

# ***Examination and Consideration of the Effects of the Stretch Rate of Kinesio Taping on the Skin: Second Report***

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**Summary:** Having experimented with the effects of stretch rate last year and the year before, the effects of the width and stretch rate of Kinesio Taping on the skin fascia and muscles were again examined experimentally, and the results are shown below.

**Emphasis of Presentation:**

In this study, the model of fascia and muscle was constructed in more detail than in the previous studies, and changes with various widths and stretch rates of KinesioTaping were made clearer. Photographs of ultrasound images were taken, and the effects of KT on the actual skin, fascia and muscles were presented.

**Clinical Report:** Summary of the previous testing (pathology of fascial fluid) → Logarithmic change in the skin, fascia and muscles with Kinesio Taping in the model → Actual change in the skin, fascia and muscles with KT in ultrasound images → Conclusions from experiments → Summary → Future subjects

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<<Purpose of this presentation and experiment>>

In the previous experiments, it was possible to objectively determine the effects of the width and stretch rate of Kinesio Tape on the subcutaneous tissues. They were, however, experimental examinations under conditions in which there was no lymph accumulation between the fascia. In actual clinical practice, however, it is well known that temperature and humidity may affect pain as the patients with rheumatism can forecast the weather tomorrow. However, consideration of the conditions in the body affected by weather is impossible without considering the presence of lymph fluid. In this study, therefore, I conducted an experiment by improving the previous skin and fascia model and infiltrating absorbent cotton (fascia) with the lymph fluid (olive oil).



Last year's model



This year's model

This year's model is different in its form from last year's model, which could be affected by gravity and pressure.

### <<Experimental methods>>

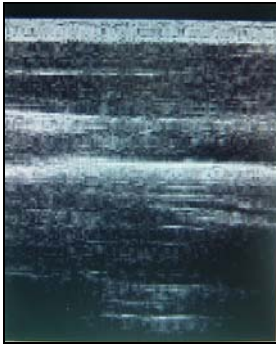
- (1) The effects of the width and stretch rate of Kinesio Tape on the human body (forearm) were compared using ultrasound images.
- (2) What is the difference between the fascia model of 5 to 6 mm and the actual fascia of the human body? If the muscles have not developed sufficiently but the soft and elastic skin and fascia are present, as observed in babies, they are considered to be close to this fascia model of 5 to 6 mm. The skin and fascia in persons with both quick motion and muscle strength, as observed in athletes, are slightly thinner than this model, but the pale skin and fascia of patients not doing exercise or prone to illness, and the skin and fascia of the aged, should be thicker than this model. In preparing the model, we used this thickness as an average.
- (3) Olive oil was selected as the lymph fluid because, among oils not considered to affect the human body, olive oil was felt to be most similar in viscosity to the lymph fluid.
- (4) The reason why Saran Wrap was used between the fascial layers is because it can prevent the oil from penetrating which would make the experiment impossible, and because it was believed that the stretch rate of the model fascia is decreased and becomes close to that of the biological fascia by using Saran Wrap.

Using the above materials, I conducted an experiment with the same width and stretch rate of Kinesio Tape as those of previous years, and in addition, I observed the changes immediately after, and 3 minutes after, application of Kinesio Tape.

### <<Experiment>>

A)  
Visifit (Ito Co., Ltd.) was used as a measuring apparatus for ultrasound images.



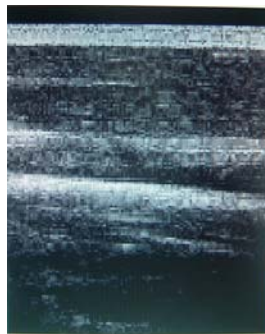


Conditions without Kinesio Tape attached

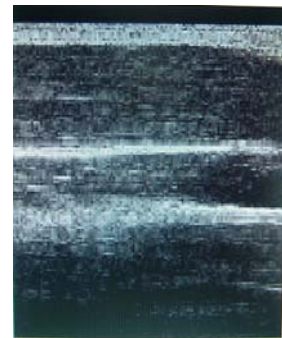
Tape width: 1.25 cm



Stretch rate 25%  
The space just below the skin was broadened

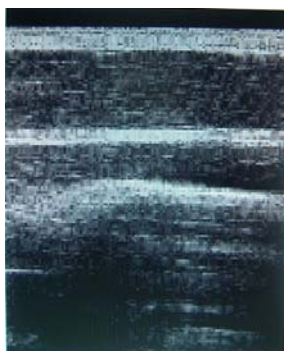


Stretch rate 50%  
The center of fascia was affected

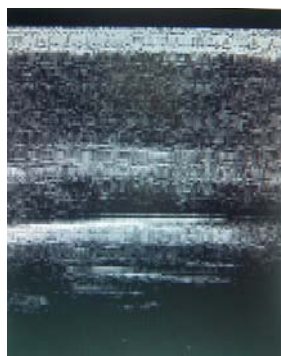


Stretch rate 100%  
Pressure on the skin was produced.

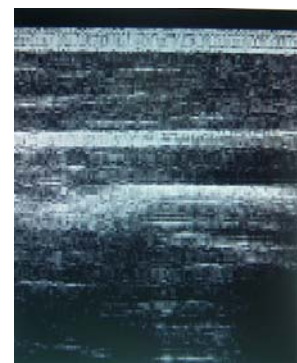
Tape width: 2.5 cm



Stretch rate 25%  
The whole fascia was broadened.

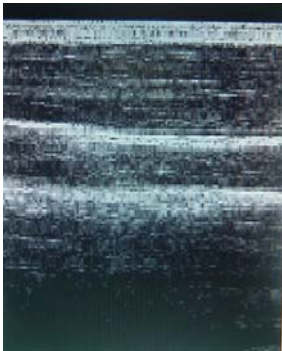


Stretch rate 50%  
The space between fascia was broadened to the maximum



Stretch rate 100%  
The space between fascia became narrow.

Tape width: 3.75 cm



Stretch rate 25%  
The fascial region near to the muscle layer was broadened.

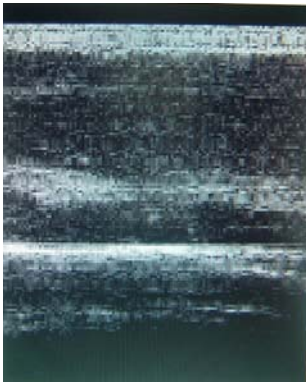


Stretch rate 50%  
The extension within muscles was shown.

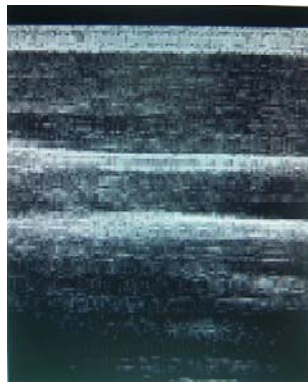


Stretch rate 100%  
The fascial layer became extremely narrow.

Tape width: 5 cm



Stretch rate 25%  
The fascial layer was affected.



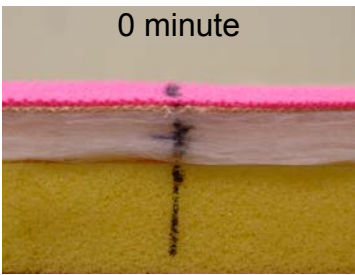
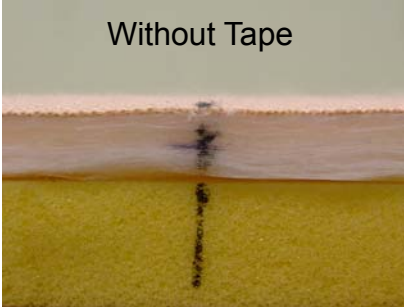
Stretch rate 50%  
The fascial and muscle layers became narrower than 25%.



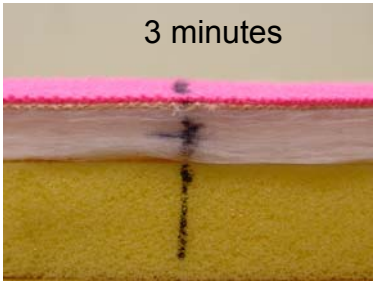
Stretch rate 100%  
Pressure was observed from the epidermis to the fascial and muscle layers.

**B) Experiment with model**

Tape width: 1.25 cm

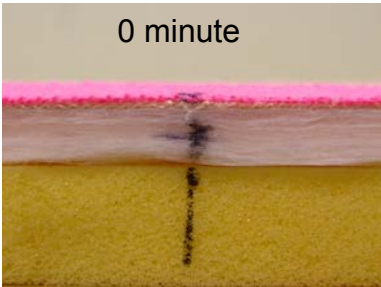


Stretch Rate 25%

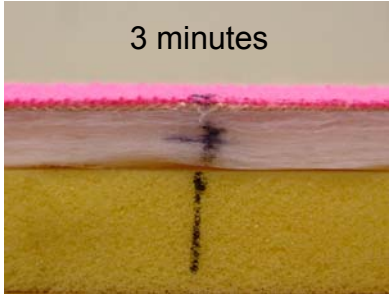


The region 1 mm in depth from the surface was expanded.

The surface appeared to float further

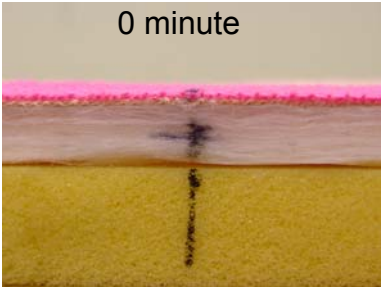


Stretch Rate 50%

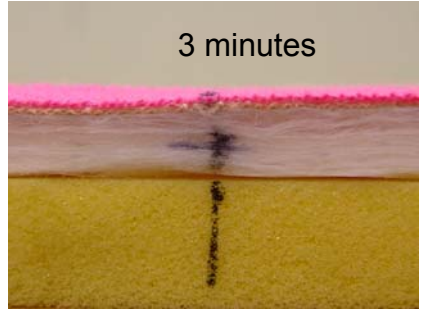


The region 1-2 mm in depth from the surface was expanded

The centerline was slightly misaligned



Stretch Rate 100%

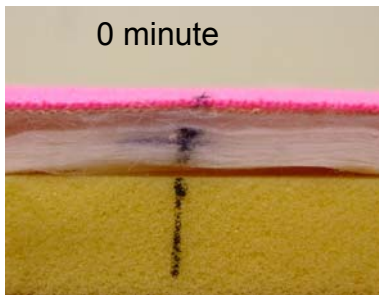
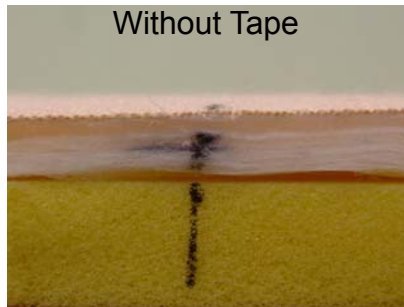


The region 2.5 mm below the skin was expanded

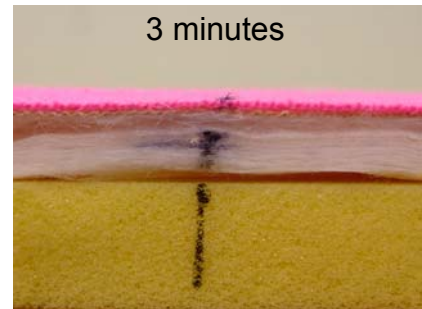
Unreasonable waves occurred on the epidermis



Tape width: 2.5 cm

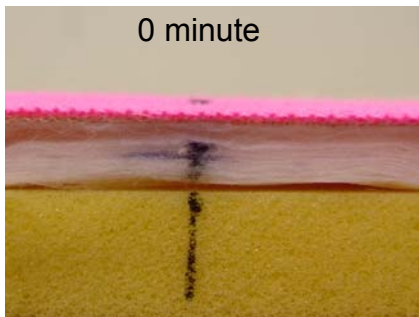


Stretch Rate 25%

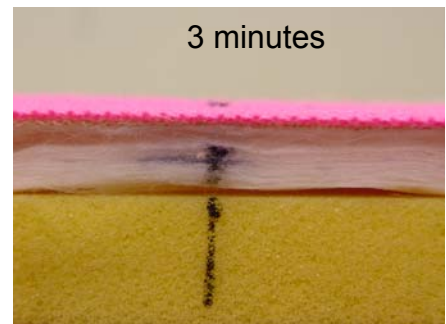


The whole surface of 15 cm of the Tape floated. A part of the region 3 mm below the skin was expanded.

The whole region 3 mm below the skin was expanded

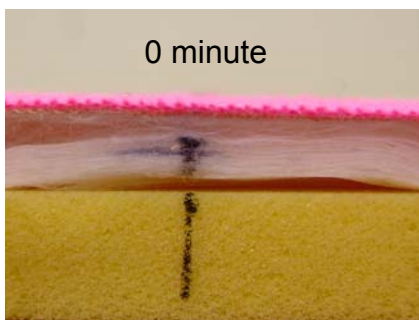


Stretch Rate 50%

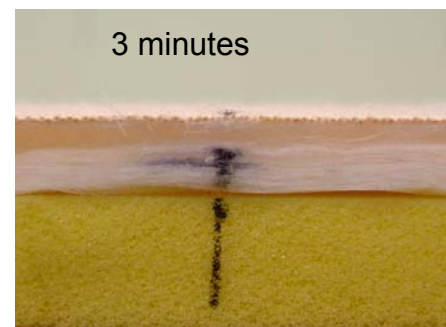


The whole fascia was elevated

The space between the fascia and muscle was broadened



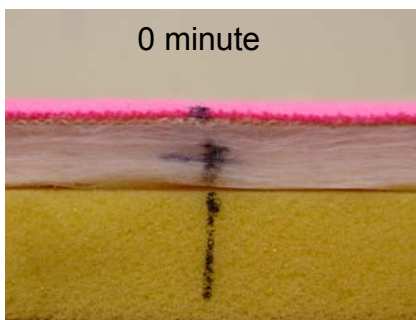
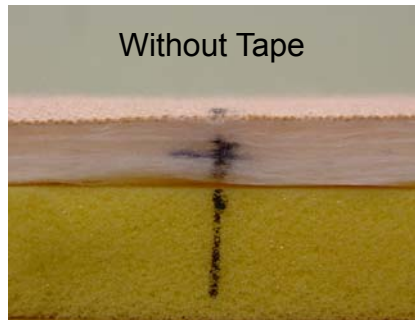
Stretch Rate 100%



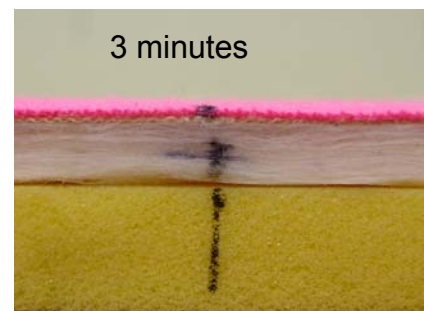
The fascia was elevated while compressing

The pressure has been increasing continuously

Tape width: 3.75 cm

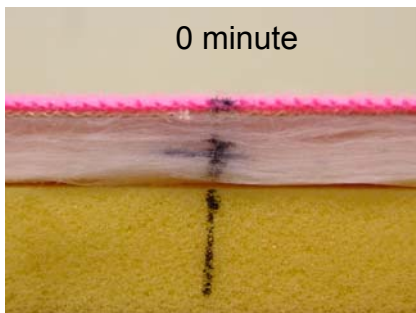


Stretch Rate 25%

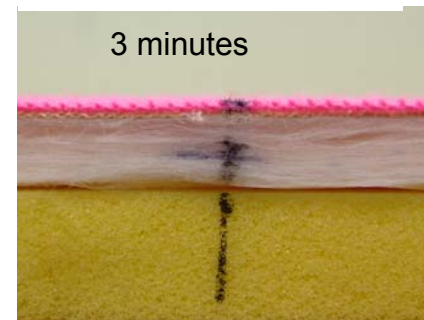


Pressure effects on the fascia appeared.

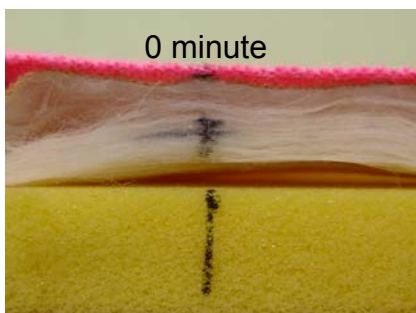
The centerline was misaligned (advantageous for mechanical collection).



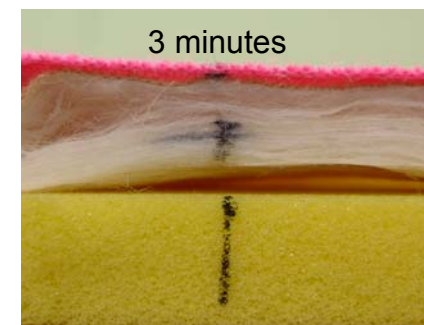
Stretch Rate 50%



The muscle layer was affected beyond the fascia



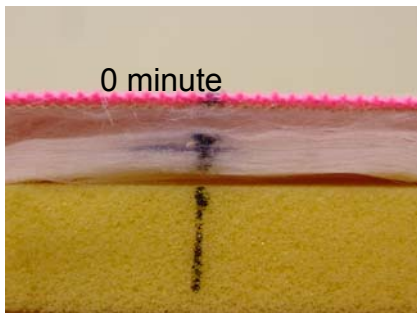
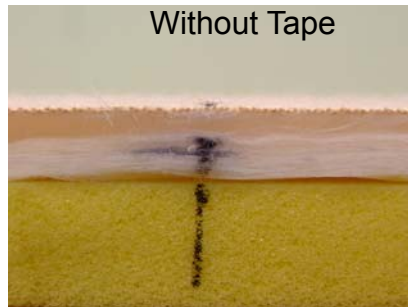
Stretch Rate 100%



The fascia heaved irregularly (overstimulation).

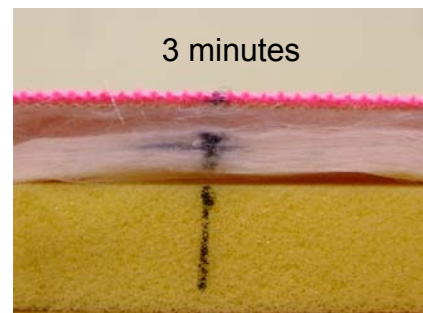
The undulation was observed more markedly

Tape width: 5 cm

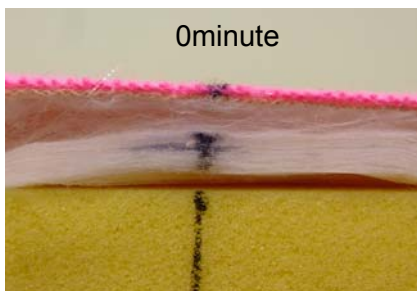


Stretch Rate 25%

Lifted up to the muscle layer.

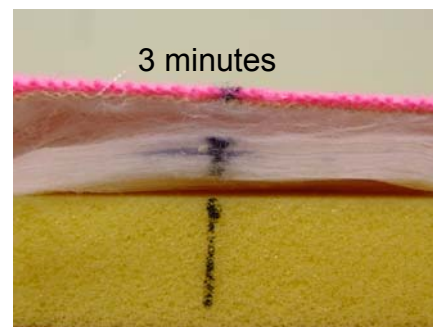


Further lifted up to the muscle layer

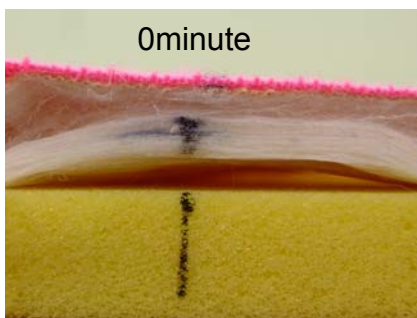


Stretch Rate 50%

The evidence of overstimulation was observed. The centerline was also misaligned.

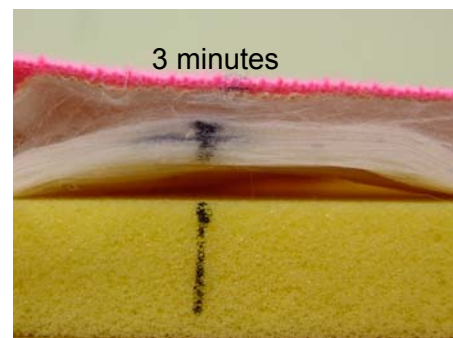


Pressure was added



Stretch Rate 100%

The surface of the tape hollowed



The surface of the tape hollowed further (I-type mechanical collection).



The above experiment was conducted at room temperature (25°C or about 77°F), but since the body temperature (the temperature inside the skin), is usually about 35° to 38°C (about 95°F to 100.4°F) the changes in the lymph fluid at the temperature are unclear. Since an increase in the body temperature (the temperature inside the skin) is attributable the pressure in a narrow and limited space producing frictional heat, it can be said that it is possible to reduce the frictional heat by broadening the space to reduce the pressure in the space. As concerns the inflammation, Kinesio Taping can easily enhance anti-inflammatory effects by broadening the space in the upper layer of the fascia. However, over stimulation on the fascia may cause an uncomfortable sensation, pruritus and increased pain. In addition, if the structure of the Tape changes in the future, it cannot be said that the same experimental results will be obtained as in this study. I will conduct similar experiments on the Tape to demonstrate the difference between the present experimental results and any future results.

#### <<Conclusion>>

Although less markedly than the previous experiments, it was clearly observed from the results of the present study that the stretch rate and width of Kinesio Tape affected the fascia and flow of lymph fluid. I attempted to substantiate the validity of the past method of attachment of Kinesio Tape by this experiment (showing that the width and stretch rate of Kinesio Tape caused slight changes and difference in the fascia).

Kinesio Taping provides a unique way for you to give your patients more of the healing and pain relief that your skilled hands bring to them by sustaining and enhancing your therapy.

The actual target of Kinesio Taping is how to reproduce and maintain the treatment by skilled persons, and the efficacy of the magic-like techniques can be reproduced with Kinesio Tape.

