● Do not wet the electric components

Do not pour or spill water or liquid detergent over the electric components, power cable and power plug.  
Running the system while the electric components are wet may create a shock hazard or a risk of fire.

##### ● Do not handle the power plug with wet hands

Risk of shock.

##### ● No fire

Do not put the product close to fire. It may lead to discoloration or deformation of the product as well as short circuit, creating a risk of fire.

The Suture Evaluation Simulator skin can remain usable even though the color of the unit parts may fade over time.

# Preparation

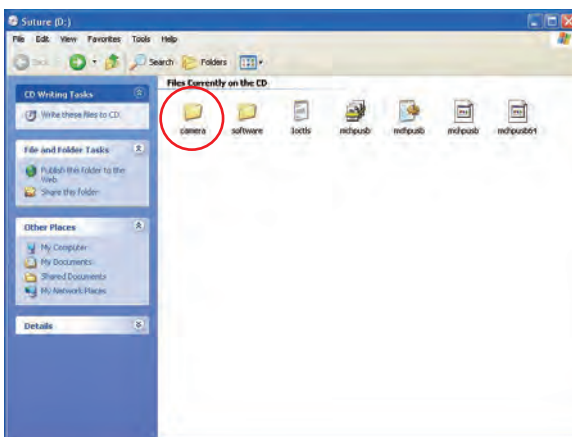
## Installation of the Driver (CD)



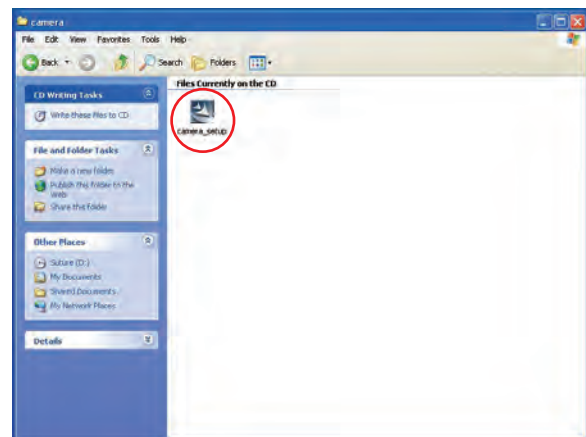
Caution

Never fail to install the driver-soft of the camera, before connect this simulator with PC.

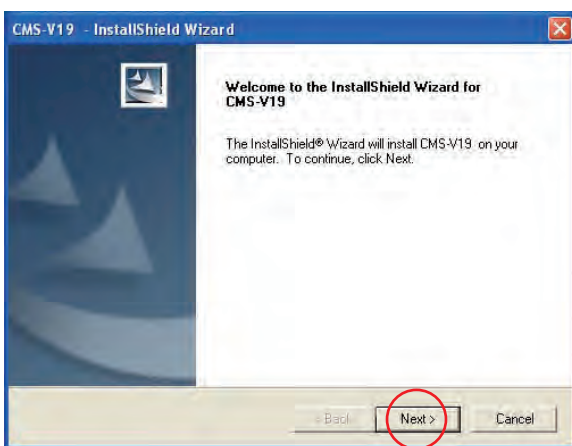
### 1 Install the USB camera driver



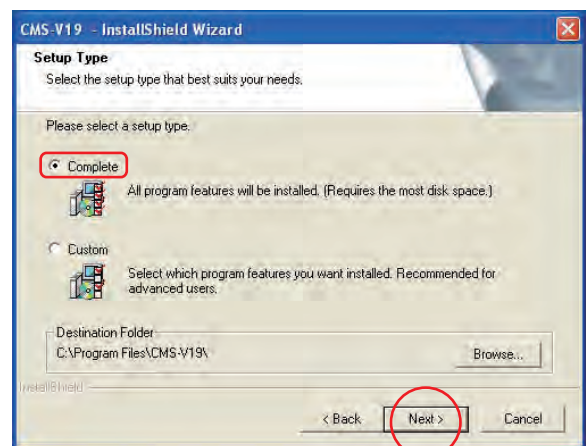
- ① First, Install the driver-soft (CD) of the camera.  
Put the setup CD into drive, and open the folder  
"camera".



- ② Double-click of "camera\_setup.exe"  
in camera folder.



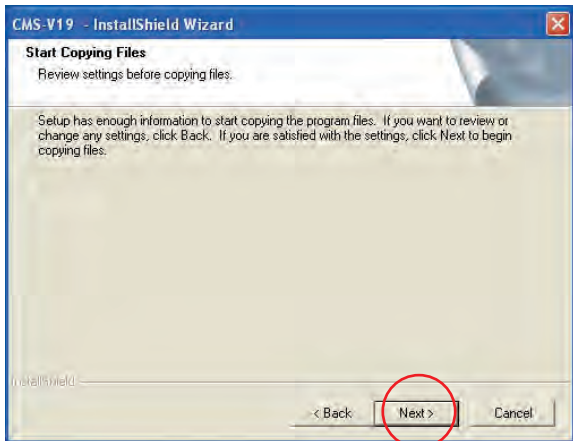
- ③ Then starting installation, follow the screens'  
instructions.  
Click "Next."



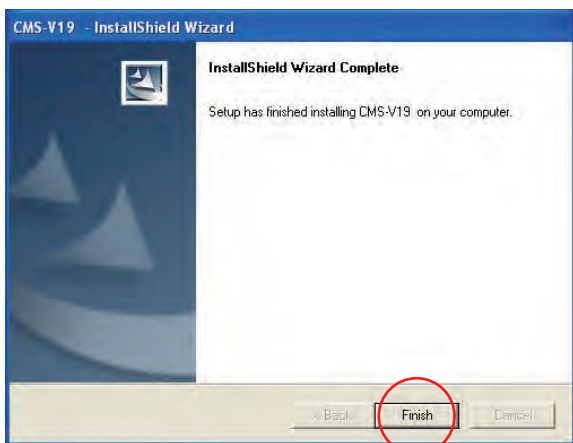
- ④ Select "Complete", and then click "Next."

# Preparation

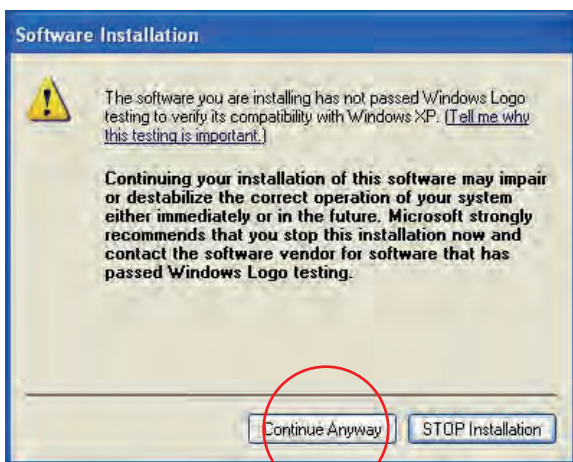
## Installation of the Driver



⑤ Click "Next."

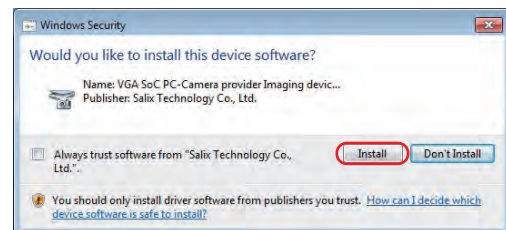


⑥ Click "Continue."



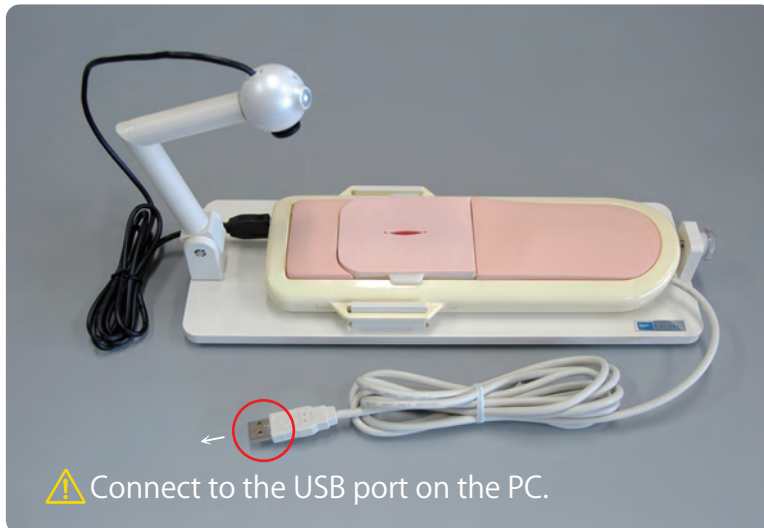
⑦ Click "Finish," then finish installing of the driver-soft.

windows7

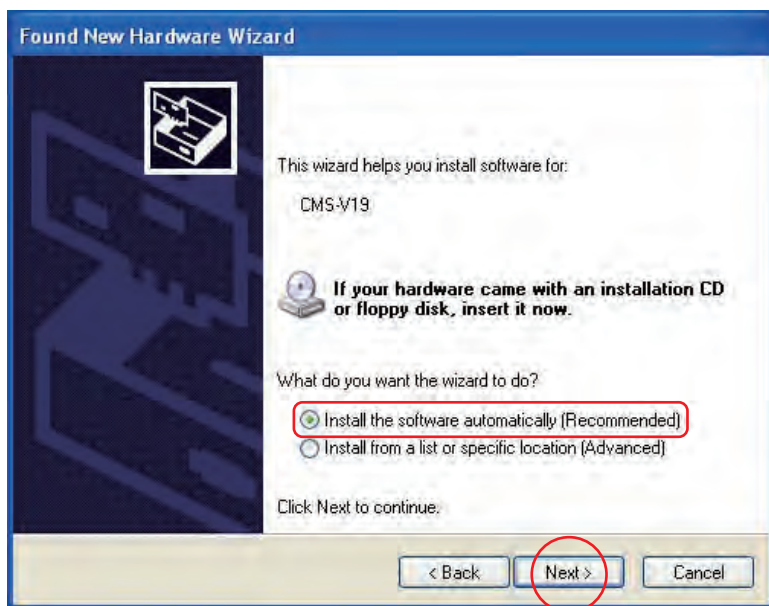


⑥ Select "Install."

After installing the USB camera driver, connect the Suture Evaluation unit's USB cable to PC.



※The sample screen shots in this manual are of Windows XP.  
Window appearance or procedures may vary depending on OS or other system settings.



⑧When the simulator connected to the PC, window opens as shown above.  
Click "Install the software automatically",  
then choose the "Next."

# Preparation

## Installation of the simulator unit

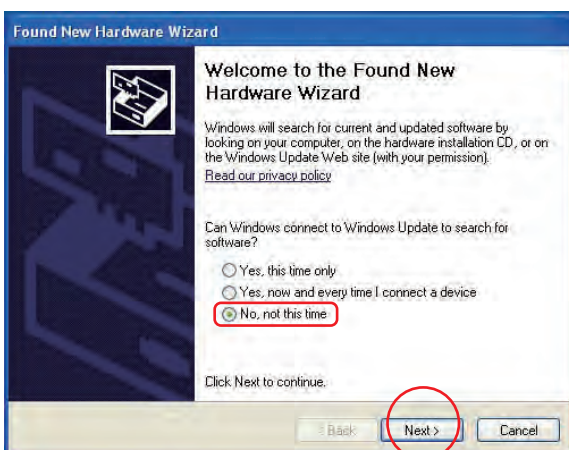


⑨ Click "Continue Anyway"

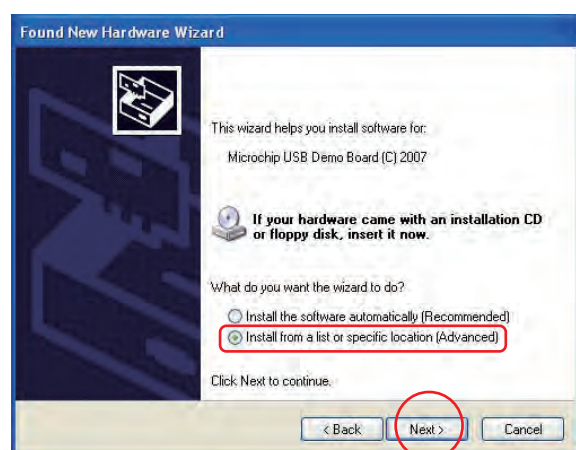


⑩ Click "Finish", complete the installation.  
Set up is to begin installing Suture Evaluation Simulator automatically, then click "Next"

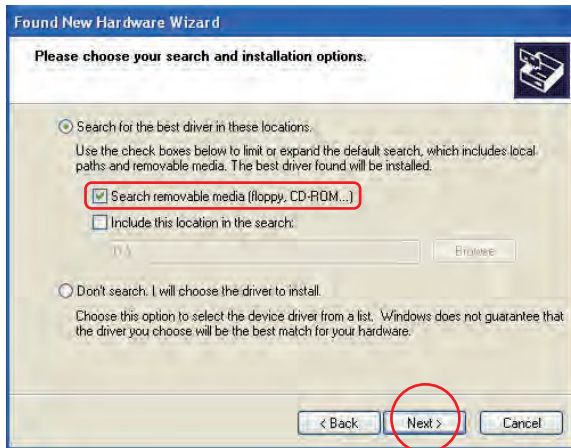
## 2 Installation of the Suture Evaluation Simulator



① Ensure the set up CD in the drive.  
Click "No, not this time."  
Click "Next."



② Select "Install from a list or specific location,"  
select "Next"



- ③ Select "Search the Removable Media", select "Next."



- ④ Installation starts automatically, please wait a minute.



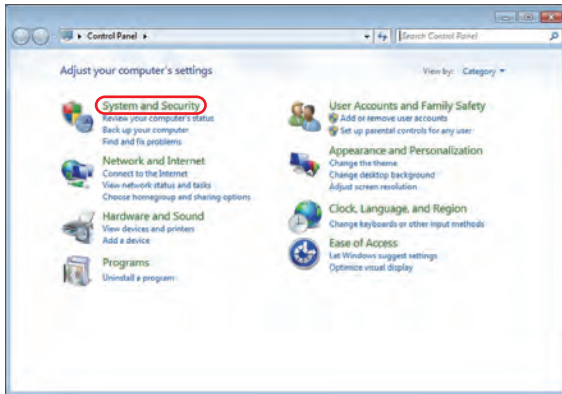
- ⑤ After finished the installation, click "Finish".



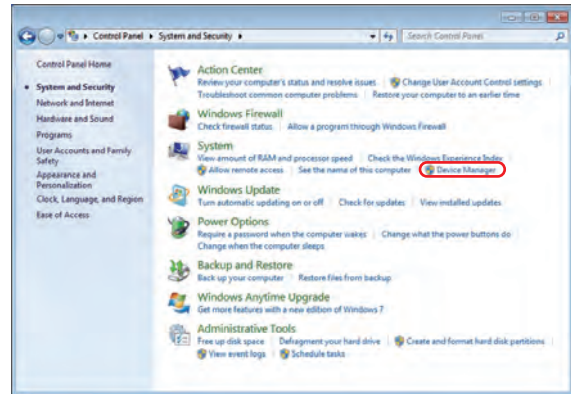
- ⑥ In a short time, screen like the upper picture is appeared at the lower right on the monitor.

※ If connecting the USB of the suture simulator into other USB port, installation procedure is required again (See on page 6 ~ page 8).

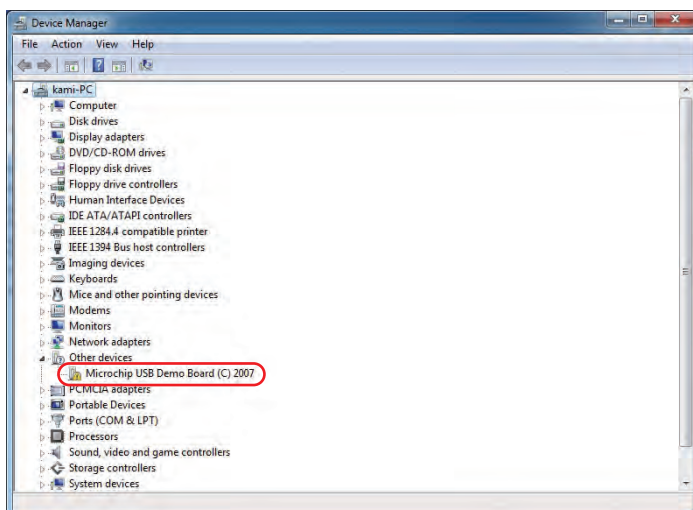
### 3 Confirmation and Updating of the Driver Software



① Please open the "Control Panel" window, and then select "System and Security."

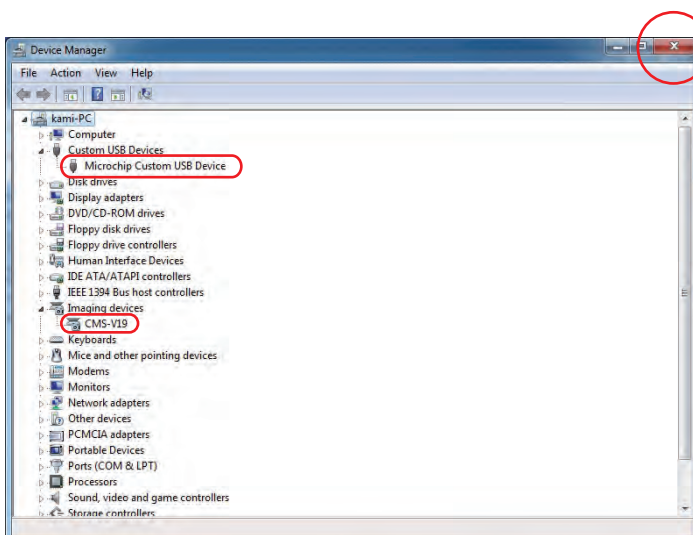


② Select "Device Manager."



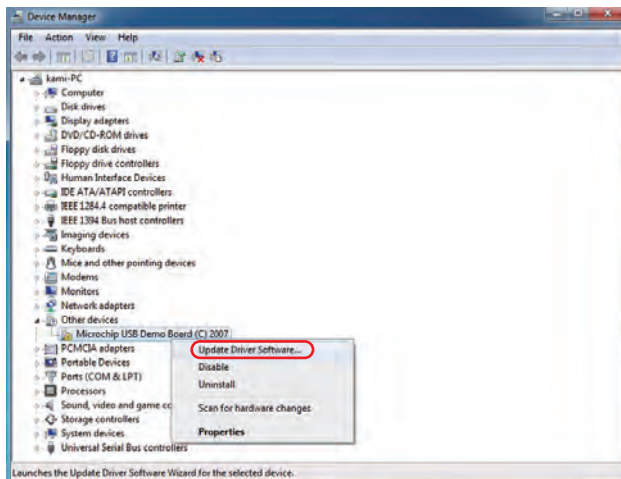
✗ USB is unrecognized.

③ If upper window is opened, USB is unrecognized. Click on "Microchip USB Demo Board (C) 2007."

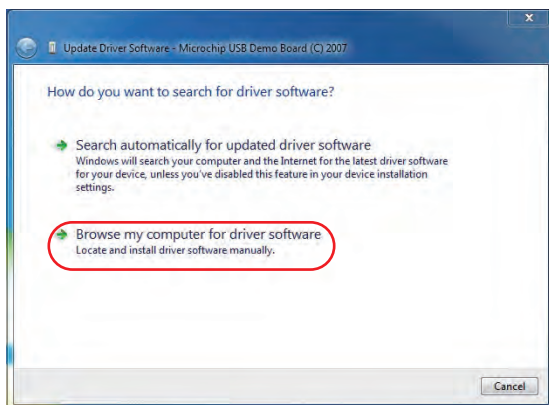


○ USB is recognized.

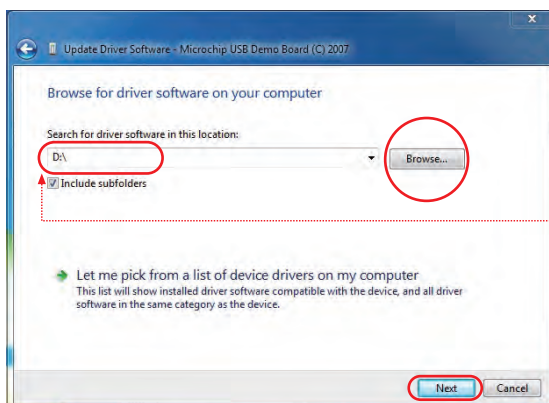
③ As like the upper window, installation is OK. Complete by selecting "X" on the right upper side.



④ Select "Update Driver Software."

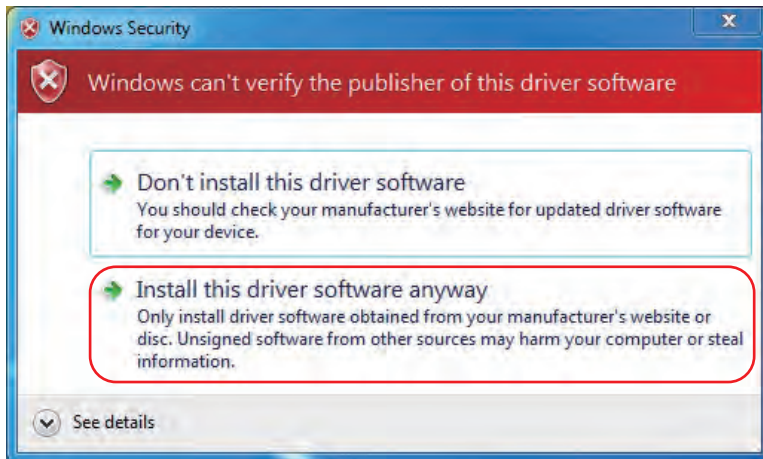


⑤ Select "Browse my computer for driver software."

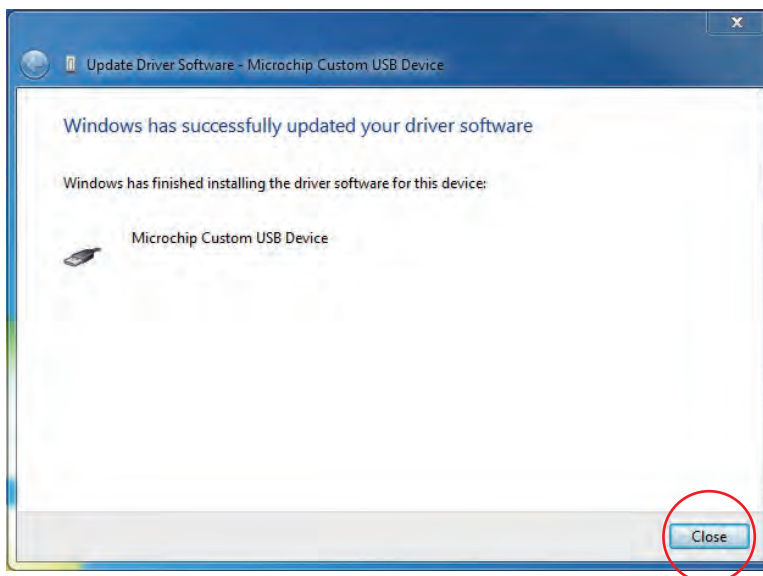


Please select the disk drive that allows you to insert CD.

⑥ Click "Browse" and select the disk drive that allows you to insert installation of CD, and then select "Next."

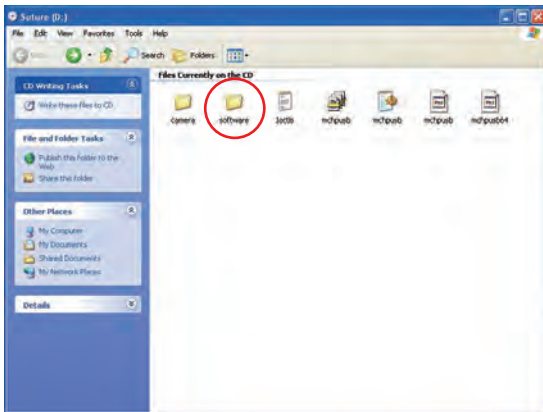


⑦ Select "Install this driver software anyway."

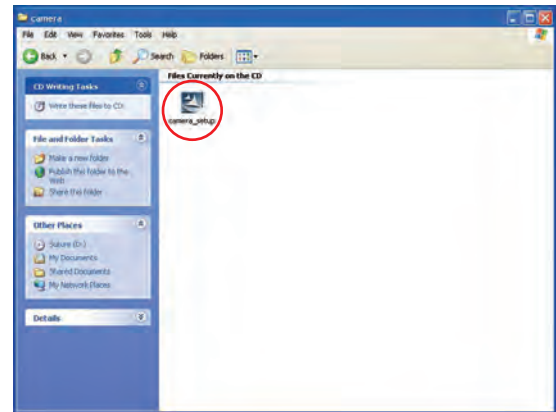


⑧ Select "Close", and then finish.

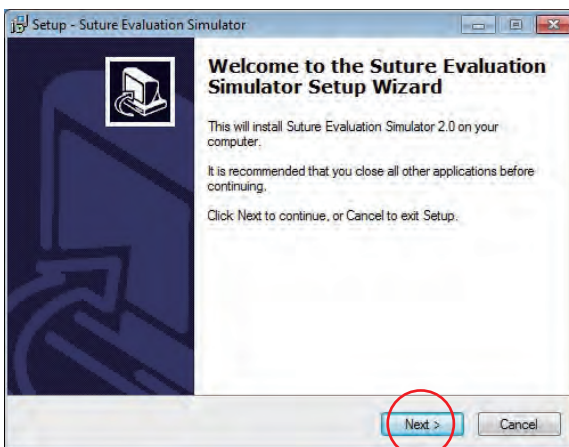
### 4 Installation of the software



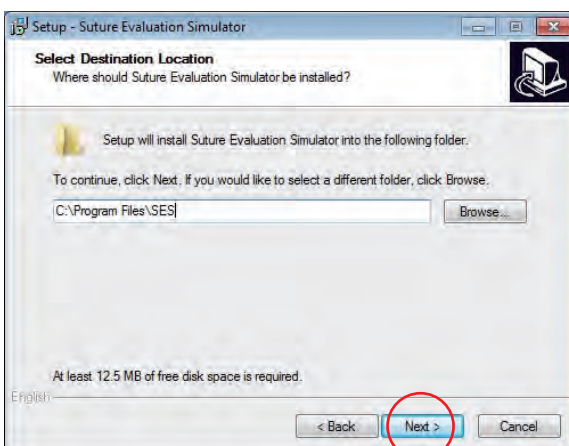
- ① After Installation of the Driver Software, install the Suture Simulator Software. Insert the CD for "Setting up" in the driver, then open the folder "software."



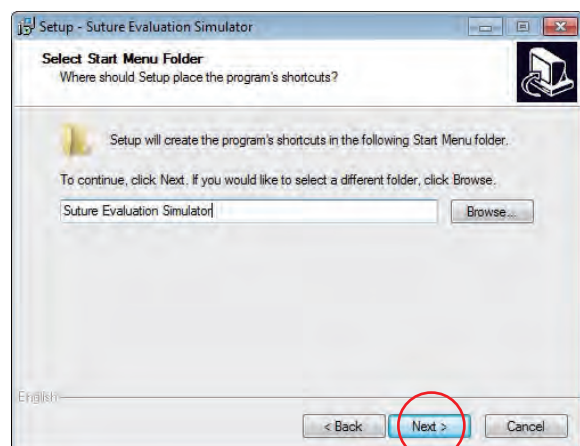
- ② Double-click on "soft setup.exe" in software folder.



- ③ Select "Next."



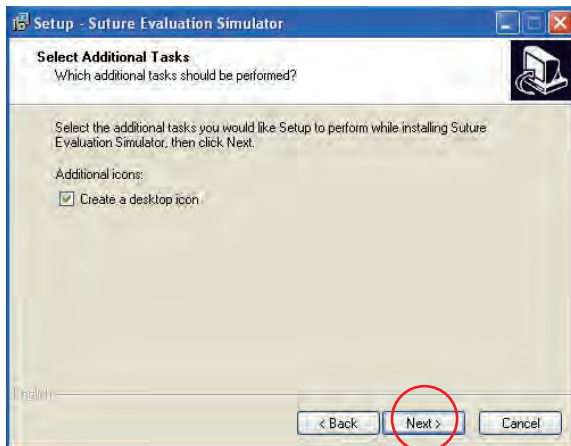
- ④ Select "Next."



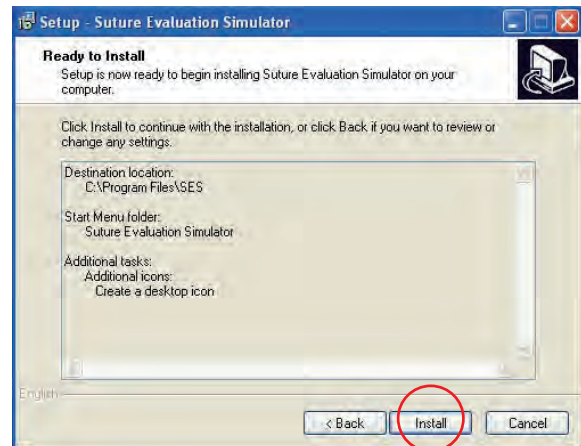
- ⑤ Select "Next."

# Preparation

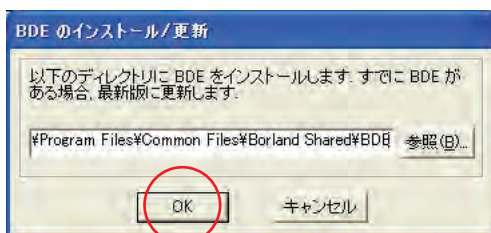
## Installation of the software



⑥ Click "Next"

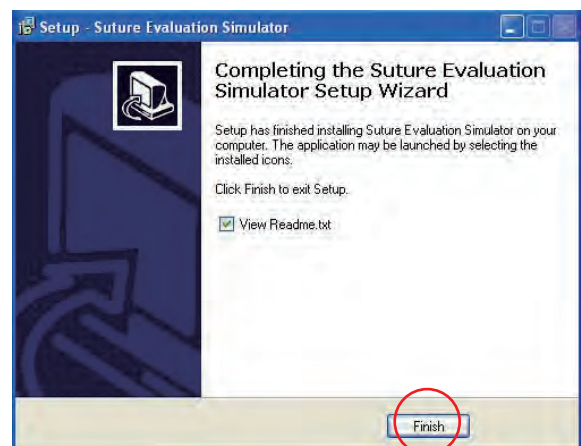


⑦ Click "Install" with ensuring the place of the installation.  
Installation is automatically, please wait a minutes.

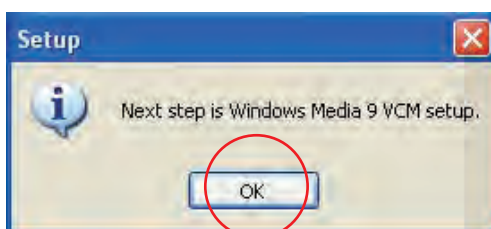


※This screen might appear differently on your PC, find the "OK" button and click it.

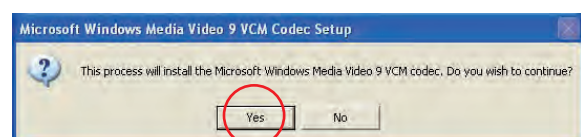
⑧ Click "OK."



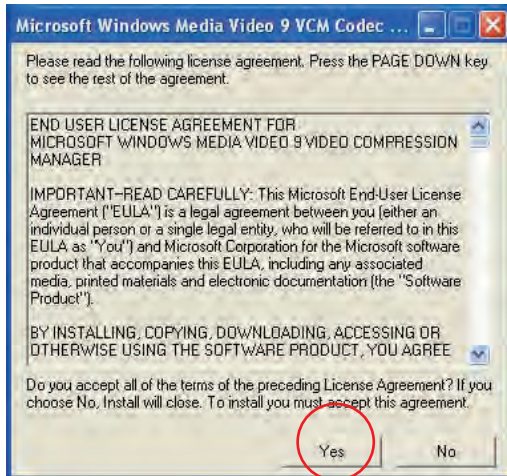
⑨ Click "Finish" to exit set up.



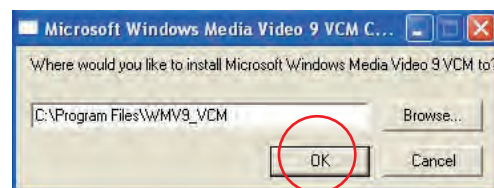
⑩ Next step is "Windows Media 9 VCM" set up. Click "OK." (Windows media Video 9 is the free soft which is necessary to motion of the program.)  
Windows Media Video 9 is free soft which is the act of putting the program onto a computer system so that it can be executed.



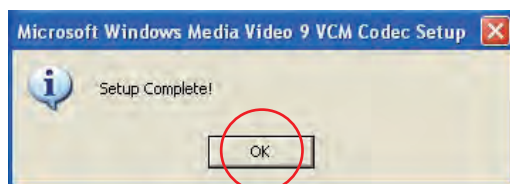
⑪ Click "Yes."



⑫ Click "Yes."



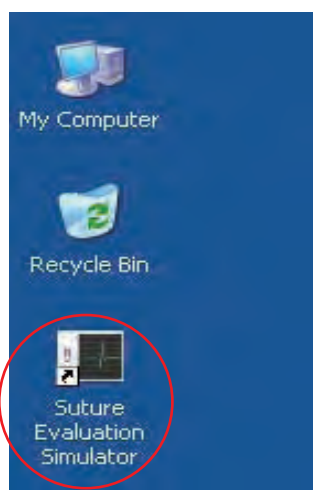
⑬ Click "OK."



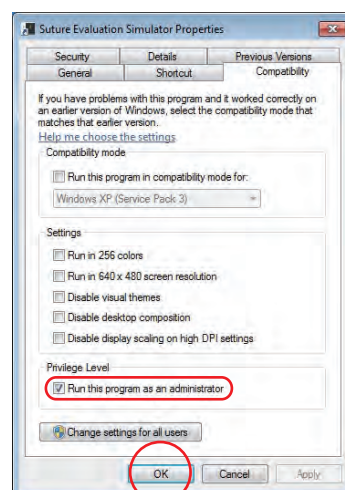
⑭ Click "OK," and finish the installation.

## 5 Administrator Setting

Windows Vista、Windows7

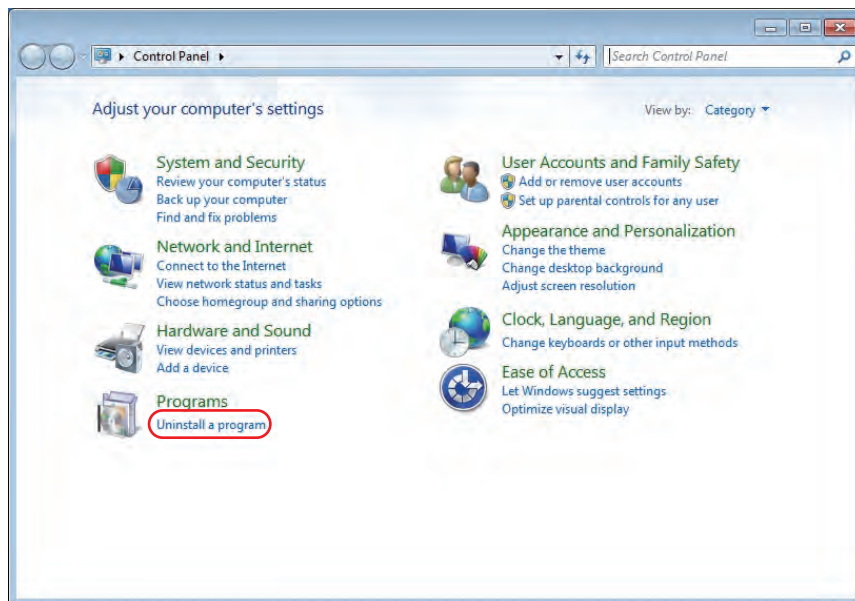


① Right-click "Suture Evaluation Simulator" icon on the desktop.

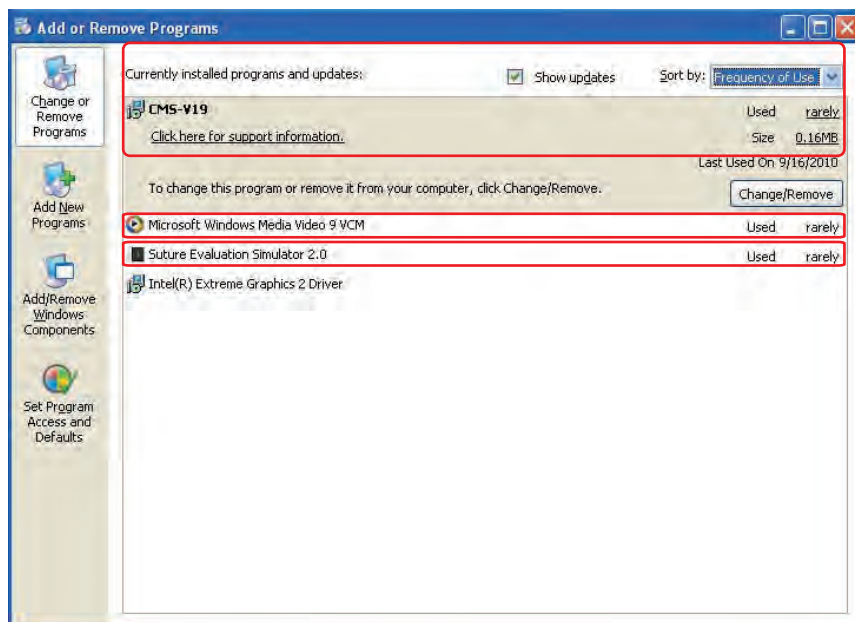


② Check the box where it indicates "Run this program as an administrator". Then click OK.

### 6 Un-installation of the driver and the soft



- ① Open the "Control panel."  
Double-click the icon "Add or Remove Programs."



- ② Open the window "Add or Remove Programs", delete the three applications as following.

[Program]

- Windows Media Video 9 VCM
- CMS-V19 driver
- The Suture Evaluation Simulator 2.0

# Training

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## ● Skills intended to be assessed

- 1 Skills intended to be assessed ..... P.17
- 2 Evaluation function / Evaluation items ... P.17
- 3 Normalization of evaluation items ... P.18~P.19
- 4 About weighting coefficients ..... P.19

## ● How to use

- 1 Attachment and removal of ..... P.20  
the Simulated skin
- 2 Use a black suture thread ..... P.20
- 3 Start up the simulator soft ..... P.21
- 4 The process of the Suture Evaluation .... P.22
- 5 Image Evaluation Procedure ... P.23~P.24

## ● Screen and Functions

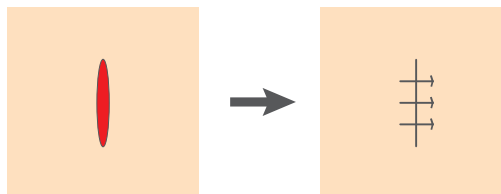
- 1 Login ..... P.25
- 2 User Account registration ..... P.26
- 3 Top screen ..... P.27
- 4 Edit your account settings ..... P.28
- 5 Evaluation Mode ..... P.29
- 6 Learning Mode (login as registered) ... P.30
- 7 Learning (login as guest user) .... P.31
- 8 Data replay window ..... P.32
- 9 Examination Mode ..... P.33~P.34
- 10 Change evaluation value weighting .... P.35
- 11 Evaluation data management ..... P.36
- 12 Examination data management .... P.37

### 1 Skills intended to be assessed

This Simulator is designed to assess the skin suturing skills.

Suture intended to be assessed

- Suture : Simple interrupted suture
- Ligature : Instrument tying



Make three-stitch sutures as shown above.



- Proper evaluation cannot be obtained when suture is made with unintended methods, such as mattress suture or continuous suture.

### 2 Evaluation function / Evaluation items

#### ● Evaluation function

This simulator evaluates the skin suturing skills by a unique evaluation function shown below.

$$E_{Suture} = \omega_T I_T + \omega_{FoT} I_{FoT} + \omega_{JuT} I_{JuT} + \omega_{DbS} I_{DbS} + \omega_{EqD} I_{EqD} + \omega_{WoD} I_{WoD}$$

(総合点)

#### ● Evaluation items

- |                                    |   |
|------------------------------------|---|
| ① Time                             | $I_T$ : Index of Completion Time                      |
| ② Force on Tissue                  | $I_{FoT}$ : Index of Force on the Tissue              |
| ③ Suture Tension                   | $I_{JuT}$ : Index of Judging Tension                  |
| ④ Distance between Stitches        | $I_{DbS}$ : Index of Distance between Sutures         |
| ⑤ Equidistance from the wound edge | $I_{EqD}$ : Index of Equidistance from the wound edge |
| ⑥ Would Dehiscence                 | $I_{WoD}$ : Index of Wound Dehiscence                 |

重み係数  $\omega_{T, FoT, JuT, DbS, EqD, WoD}$  : Weighting Coefficient<sup>s</sup>

(Reference)

Oshima, N. ; Solis, J. ; Ishii, H. ; Matsuoka, N. ; Hatake, K. ; Takanashi, A.

"Acquisition of quantitative data for the detailed analysis of the suture/ligature tasks with the WKS-2R"

Proceedings of 6th International Special Topic Conference on Information Technology Applications in Biomedicine, 2007. 8-11 Nov. 2007 Page(s) : 107-110

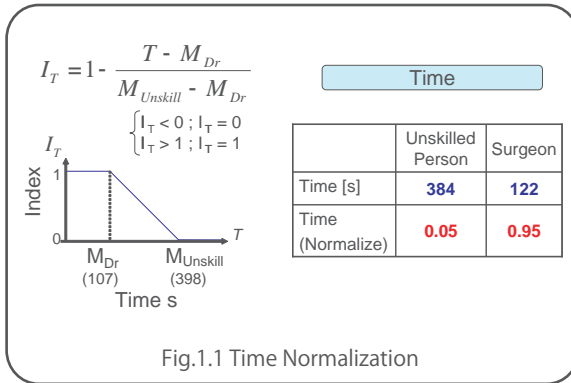
Oshima, N. ; Solis, J. ; Ogura, Yu. ; Hatake, K. ; Takanashi, A.

Development of the suture / ligature training system WKS-2 designed to provide more detailed information of the task performance  
Proceedings of IEEE / RSJ International Conference on the Intelligent Robots and Systems 2007.

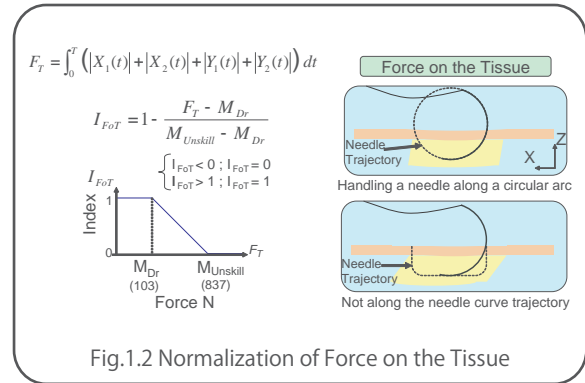
ct.9 2007-Nov.2.2007 Pages(s) : 58-63

### 3 Normalization of the evaluation items

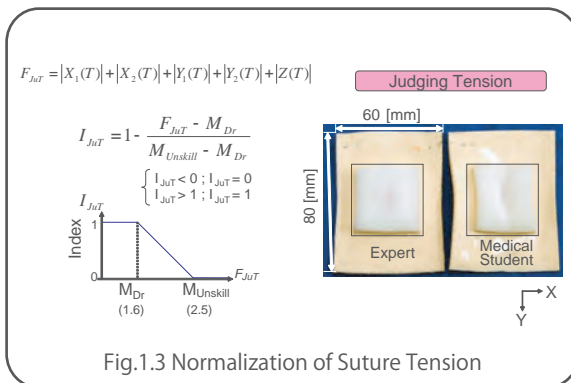
Each evaluation item in the evaluation function was normalized by using the collected data of surgeons' performance and those of unskilled persons. The average of the surgeon group's data is set to "1", while the average of the unskilled group's data was set to "0", and then they were linearly-connected. Each evaluation parameter was normalized as follows.



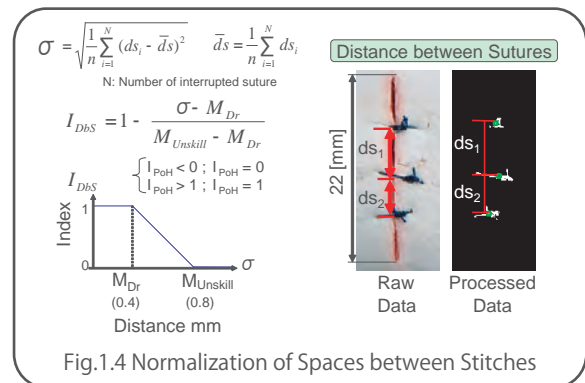
**1.1 Normalization of the completion time**  
For the surgeons group, the average time required to complete the designated skin suturing procedure was 107 [s], while that of the unskilled group was 398 [s]. Thus, when the completion time is 107 [s] or less, IT is "1", and when it takes 398 [s] or more, IT is "0". When the time is between 107 [s] and 398 [s], IT is found by the calculating formula shown below.



**Fig. 1.2 Normalization of force on the tissue**  
The data of the force applied on the tissue during the suturing operation was normalized according to "the smaller, the better" principle.



**Fig. 1.3 Normalization of Suture Tension**  
The tension caused by the ligature was also normalized, according to the principle that the smaller the deformation of the simulated tissue, the better the result.



**Fig. 1.4 Normalization of Spaces between Stitches**  
Distances are measured between the centroid of each stitch.  
The Distances are measured between the centroids of the stitches were used for normalization, because the smaller the values is, spaces between the stitches are closer to equal.

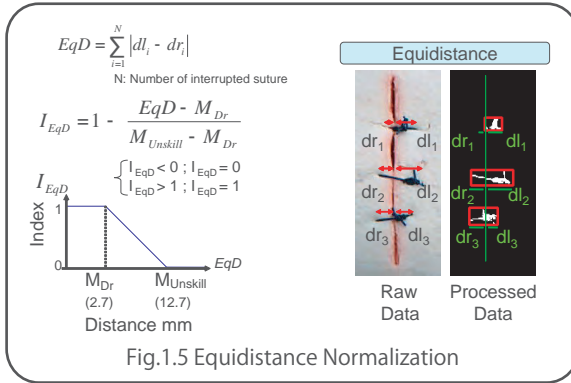


Fig. 1.5: Normalization of the equidistance from the wound edge  
On each stitch, difference in distances from the needle insertion point to the wound edge and the distance from there to the needle emerging points is obtained from image processing. The normalization was made to the total equidistance value of all stitches.

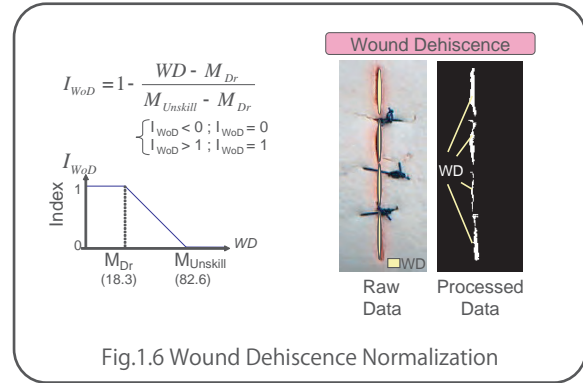
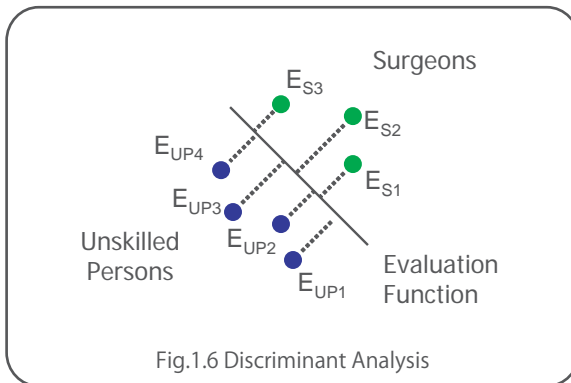


Fig. 1.6 Normalization of the wound dehiscence  
Since lips of a wound should be as closely contacted to each other as possible, the area of opening wound was normalized accordingly.  
Wound Dehiscence

## 4 About weighting coefficients



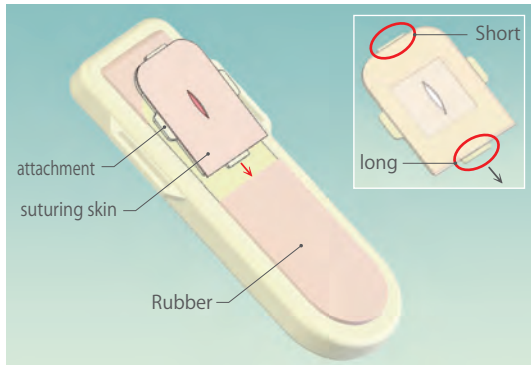
Weightings " $\omega$ " of each evaluation item in the evaluation function was found by using method, a straight line separating the two groups at the greatest distance is drawn, and the coefficients are derived therefrom.

- |                                    |                   |
|------------------------------------|-------------------|
| ① Time                             | $I_T = 0.843$     |
| ② Force on Tissue                  | $I_{FoT} = 0.257$ |
| ③ Suture Tension                   | $I_{JuT} = 1.367$ |
| ④ Distance between Stitches        | $I_{DbS} = 0.330$ |
| ⑤ Equidistance from the wound edge | $I_{EqD} = 1.072$ |
| ⑥ Would Dehiscence                 | $I_{WoD} = 0.746$ |

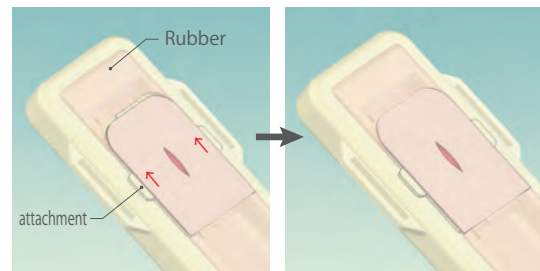


• The weighting coefficient values are set as the default.  
The values can be changed by the administrator only.

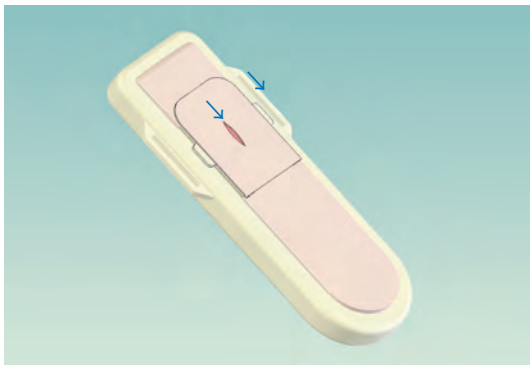
### 1 Attachment and removal of a simulated skin



- ① To attach the skin unit, holding the side lugs of the plate, insert its longer tenon into the pit in the section of the larger rubber until it is all the way seated.



- ② Holding the lugs, slide the skin unit to the opposite direction so that its shorter tenon is inserted in the section of the smaller rubber.

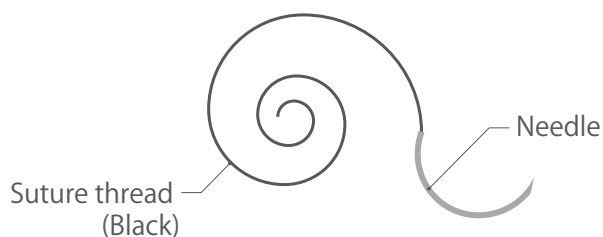


- ③ When detach the skin unit, holding the lugs, slide the skin toward the larger rubber, and detach the tendons following the reverse procedure of its.

#### Caution

- Pay attention to direction, the upper and the lower of the Suture skin.
- The rubber can be damaged if the plate is forcibly inserted or removed without being slid.

### 2 Use a black suture thread



When the simulator evaluates the sutured wound by image processing, PC will not recognize lighter colored thread properly. Therefore, be sure to use a black suture thread for evaluation and training with this simulator.

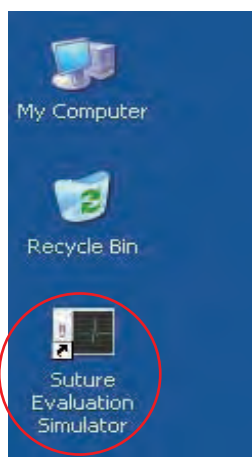


#### Caution

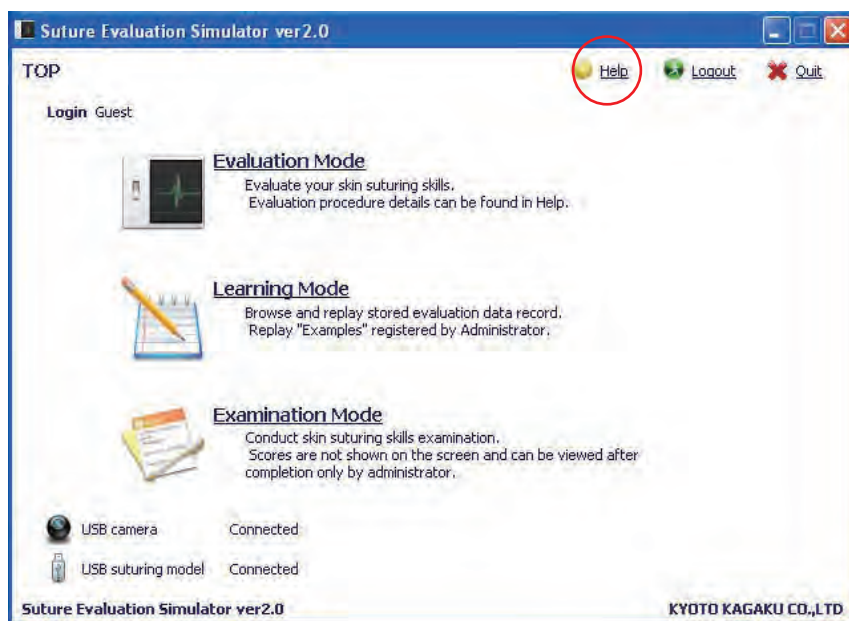
- Recommend a standardized needles and threads as the above picture.

### 3 Start up the Simulator-soft

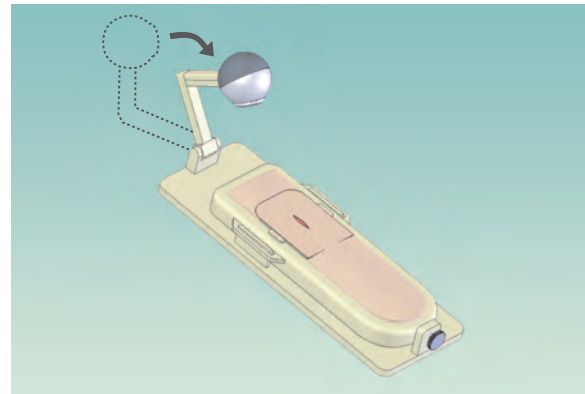
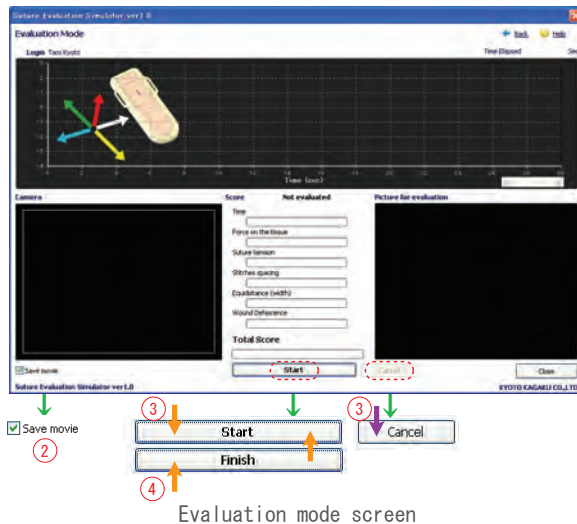
Before starting up the suture simulator soft, connect the Suture Simulator USB cable into the PC.



For starting up the suture simulator soft, double-click the short cut "Suture Simulator" or click the button "Windows", select Suture Simulator in "All programs" from the menu.



### 4 The process of the Suture Evaluation

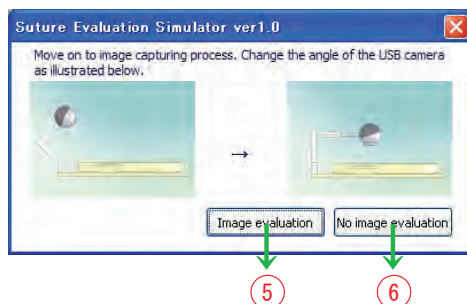


① After start up the suture simulator soft, select Evaluation mode or Examination mode with registered account number. (About login: See on the page 22 "How to use the software.")

② Confirm the check-box "keep movies" checked when recording the suture operations, and set the USB camera like the above figure  
※ Even if no recording, it is no influence on evaluating the skin suturing skills.

③ Set a needle with needle-folder, click the start button in Examination mode. Start suturing after "Go" sign is shown in the screen.

④ After making three-stitch, click the "finish" button. (Cut an excessive thread after click the finish button.) Image evaluation dialog box is shown, evaluated the image according to the image evaluation system. When USB camera has no connection, image evaluation dialog box isn't shown.



⑤ Image evaluation: The image is evaluated. See on the page 20 "How to assessment."

⑥ No image evaluation: Score is shown in evaluation mode screen which is judged from "Time," "Force on tissue" and "Suture tension."



• Be sure to make three-stitch suturing with Simple interrupted suture and Instrument tying. Image Evaluation Dialog Box①

### 5 Image Evaluation Procedure

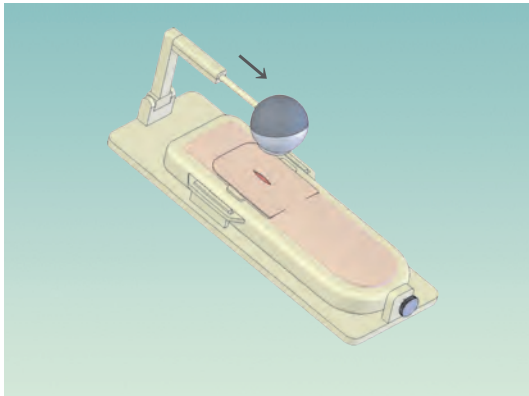
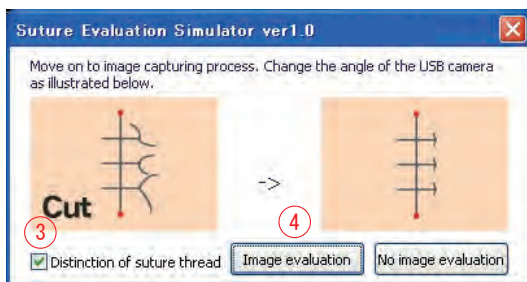


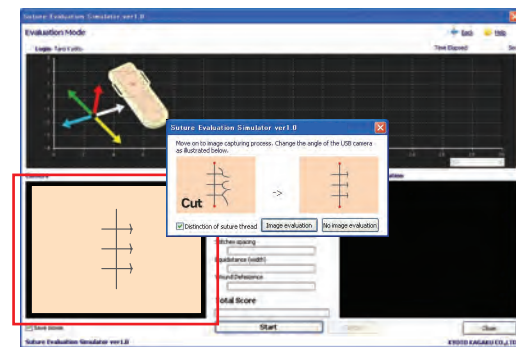
Image Evaluation Position

- ① First, move the USB camera to the image evaluation position as illustrated below.



- ③ Remove the check of "Distinction of suture thread".
- ④ Click the "Image evaluation" button and next window will appear. The wound will be marked with blue and the suture thread will be marked with red.

#### Automatic mode



- ② Confirm the wound is in the image of the USB camera and click "Image evaluation"

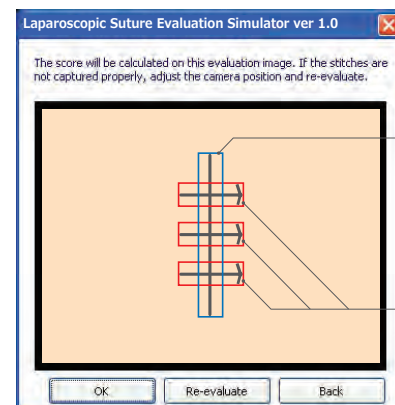
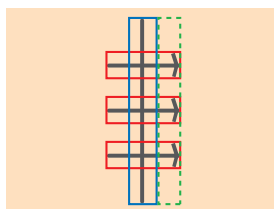
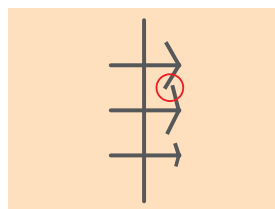


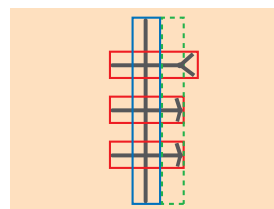
Image Evaluation Dialog Box



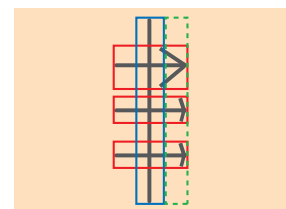
○ Good



× Overlapping tails  
(Boxes will not be displayed.)



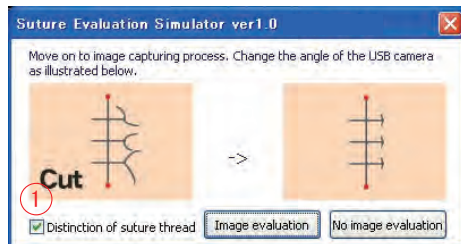
× Tails out of the  
designated area.



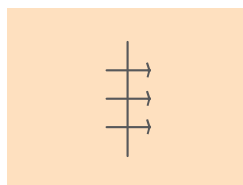
× Tails out of the  
designated area.

- ⑤ Cut the unnecessary threads of the knot like the figure "Good" above.
- ⑥ Click the Re-evaluate button if the recognition of the threads is incorrect.
- ⑦ Confirm the correct recognition of threads and click OK. The score will be shown on the display.

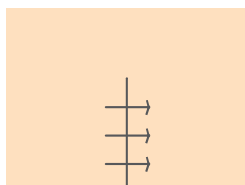
### Manual mode



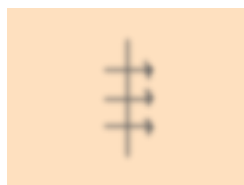
- ① Click the check box "Distinction of suture thread".



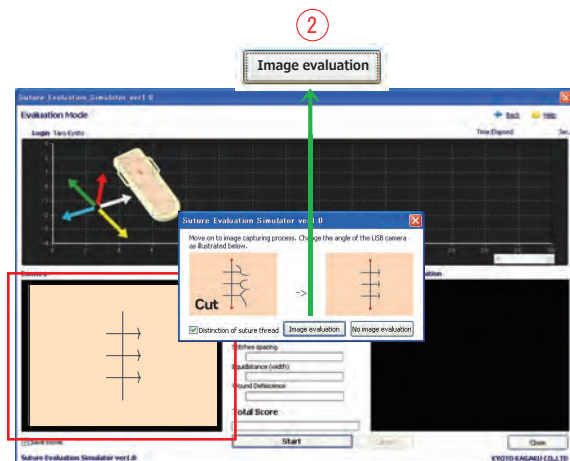
○ Good



× Whole of the wound is not covered



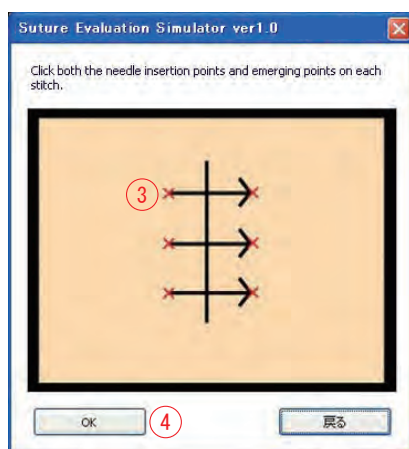
× Out of focus



- ② Confirm the wound is in the image of the USB camera and click "Image evaluation".

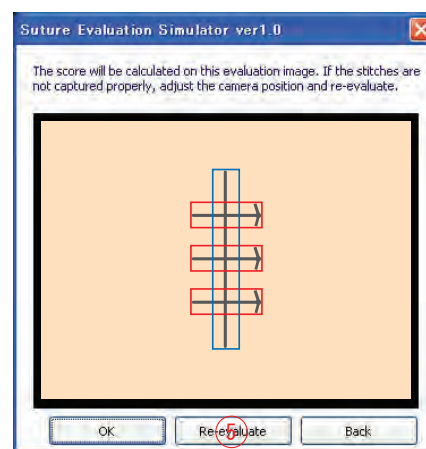
**Caution**

- The wound must be in the image of the USB camera and come into focus in order to evaluate the result correctly.



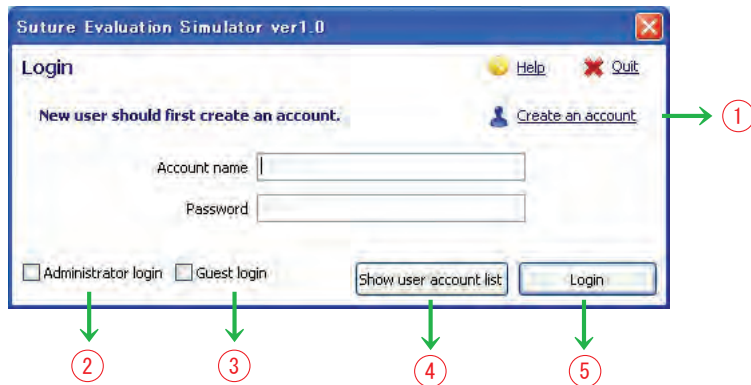
- ③ Click the both the needle insertion points and emerging points on each stitch.

- ④ Click OK and next window will appear.



- ⑤ If the recognition of thread is incorrect, adjust the thread and click the "Re-evaluate".

### 1 Login

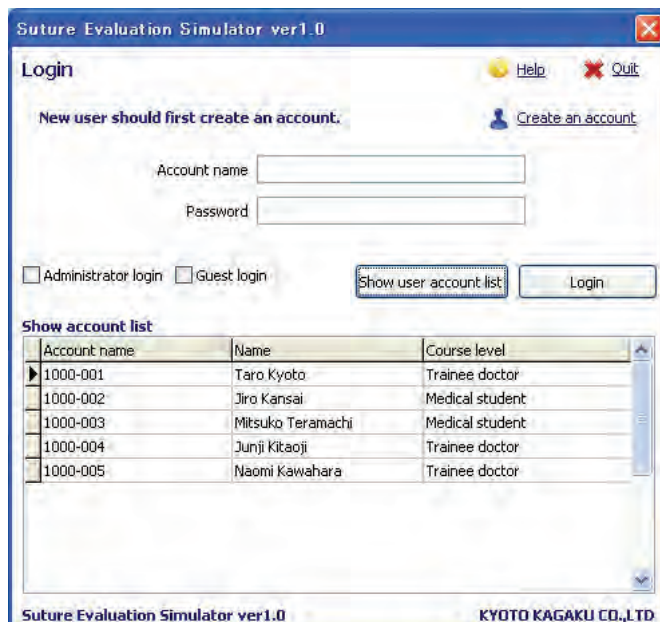


#### ① Login as administrator

By checking this box, the Account name becomes un-editable. Default password is set to "crossnet".

※ The administrator should to change the password after the software is installed.

#### ② Login as guest By checking this box, both Account name and Password are set to "guest", which are automatically entered.



#### ③ List of accounts

Show all registered accounts.

#### ④ Login

Login the system by checking the entered Account name and Password against the database. When the login is complete, the TOP Screen will be displayed.

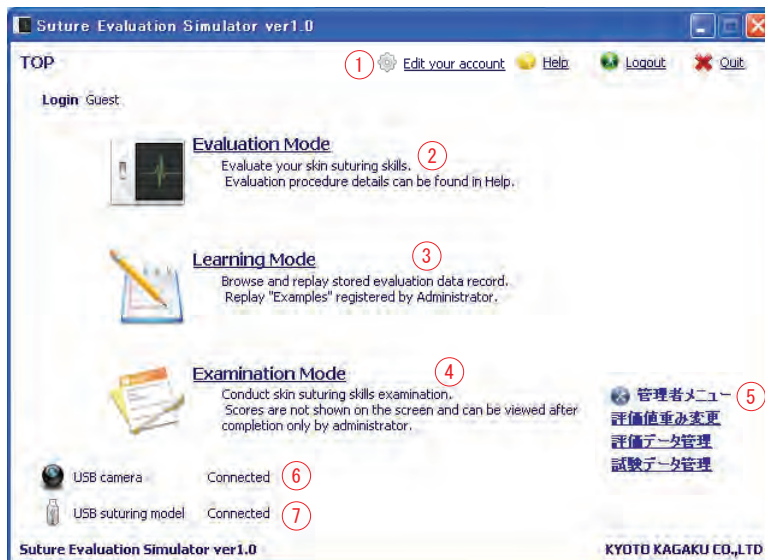
#### ⑤ Account registration

Open a new Account Registration dialog box

### 2 User Account registration

- ① Account name (one-byte alphanumeric characters, 35 characters at maximum)  
Enter an account name to be used for login.  
(If the same name has already registered, the new one cannot be accepted.)
- ② Password (one-byte alphanumeric characters, 4 characters at minimum, 35 characters at maximum)  
Enter a password.
- ③ Password confirmation (one-byte alphanumeric characters, 4 characters at minimum, 35 characters at maximum)  
Enter the same password again.
- ④ Name (double-byte or one-byte kana/alphanumeric characters, 35 characters at maximum)  
Enter your name.
- ⑤ Course level (double-byte or one-byte kana/alphanumeric characters, 35 characters at maximum)  
Enter your current course level.
- ⑥ Account registration  
Register the account in the database. An automatic login follows.
- ⑦ Cancel  
Cancel the Account registration.

### 3 Top screen



- ① Edit your account settings  
This link is not shown when login is done as guest.  
Current account details can be edited.
- ② Evaluation Mode  
This mode is unselectable when login is done as administrator.  
Evaluation result cannot be saved when login is done as guest.
- ③ Learning Mode  
This mode is unselectable when login is done as administrator.  
When login is done as guest, only the "Model Techniques" video can be watched.
- ④ Examination Mode  
This mode is selectable only with login as guest.
- ⑤ Administrator menu  
This menu is shown only when login is done as administrator. The following modes are options.  
Edit evaluation value weighting: Change weighting of each evaluation item in the evaluation function.  
Evaluation data management: Browse/delete user account and evaluation data.
- ⑥ USB camera  
Connection status of the USB camera.  
When it says "disconnected", suture performance cannot be recorded on video for image evaluation.
- ⑦ USB suture model  
Connection status of the USB suture model.  
When it says "disconnected", neither "Evaluation Mode" nor "Examination Mode" is selectable.

### 4 Edit your account settings

Edit registered account information.

Suture Evaluation Simulator ver1.0

Edit account information

① Account name 1000-001

② Password \*\*\*\*\* at least four letters

③ Confirm password \*\*\*\*\*

④ Name Taro Kyoto

⑤ Course level Trainee doctor

Update Cancel

Suture Evaluation Simulator ver1.0 KYOTO KAGAKU CO.,LTD

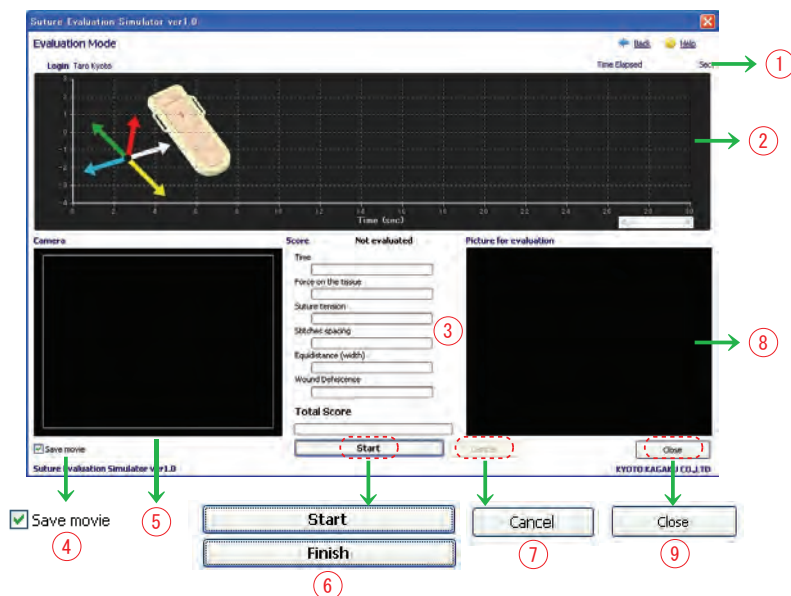
⑥ ⑦

- ① Account name  
Account name is un-editable.
- ② Password (one-byte alphanumeric characters, 4 characters at minimum, 35 characters at maximum)  
Enter a new password.
- ③ Password confirmation  
(one-byte alphanumeric characters, 4 characters at minimum, 35 characters at maximum)  
Enter the same new password again.
- ④ Name (double-byte or one-byte kana/alphanumeric characters, 35 characters at maximum)  
Enter a new name.
- ⑤ Course level (double-byte or one-byte kana/alphanumeric characters, 35 characters at maximum)  
Enter your current course level.
- ⑥ Update  
Save the data and update the account information in the database.
- ⑦ Cancel  
Cancel the Account editing.

### 5 Evaluation Mode

Suturing operation with registered account (or guest-login).

※Refer to "Skin suturing evaluation procedure" for actual procedures of suture performance evaluation.



① Time elapsed

Indicates the time elapsed.

② Chart data

Chart data is shown (horizontal axis: time, vertical axis: skin displacement).

Skin displacement along five axes is dynamically graphed by color corded chart ;  
X+ (white), X- (blue), Y+ (green), Y- (yellow), and Z (red) .

③ Scores

Itemized scores

④ Save video

When this check box is checked, moving pictures captured by the camera will be saved.

When log in is done as guest, "Save video" function is unusable.

⑤ Camera

Images captured by the USB camera are shown. The same moving pictures are saved by the "Save video" function".

⑥ Start (Finish)

Evaluation starts after three-second countdown.

When the suture performance is complete, click the same button "Finish" to close the session.

⑦ Cancel

Cancel evaluation. Scores will not be displayed for an aborted operation.

⑧ Evaluation image

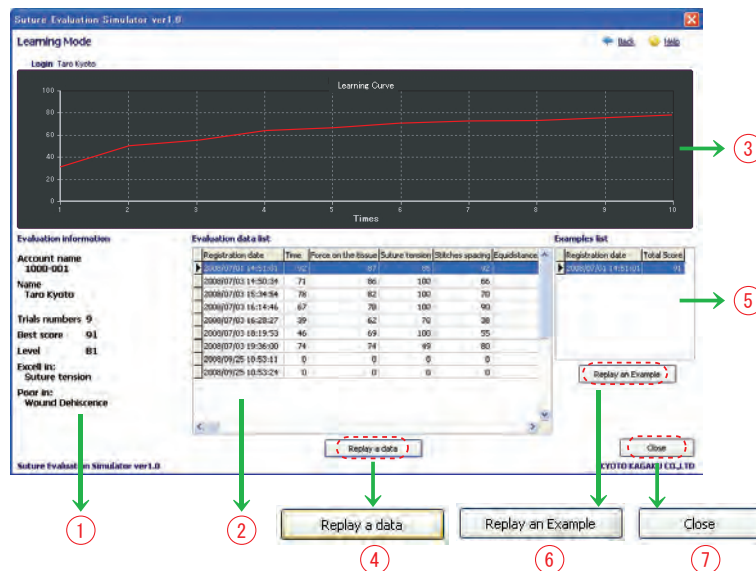
The picture evaluated for giving scores on distance between sutures, equidistance from the wound edge, and wound dehiscence, is shown.

⑨ Close

Close the window.

### 6 Learning Mode (login as a registered user)

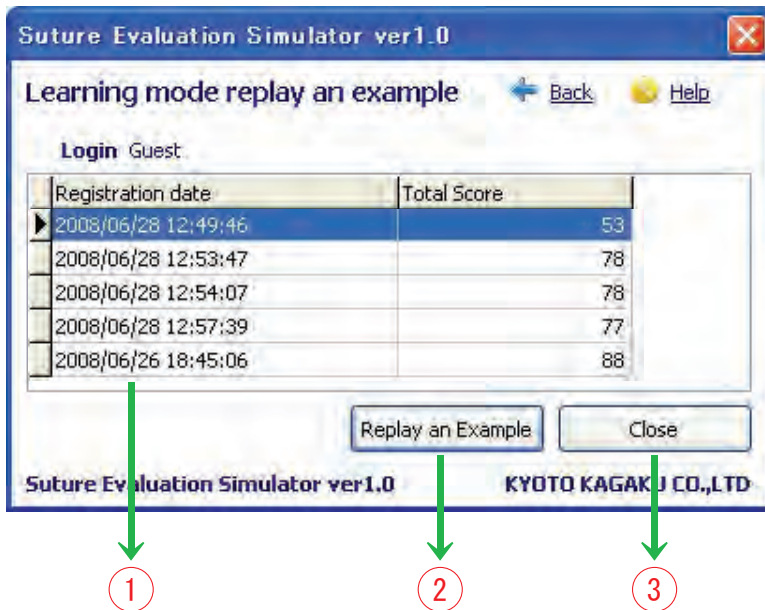
Registered user's data and the "Examples" can be read.



- ① Your evaluation information  
Statistics of evaluation data of the login user are displayed.
- ② Evaluation data list  
Evaluation data of the login user are displayed.  
Data can be sorted by clicking the title of a key evaluation item.
- ③ Learning curve  
Learning curve of the login user is shown.
- ④ Replay evaluation data  
Replay a selected evaluation data of the login user (Data replay).
- ⑤ List of Examples  
Evaluation data registered in Examples is shown in a list form.
- ⑥ Play Examples' data  
Replay a selected Example's data (Data replay).
- ⑦ Close  
Close the window.

### 7 Learning Mode (login as guest)

When login as guest, can be checked only "example data."



① List of Examples

Evaluation data registered in Examples is shown in a list form.

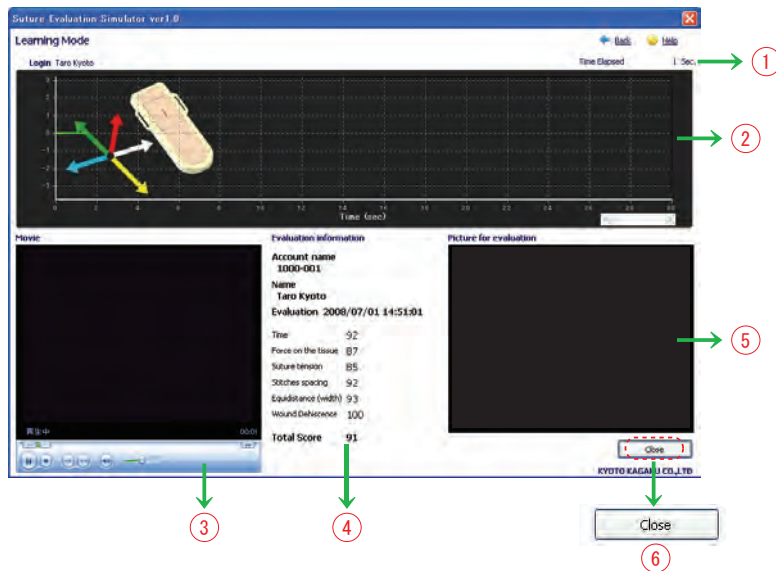
② Replay Examples' data

Replay a selected Example's data (Data replay).

③ Close

Close the window.

### 8 Data replay window



- ① Time elapsed  
Indicates the time elapsed.
- ② Chart data  
Chart data is shown (horizontal axis: time, vertical axis: skin displacement).  
Skin displacement along five axes is dynamically graphed by color corded chart ;  
X+ (white), X- (blue), Y+ (green), Y- (yellow), and Z (red) .
- ③ Movie  
The recorded video is replayed.
- ④ Evaluation information  
User information of the session's operator and the itemized evaluation scores are shown.
- ⑤ Evaluation image  
The picture evaluated for giving scores on distance between sutures, equidistance from the wound edge, and wound dehiscence, is shown.
- ⑥ Close  
Close the form.

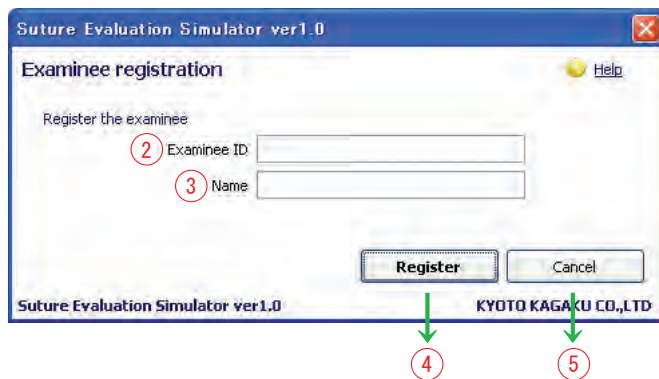
### 9 Examination Mode

Evaluation Mode is for students' achievement examination.

Set up the examinee data and evaluate suture operation as a guest.

After operation, its score doesn't appear.

Only an administrator can check scores.



#### ① Examinee registration

When the Examination Mode is selected, the "Examinee registration" dialog box will open.

#### ② ID number (one-byte alphanumeric characters, 35 characters at maximum)

Enter the examinee's ID number.

#### ③ Name (double-byte or one-byte kana/alphanumeric characters, 35 characters at maximum)

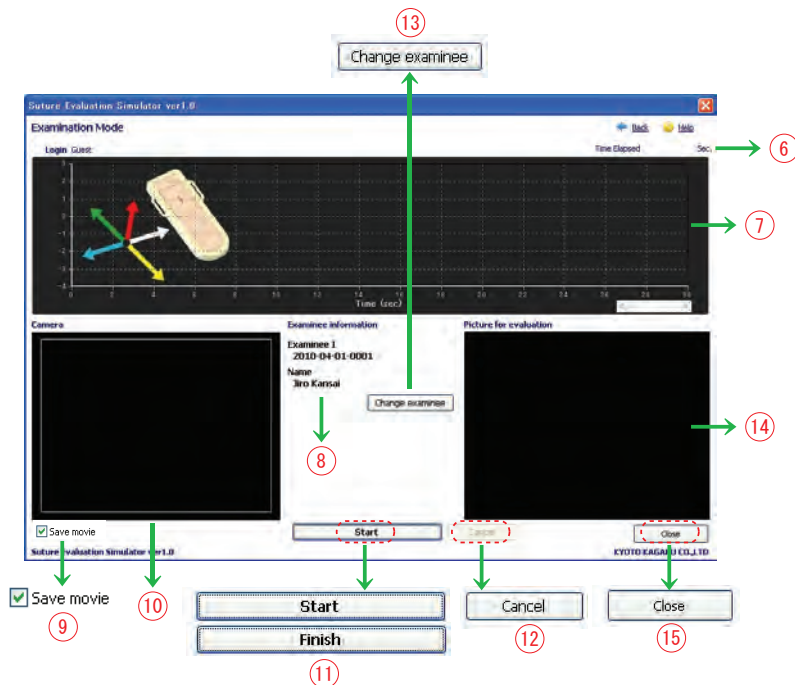
Enter the examinee's name.

#### ④ Register

Register the examinee and move on to the Examination Mode Screen.

#### ⑤ Cancel

Close the form.



※Refer to "Skin suturing evaluation procedure" for actual procedures of suture performance evaluate

- ⑥ Time elapsed  
Indicates the time elapsed.
- ⑦ Chart data  
Chart data is shown (horizontal axis: time, vertical axis: skin displacement).  
Skin displacement along five axes is dynamically graphed by color corded chart ;  
X+ (white), X- (blue), Y+ (green), Y- (yellow), and Z (red) .
- ⑧ Examinee information  
Registered examinee information is shown.
- ⑨ Save video  
When this check box is checked, moving pictures captured by the camera will be saved.  
When log in is done as guest, "Save video" function is unusable.
- ⑩ Camera  
Images captured by the USB camera are shown. The same moving pictures are saved by the "Save video" function".\
- ⑪ Start (Finish)  
Evaluation starts after three-second countdown.  
When the suture performance is complete, click the same button "Finish" to close the session.
- ⑫ Cancel  
Cancel evaluation.
- ⑬ Change examinee  
Open the examinee registration window and to reset the examinee.
- ⑭ Evaluation image  
The picture evaluated for giving scores on distance between sutures, equidistance from the wound edge and wound dehiscence, is shown.
- ⑮ Close  
Close the window.

### 10 Change evaluation value weighting

Change evaluation value weighting in Examination mode at will as an administrator.



① Default values

Reset the all weighting coefficients to the default values.

② Update

Save the entered weighting coefficients and make them reflected in the calculation.

③ Cancel

Cancels the change of weighting coefficients, and closes the window.

### 11 Evaluation data management

Management use account and assessment data as an administrator.  
Register "Example data" in this screen.

The screenshot shows the 'Evaluation data management' window. The 'User list' table contains the following data:

User ID	Account name	Course Level	Name	Number of evaluation record	Best Score	Average score	Date
3	1000-002	Medical student	Sho Koyasu	2	53	53	2008/06
4	1000-003	Medical student	Hirofumi Teramachi	0			2008/06
5	1000-004	Trainee doctor	Junji Kitachi	0			2008/06
6	1000-005	Trainee doctor	Naomi Kawahara	0			2008/06

The 'Evaluation data list' table shows evaluation data for User ID 1000-001. The buttons at the bottom are: 'CSV export', 'Save as an Example', 'Replay a data', 'Delete a data', and 'Close'.

#### ① User list

All data of administrators are shown.

With double-click on a line of individual data, all the evaluation data of the selected user will be shown in the Evaluation data list box. Data can be sorted by clicking the title of a key evaluation item.

#### ② Delete user

Delete a selected user account (with Ctrl key, multiple users can be selected together).

#### ③ Evaluation data list

A list of evaluation data of the user selected in the User list is shown. Data can be sorted by clicking the title of a key evaluation item.

#### ④ CSV export

Export the selected evaluation data in CSV format.

#### ⑤ Example data registration

Register the selected evaluation data as an Example.

※ "Examples" accept up to 5 set of evaluation data.

#### ⑥ Replay evaluation data

Replay the selected evaluation data (Data replay).

#### ⑦ Delete evaluation data

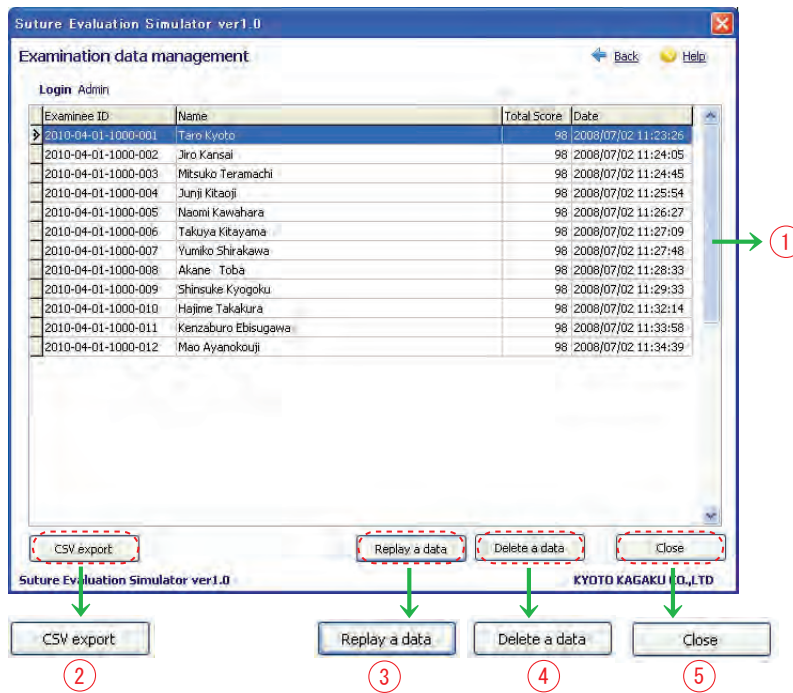
Delete the selected evaluation data (with Ctrl key, multiple lines can be selected together).

#### ⑧ Close

Close the window.

### 12 Examination data management

Data management the operation in Examination mode as an administrator.



#### ① User list

All registered examination data are shown.  
Data can be sorted by clicking a key item name.

#### ② CSV export

Export the selected examination data in CSV format.

#### ③ Replay examination data

Replay a selected examination data (Data replay).

#### ④ Delete examination data

Delete a selected examination data (with Ctrl key, multiple lines can be selected together)

#### ⑤ Close

Close the window.



## Caution

Do not leave this manual in contact with manikin skin.  
Ink marks will be indelible, due to pigment infiltration.

Consumables  
and  
Replacement  
parts

Part number	Description
11230-010	Simulated skin 40pcs



Simulated skin

## **KYOTO KAGAKU co.,LTD**

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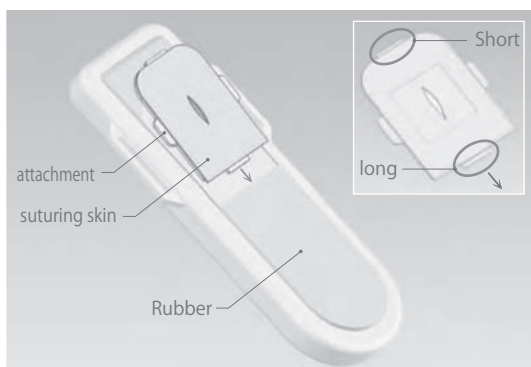
The contents of the instruction manual are subject to change without prior notice.

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Please contact manufacturer for extra copies of this manual which may contain important updates and revisions.

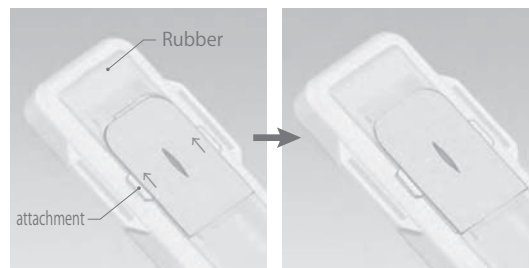
Please contact manufacturer with any discrepancies, typos, or mistakes in this manual or product feedback. Your cooperation is greatly appreciated.

# Handling of the Suture Skin

## 1 Attachment and removal of a simulated skin



- ① To attach the skin unit, holding the side lugs of the plate, insert its longer tenon into the pit in the section of the larger rubber until it is all the way seated.



- ② Holding the lugs, slide the skin unit to the opposite direction so that its shorter tenon is inserted in the section of the smaller rubber.



- ③ When detach the skin unit, holding the lugs, slide the skin toward the larger rubber, and detach the tendons following the reverse procedure of its.

### Caution

- Pay attention to direction, the upper and the lower of the Suture skin.
- The rubber can be damaged if the plate is forcibly inserted or removed without being slid.

## 2 Image Evaluation of a Suture Condition



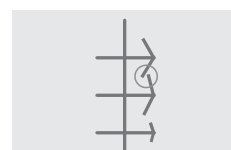
○ Good



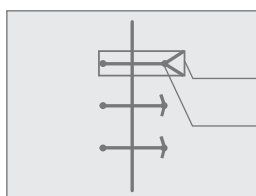
× Whole of the wound is not covered



× Out of focus

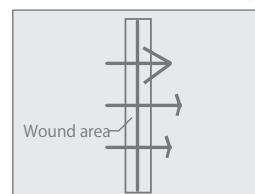


× Overlapping tails  
(Boxes will not be displayed.)



Needle insertion point evaluated by sensor camera  
Actual insertion point

□ × Needle insertion point evaluated by sensor camera



× A thread overlaps the wound area



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### Head Office and Factories:

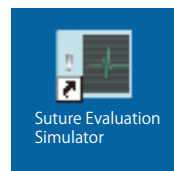
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## Start up the Simulator-soft and Camera setting

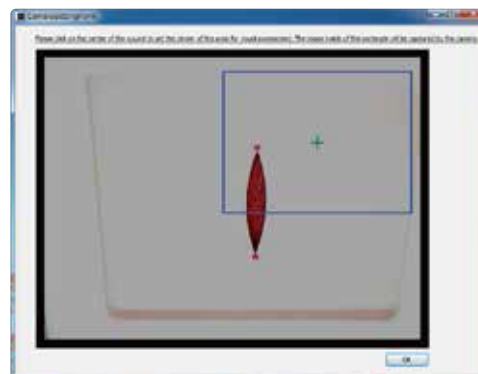
Before starting up the suture simulator soft, connect the Suture Simulator USB cable into the PC.



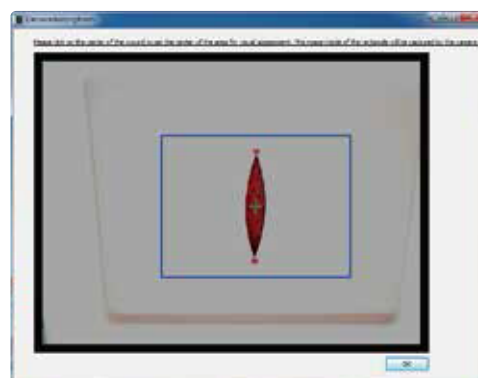
① Click "Camera Setting"



② Rectangle is shown as recording area.  
Click the center of the wound to set correct area.



③ Click "OK" to complete the setting.



\*Camera setting is required only at first use.

2020.04



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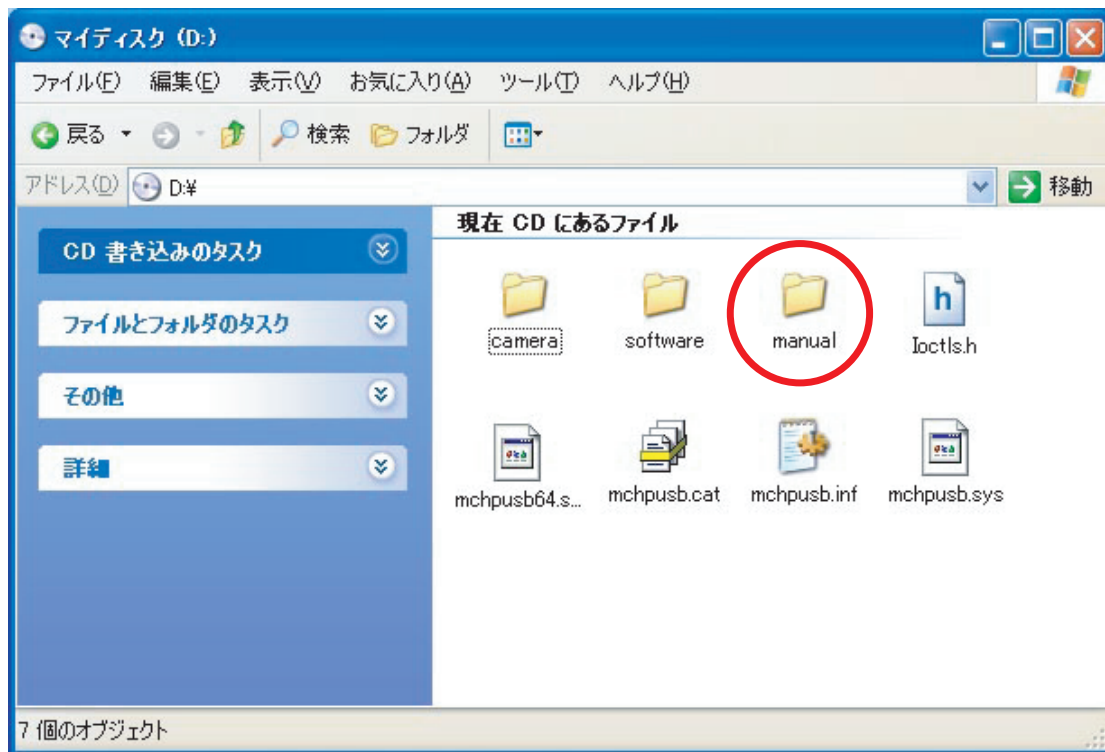
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The operation manual is included in the installation CD.



It is also downloadable from KYOTO KAGAKU website.

<http://www.kyotokagaku.com/>

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