Slide 1

Taping the World for Health
To Kinesio Tape Or Not To Kinesio Tape
Keith Khoo PT CKTP

Slide 2

OBJECTIVES
- Describe the concepts of Kinesio Taping.
- Review muscular anatomy as it is related to Kinesio Taping.
- Explain and apply the concepts of the Kinesio Taping Method.
- Describe the unique qualities of the Kinesio Tex Tape.
- Demonstrate application skills in guided laboratory sessions.
- Practice the various cutting techniques and their clinical application.
- Utilize and demonstrate application skills in guided laboratory sessions.
- Apply Kinesio Taping method to relax and stimulate muscles.
- Apply Kinesio Taping methods for pain, swelling, joint mobility, and stability.
- Apply various taping techniques for treatment of the spine, and upper/lower extremity dysfunctions.
- Apply various taping techniques for treatment of unique conditions using the concepts and principles of the Kinesio Taping Method.
- Understand the benefits and limitations of Kinesio tape.
- Identify contraindications of Kinesio tape use.

Slide 3

What's In A Name?
Proper Name:
Kinesio® Tex Tape
for use with the
Kinesio® Taping Method
These are both trademarked

Common Use Term:
Kinesio®, Kinesio® Tape, KT
Wherever there is skin, we can apply Kinesio Tex Tape to treat...

- AC Joint Injury
- ACL Injury
- Achilles Tendonitis
- Bicep Tendonitis
- Brachial Plexus Syndrome
- Carpal Tunnel Syndrome
- Elbow Bursitis
- Hallux Valgus Pain
- Headaches
- Medial/Lateral Patellar Tendonitis
- Patellar Tendonitis
- Plantar Fasciitis
- Scoliosis
- Shin Splints
- Bruised Tissue

Virtually everything!

Wherever there is skin, we can apply Kinesio Tex Tape to treat...

Virtually everything!

Wherever there is skin, we can apply Kinesio Tex Tape to treat...

Virtually everything!
Slide 7

What is Kinesio Taping?

- A time tested, therapeutic taping method
- Uniquely designed elastic tape
- Enhances function of many different tissues
- Can be applied and worn 24 hours a day, 3-5 days

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What is Kinesio Taping?

- Unique modality for any treatment plan
  - Acute
  - Sub-Acute
  - Rehabilitative
  - Chronic
- Preventative Modality
- Helps the body return to Homeostasis

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What is Kinesio Taping?

- Can be used with other modalities
  - Manual therapy
  - Cryotherapy
  - Hydrotherapy
  - Electrical stimulation
  - Phototherapy
  - Acupuncture
- Immediate and long term response
Dr. Kase has earned degrees in Business Administration, a Doctorate of Chiropractic Medicine, is a Certified Acupuncturist and Moxibustion Therapist.

Dr. Kase teaches the Kinesio Taping Method in Japan and around the world.

He continues to lecture about Kinesio Taping Methods, research in anatomy and exercise protocols.

He has published scientific research regularly since 1980.

Kenzo Kase D.C.
Inventor of KinesioTex Tape
Founder of Kinesio Taping Method

Dr. Kase wanted to offer patients a "prescription" that was effective even between visits.

Began experimenting with existing tapes

Without desired results, he developed a new type of tape

Dr. Kase invented KinesioTex Tape and the Kinesio Taping Method in 1973 in Japan.

First used in Japan's clinical rehabilitation settings

International exposure due to use in '88 Seoul Olympics

Introduced to the USA in 1995 and Europe in 1996.

KTA formed in 1997
United States Postal Service Cycling Team

Lance Armstrong's Every Second Counts

- "Something better than any laser, wrap, or electric massager...The Tape.
- It is a special hot-pink athletic tape that came from Japan and seemed to have special powers.
- tape(s) us all up, different parts of our bodies...George's back, Chechu's knees.
- threshold pain...we wrapped up...that we'd look like dolls, a bunch of broken dolls.
- But the next day the pain disappeared—it was gone."

Kinesio Taping Today

- 85% of Kinesio Tex Tape applications are non-athletic
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Kinesio Taping Today

- Professional teams and athletes rely on the unique technique within
  - United States/Canada
  - South America
  - Asia
  - Europe
  - Middle East
  - South Africa
- 41 US Colleges and Universities introduce KT as a part of the professional curriculum since 2003

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KT Practitioners

- Primary markets are PT’s, OT’s, ATC’s, DC’s, MD’s, LAc’s, MT’s and RN’s
- In 2008, over 78,000 practitioners purchased Kinesio Tex Tape in the US, with over 150,000 worldwide
- 21 International Distribution Partners representing over 78 countries around the globe
- #1 Elastic Therapeutic Tape in the world

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Unique Qualities of Kinesio Tex Tape

- Tape applied to paper substrate with 10% stretch
- Elasticity to 40-60% of resting length
- Stretches along longitudinal axis only
- Thickness and weight similar to skin
- 100% medical grade, acrylic heat activated adhesive
- No medicinal properties in tape
Kinesio® Tex Tape
Unique Qualities of
®
LATEX FREE!!!!

Kinesio Taping Method®
vs.
Other Taping Techniques
Three main taping techniques recognized within therapeutic communities
- McConnell-Taping Technique (very restrictive)
- Prophylactic Athletic Taping (restrictive)
- Kinesio® Taping Method (Lift Skin, Create Space)
- Dynamic Taping (Absorb Load, Full ROM) Australian Ryan Kendrick

Athletic Taping
- Acute injuries and injury prevention
- Used to limit or assist motion
- Requires pre-tape or spray adhesive
- Compression of the skin, joints and muscles
- Skin irritation due to latex adhesive
- Limited wear time
- Primary purpose not rehabilitative
McConnell Taping®
Technique

- Bracing or strapping technique
- Endura Tape®, Leuko Tape®
- Extremely rigid, cotton mesh tape
- Primarily orthopedic applications
- Requires pre-tape
- Limited wear time due to skin irritation
- Limits normal and pathologic movement
- Poor adhesive quality when wet

Clinical Differences

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<th>LiteFlex</th>
<th>Endura</th>
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Kinesio Tape®
Availability

- Available in various colors
- Suitable for athletic tape
- Ideal for kinesiology

*Images and graphics are intellectual property of the Kinesio Tape Foundation.*
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Initial Difficulties with Kinesio Taping Method

- Unlearn traditional athletic tape application methods
- Not just an orthopedic modality
- Proper patient assessment is critical
- Not appropriate for all patients
- Practice within your expertise only. May need to consult with a physician or other medical professional before taping.
Basic Concepts of KT Corrective Techniques

**Rule of Thumb**
- Rule of thirds where the treatment component of the tape is one third and the tails on each end is a third each
- Less is more where tension is concerned
- Less is more where number of applications is used

Kinesio Tape Removal Roll Method
- Catch front edge of tape
- Gently roll down with finger
- Pull tape away from substrate
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Tear paper substrate
Gently pull back substrate from tape

Tape Removal
Tear Method

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Pull the backing from both sides
Example of stretch

Feel the Stretch of Kinesio Tex Tape

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Application of Kinesio Taping®

- Assess/Screen
- Tape
- Re-assess
- X, I, Y, Web & Fan cuts
  (the Y & I cuts are most common)
Currently, Kinesio Tex Tape comes in Beige, Blue, Red, and Black. Note: “Pink” is listed as “RED.”

- There is no difference in tape manufacturing or ingredients other than the color dye.
- All color is added from plant extracts, which add to the hypoallergenic properties.
- Individual and bulk rolls come in all colors.

Kinesio Taping Glossary

- Anchor: Beginning of application; no tension.
- Ends or Tails: Last part of tape that is laid down; no tension.
- Base: Tape beyond anchor or therapeutic region of the tape. Portion of the tape between anchor and beginning of ends or tails in Y or X cut; or between anchor and end or tail of I cut.

“Paper Off Tension” Tape is applied with the 10-15% tension off the substrate.

Tensions greater than 50% are for Corrective techniques only.
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Concepts of Kinesio Taping

- Skin should be free of oils and dry
- Stretch target tissue as tolerated
- No tension on anchors
- After application, lightly rub the tape to activate the heat sensitive adhesive
- Tape application in moist areas or prior to swimming: apply 30 to 60 minutes prior to activity
- Tape both the pain, and cause of the pain

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Limitations of Kinesio Taping

- Body hair may need to be clipped or shaved
- Apply tape approx. 30 minutes before activity
- Application during activity, may require the use of a tape adherent
- Patient education is important component to success of application

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Removal of Kinesio-Tex Tape

"ROLL" Method

- Remove in direction of hair growth
- Roll the tape off using the base of the hand to brush/pat skin gently to reduce discomfort
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**Removal of Kinesio Tex Tape**

"SKIN FROM TAPE" Method:
- Pull the skin back from the tape
- Tape may be removed while bathing
- Soap, hand lotion or oil (baby or mineral) may be applied to the tape to break the adhesive bonds comfortably

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**Kinesio Taping Method**

- A wide variety of tensions are used with Kinesio® Tex Tape. One chooses the tension based on the target tissue and desired outcome
- Convolutions are evidence of Kinesio® Tex Tape's effect on the skin

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**Kinesio Taping Method**

**Tension Application**

- Paper off: 10-15%
- Light: 15-25%
- Moderate: 25-50%
- Severe: 50-75%
- Full: 75-100%
- 0% no tension on anchor or end
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**Kinesio Taping Method**

**Tension Application**

- Facilitation (PAD) 15-50%
- Inhibition (DIP) 15-25%
- Space Correction 25-50%
- Mechanical Correction 50-75%
- Fascia Correction 15-50%
- Ligament Correction 50-100%
- Tendon Correction 50-75%
- Lymphedema/inflammation 10-25%
- Scar management 25-50%

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**Direct Technique**

- Exert their influence directly on the muscle or the musculotendinous unit (MTU)
- Reducing the load – additional elastic forces in parallel to the series elastic components
- **Pre-Set** – facilitates muscle activation in the target muscle (possibly by excitation of the muscle spindles)
- **Force Generation, Energy Absorption, Storage and Release** – Tape can contribute force thereby reducing the force generation requirements of the MTU
- **Long application** – 30% tension

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**Indirect Techniques**

- Are concerned with modification of gross movement patterns without concern for particular muscles or tendons
- **Modification of Kinematics** – modifying and improving the way patients move
- **Off Loading and Support** – reducing the mechanical load on sensitized tissues not by directing assisting a MTU but by supporting or providing weight relief
- **Short Application** – 70% tension
**Kinesio Taping Method**

**How It Works**

- Designed to facilitate the body's natural healing process and to provide extended soft tissue manipulation to prolong the benefits of manual therapy administered within the clinical setting.
- Targets different receptors within the somatosensory system, the tape alleviates pain and facilitates lymphatic drainage by microscopically lifting the skin.
- The lifting effect forms convolutions in the skin thus increasing the interstitial space and allowing for decreased inflammation.
- Can be used in conjunction with a multitude of other treatments and modalities and is effective during the rehabilitative and chronic phases of an injury as well as being used for preventative measures.

**Skin Physiological Effects**

- Kinesio Tape provides gentle sensory stimulation to various types of sensory receptors in the skin during movement (Ruffini, Meissner, Pacinian, Krause's bulb, Merkel's disk, free nerve endings, hair follicles etc.)
- Activates the spinal inhibitory system through stimulation of touch receptors and activates the descending inhibitory system to decrease pain via the Gate Control Theory, proposed by Melzack and Wall.

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**The First Division**

**Skin & Superficial Fascia**

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Tissue decompression has two primary effects on the body.

- First, it relieves pressure from the free nerve endings in the tissues that are responsible for nociception (pain), so it can immediately reduce perceived pain.
- Secondly, the decompression action of the tape allows better circulation to and from the area taped, reducing swelling at the site of an injury and likely contributes to the performance and recovery effects seen in athletes.

As Kinesio tape lifts and creates shear patterns in the skin and underlying tissues, there is an alteration of the afferent signals going from the taped area to the brain. As a result, this changes the brain's response to the incoming information, altering the efferent signals returning to the taped area. This neurological effect of taping is responsible for many of the beneficial effects of using Kinesio tape. A study using functional MRI showed more areas of the sensory cortex of the brain are stimulated when subjects had tape (albeit Hypafix) applied to their knee during movement. Callaghan et al. Effects of patellar taping on knee activity during knee joint proprioception tests using functional magnetic resonance imaging. Physical Therapy. 2012; 92(6): 821-830.

An uninterrupted, three-dimensional web of tissue that extends from head to toe, front to back, from interior to exterior. (Dunn and Silver 1983, Mosler et al 1985)
- Fascia is responsible for maintaining structural integrity; for providing support protection; acting as a force dampener.
- Fascia has an essential role in hemodynamic and biochemical processes, and provides a major matrix for intracellular communication.
Fascia® Physiological Effects

- Fascia also functions as the body’s first line of defense against pathogenic agents and infection. Repurcussion from injury may be body wide with stress on surrounding soft tissues requiring progressive body adaptation at local and global level (Levin 1990).
- After injury, it is the fascia that creates an environment for tissue repair.
- Fascia extends to all fibers connected tissues, including apponeuroses, ligaments, tendons, retinacula, joint capsules, organ and vessel tunics, epineurium, meninges, periosteum and all the endomysial and intramuscular fibers of the myofascia.

Interconnected nature of fascia means that everything in the body is structurally connected.
- When fascia is too tight, your muscles ability to perform optimally and repair is restricted.
- This tightness can also alter biomechanics and cause mechanical compensation in other areas.
- If this fascial contraction persists, fibroblasts will secrete collagen and other proteins into the extracellular matrix where they bind to existing proteins, making the composition thicker and less extensible.
- While this increases the tensile strength of the fascia, it can unfortunately restrict the very structure it aims to protect.

This may result in a mild decrease in joint range of motion to fascial binding of muscles, nerves and blood vessels (e.g. Compartment syndromes).
- Reorganization of the fascia can occur if this fascial contraction can be interrupted.
- Fascia then will normalize its composition and tone and the extra material that was generated by prolonged contraction will be ingested by macro phages within the extracellular matrix.
- Considering the two previous physiologic effects, Kinesio Taping, when applied correctly, can help minimize this fascial contraction during soft tissue injury or help reorganize the fascia during chronic injury.
The three main lines that correspond to main muscular and habitual patterns of motion that we all employ are:
- Sagittal/which mediates flexion/extension,
- Coronal/frontal which mediates abduction/adduction
- Horizontal/transverse which mediates rotation

The assessment of three cardinal lines ensures you a more global relaxation in the fascial tension and restoration of increase mobility corresponds along these lines.

Essentially the distinct difference is not moving into the limit of anatomical integrity, instead the assessment of joint motion is confined to the level of first resistance.

That is, where you feel the first tug, snag or glitch to the smoothness and quality of this motion.

The reason is this will usually indicate the congestion of the connective tissue in the form of superficial fascia or fibrous connective tissue component as capsular or ligament restriction.
The fascia provides and transmits forces for connective tissues, thereby regulating human posture and movement. One way to assess the myofascial interaction is a fascia ultrasound recording. Ultrasound can follow fascial displacement either manually or automatically through two-dimensional (2D) method. By using an automated tracking method, the present analyses suggest statistically significant displacement of deep fascia.

Use of Kinesio tape to reposition fascia with tension on the base.
- Use of elastic qualities of tape to simulate manual therapy technique.
- Oscillating motion (lateral or longitudinal) during application to reduce tension and adhesions between and within layers of the fascia.
- Maintaining the fascial plane post manual therapy once fascial planes have been reestablished to hold fascia in desired position and or to limit movement of fascia into unwanted positions.

Application of Kinesiology tape in the fascia method involves using light to moderate tension (15-50%).
- Generally, for fascia correction a Y strip of Kinesio Tape is used. The base is applied with no tension, then by applying light tension the tape is gently stretched in the direction fascia correction is desired.
- Can use oscillation (longitudinal or horizontally) as the tape is laid down, no tension on the tails.
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Fascia "Holding" Correction

Apply muscle tension in desired direction for application of KT.

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Fascia "Holding" Correction

Hold the base, hold both ends of the tape and oscillate as you apply it to the skin to either hold or assist the fascia in unwinding it from the undesired position.

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Fascia "Holding" Correction

Light to moderate tension 15-50% tension in the direction of the fascia.
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Fascia "Holding" Technique

- Tails with no tension

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Thoracolumbar Fascia Application

- Patient position: standing with maximum forward flexion
- Apply base of tape to paraspinals at T7-8 (level of the inferior angle of the scapula)
- For the base of KT and apply downward pressure to increase tissue tension
- Apply KT along the paraspinals to the lumbosacral junction
- At the LS junction, apply KT at 45° toward the sacroiliac joint

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Thoracolumbar Fascia Application

- Allow the patient to return to neutral before applying the second piece of KT to the opposite side
- Apply second piece of KT in similar manner as the first piece
Extend the spine to 15° and apply horizontal piece holding onto the tails of the KT, with light tension (25%). Note: the horizontal piece that is being applied here is the line drawn between the right and left posterior superior iliac crests. Apply the tails to the PSIS with light tension (25%).
Kinesio Taping after 12 Hours

KT Muscle Applications
- Relieves pain
- Increases Range of Motion
- May normalize length/tension ratios to create optimal force
- Assists tissue recovery
- Reduces fatigue

Muscle Physiological Effects
- The elastic properties of Kinesio Tape replicates and enhances the function of muscle fibers and tendons
- In other words the GTO will cause "contraction failure" to protect the muscle and tendons from excessive force
- It is by these mechanisms that Kinesio Taping, when applied correctly, can take advantage of the neural control of human movement
Muscle Physiological Effects

The elastic properties of Kinesio® Tex Tape replicates and enhances the function of the muscle fibers and tendons.

- Golgi tendon organs (GTOs) are specialized mechanical receptors found at the musculotendinous junction.
- A single aβ caliber nerve fiber forms elaborate sprays that intertwine with tendon fiber bundles enclosed with the connective tissue capsule.
- A dozen or more muscle fibers insert into these intracapsular tendon fibers, which are in series with the muscle fibers.
- The bulbous nerve endings are activated by the attenuation that develops during muscle contraction.

- The rate of impulse discharge on the parent fiber is related to the applied tension.
- Tendon endings signal the force of muscle contraction.
- Stimulation of the GTO by direct pressure has been well documented by Rood and others to inhibit muscle over activation.
- Research has also revealed that the GTO is responsible for controlling the muscle spindle throughout movement.
- It modulates and modifies tension of the muscle spindle directly in response from feedback from the antagonist muscle to create controlled coordinated motion.
- GTOs turn the muscle off when the force applied is greater than the tolerance of the muscle.

- Muscle spindles are up to 1 cm in length and vary in number from a dozen to several hundred in different muscles.
- They are abundant in the antigravity muscles along the vertebral column, femur, and tibia, muscles of the neck, intrinsic muscles of the hand.
- All these muscles are rich in slow, oxidative muscle fibers.
- Spindles are scarce where Fast Glycolytic fibers or Fast Oxidative Glycolytic fibers predominate.
- Muscle spindles contain up to a dozen intrafusal muscle fibers (ordinary muscle fibers are extrafusal in this context).
- The larger intrafusal fibers emerge from the poles (ends) of the spindles and are anchored to connective tissue (perimysium).
- Smaller ones are anchored to the collagenous spindle capsule.
Muscle Physiological Effects

- At the spindle equator (middle), sarcomeres are replaced almost entirely by nuclei, in the form of "bags" (in wide fibers) or "chains" (in slender fibers).
- Muscle spindles have both a motor and a sensory nerve supply.
- The motor fibers, called fusimotor fibers, are in the A size range, in contrast to the A fibers supplying the extrafusal muscle.
- The fusimotor axons divide to supply the striated segments at both ends of the intrafusal muscles.
- A single primary sensory fiber of type Ia caliber applies annulospiral wrappings around the bag or chain segments of the intrafusal fibers.
- Secondary "flower spray" sensory endings on one or both sides of the primary are supplied by type II fibers.

- During muscle tension the strands of collagen are stretched as long as 3 inches.
- The muscle length changes (concentric or eccentric contractions).
- The stretching deforms at the terminals of the 1b afferent axon, opening sensitive cation channels.
- As a result, the axon is depolarized and fires nerve impulses up to the central nervous system via the spinal cord.
- The action potential frequency signals the force being developed within the muscle.

- The sensory feedback plays an important role in spinal reflexes in the central control of muscle contraction.
- Specifically, it is postulated that because the GTO exists in serial connection with muscle fibers, it can measure the tension that each muscle contraction builds up.
- The 1b afferent axon synapses with interneurons within the spinal cord and also relays information to the brain.
- One of the main spinal reflexes receiving an input from the 1b afferent is the autogenic inhibition reflex, which is involved in the regulation of the force profile of ongoing muscle contractions.
Muscle Physiological Effects

In other words the GTO will cause "contraction failure" to protect the muscle and tendons from excessive force. It is by these mechanisms that Kinesio® Taping, when applied correctly, can take advantage of the neural control of human movement.

- The sensory feedback plays an important role in spinal reflexes in the central control of muscle contraction.
- Specifically, it is postulated that because the GTO exists in serial connection with muscle fibers, it can measure the tension that each muscle contraction builds up.
- The Ib afferent synapses with interneurons within the spinal cord and also relays information to the brain.
- One of the main spinal reflexes receiving an input from the Ib afferent is the autogenic inhibition reflex, which is involved with the regulation of the force profile of ongoing muscle contractions.

Muscle Physiological Effects

In other words the GTO will cause "contraction failure" to protect the muscle and tendons from excessive force.

It is by these mechanisms that Kinesio taping, when applied correctly, can take advantage of the neural control of human movement.

KT Muscle Application Methodology

KT Application Guidelines are designed to:
- Improve muscle contraction of a weakened muscle (Facilitation)
- Stimulate relaxation of an over contracted muscle (Inhibition)
- Therapeutic direction is the recoil toward the anchor
- Therapeutic zone is the portion of tape placed over the target tissue
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KT Muscle Applications®

- The muscle is optimally stretched and the tape is applied with 0% tension. (In painful conditions the tissue would not be stretched)
- The tape is applied lengthwise applying the base first without pulling, allowing tape with the tension to be applied over the muscle, relaxed the tape will wrinkle and form the convolutions necessary to lift the skin from the underlying fascia.
- When Kinesio Tape is applied from the origin of the muscle to insertion, the technique is supportive.
- Applying Kinesio Tape from muscle insertion to its origin assists in rehabilitation.
- Gently moving the skin around the affected area to determine the differential areas of pain would show the experienced practitioner the direction to apply Kinesio Tape. The tape would be applied in the direction the skin was moved before the patient’s least painful motion. i.e. away from the pain.
- These techniques can also be used prophylactically to support a weakened muscle, or in relaxation of muscle tension.

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KT Muscle Applications

Muscle Facilitation
- Apply tape from the beginning of the muscle to the end (Origin to Insertion)
- Tension 15-50%
- PAD (Proximal-Activation-Distal)
- Used to stimulate weak or underused muscles

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KT Muscle Applications

Muscle Relaxation (inhibition)
- Apply tape from the end of the muscle to the beginning (Insertion to Origin)
- Tension 15-25%
- DIP (Distal Inhibition Proximal)
- Used to relax tired or overused muscles
Vercelli et al compared the effects of no tape, origin to insertion and insertion to origin tape on quadriceps strength and limb performance in health individuals. No difference was found between groups.


**Origin:**
- Long Head: supraglenoid tubercle of the scapula
- Short Head: apex of the coracoid process of the scapula

**Insertion:**
- Tuberosity of the radius and bicipital aponeurosis (lacertus fibrosus)

**Actions:**
- Long head: glenohumeral flexion
- Long and Short Head together – with the elbow fixed, elbow flexion and supination
- With the insertion fixed, flexes elbow moving humerus toward forearm as in pull-up exercise

**Inhibition (DIP):**
- Patient standing or sitting
- Attach base of KT to lateral cubital fossae
- Peel the KT from the paper substrate and apply to the skin without activating the adhesive by rubbing
Biceps Brachii Application

Inhibition (DIP)

- Extend shoulder and elbow with the head rotated to the opposite side.
- Stabilize the base of the tape and pull the skin distally to increase tissue tension.
- Apply the medial "Y" portion of the tape to the coracoid process, following the medial border of the biceps.

Biceps Brachii Application

Inhibition (DIP)

- Rotate the shoulder medially while keeping the shoulder and elbow extended.
- Apply the lateral "Y" tail to the acromioclavicular joint, following the lateral border of the biceps.

Biceps Brachii Application

Inhibition (DIP)

- Completed Biceps Brachii application for Inhibition.
• The sacrospinalis is the generic member of the erector spinae in the thoracic and lumbar regions

• Anterior member of the erector spinae group is the iliacus which, while being insufficient on its own to move the body forward or to maintain an erect posture, is very strong in resistance to extension, hyperextension and lateral flexion

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• Position: Standing or sitting in neutral lumbar posture

• Measure and cut Y tape

• Adhere the anchor (origin of Y tape) over the center of the sacrum

• Activate the adhesive

---

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• Position: Trunk flexion as tolerated

• 15-50% tension, P to D (O to I)

• Adhere one tail of the Y tape along the erector spinae muscle

• No tension on ends

• Activate the adhesive
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**KT Sacrospinalis Application**

- Adhere the opposite tail along the other side in the same manner as the previous one
- No tension on ends
- Activate the adhesive

**Slide 101**

**KT Sacrospinalis Application**

- KT Sacrospinalis Application when body is in a neutral standing position
- Y strip
- P to D (O to I)
- 15-50% tension facilitation
- Note Convolutions

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**KT Supinator Application**

- Divided into a superficial and a deep layer, the supinator helps in externally rotating the forearm together with the biceps brachii
- When the supinator becomes weak, the biceps brachii alone cannot completely rotate the forearm

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KT Supinator Application

Proximal:
- Lateral epicondyle of humerus.
- Radial collateral ligament of elbow joint.
- Annular ligament of radius and supinator crest of ulna.

Distal:
- Lateral surface of proximal 1/3rd of radius and portions of anterior and posterior radial surfaces.

Nerve:
- C6.

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KT Supinator Application

- Anchor in neutral with no tension, proximally.
- Pronate forearms and extend elbows to stretch tissue.

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KT Supinator Application

- Apply 15 to 50% tension.
- The tape should end at the middle of the ulna with no tension.
KT Supinator Application

KT Supinator Application

Completed taping

KT Muscle Applications

VIDEO

KT Mechanical “Recoiling”
Technique Type I

The purpose of this technique is to reposition or return structures to their normal position.

- Y Technique, Tension on the Tails
- Utilizes stretching qualities and inward or downward pressure of the Kinesio Tape
- “I” for severe, base of “Y” moderate, tails of “Y” mild severity.
Hold base of Y beginning of tails with no tension

To increase the mechanical stimulus to the proprioceptors, apply 50-75% tension (moderate to severe) More tension over tendon or ligament. Tension applied longitudinally and with inward pressure.

When desired tension has been applied, slide the hand which is holding the base of the Y tails up to the point of end tension

Lay down ends of tails with no tension. Where possible take joint through full range of motion prior to laying down the ends.
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**KT Mechanical “Recoiling”**

**Technique Type II**

- **Y Strip, type 2**
- Utilizes stretching qualities and inward or downward pressure of the Kinesio Tape:
  - Hold base of Y beginning of tails with no tension
  - Stabilize at the base, applying downward pressure to increase tissue tension
  - Apply both tails to skin at the same time
  - To increase mechanical stimulus to the proprioceptors, apply 50-75% tension longitudinally and inward
  - Slide hand which was holding the base up to the point of end tension
  - Lay down ends of tails with no tension. Tails should be spread out to dissipate over as large an area as possible

**Slide 113**

**Slide 114**
The purpose of this technique is to reposition or return structures to their normal position.

- Utilizes stretching qualities and inward or downward pressure of the Kinesio Tape
- Position KT directly over tissue to be treated

Move the joint to its full range of motion to increase tissue tension under the tape.

- Holding the KT by the tails, pull the central portion of the tape with moderate to full force (60-100%) and apply the central portion of the tape to the affected area.
- Initiate the KT activation prior to moving the joint otherwise the tape may pull away from the treatment area.
- Use Kinesio tape to create "blocks" to limit movement of joint or muscle.
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KT Joint Applications

- Improve joint biomechanics and alignment
- Balance agonist and antagonist
- Reduce protective muscle guarding and pain
- Facilitate ligament & tendon function
- Enhance kinesthetic awareness

Slide 119

KT Joint Applications

Physiological Effects

- Joint function can also be improved by stimulating the proprioceptors in the joints passive restraint system by application of Kinesio Tape over the ligaments.
- The proprioceptors in the ligaments and joints capsules provide information to the nervous system which allows the musculoskeletal system to provide appropriate movement to the injured joint.

Slide 120

KT Joint Applications

Technique

VIDEO
Kinesio® Taping Method
Tissue Stretch Concept
- Stretching the skin exposes more sensors to be stimulated by Kinesio® Tex Tape
- Stretching the tissue prior to tape application maintains and promotes tissue flexibility

Kinesio® Taping Method
Range of Motion Concept
Kinesio® Tex Tape is used to provide normal range of motion

KT Tissue Stretch Concept
Ligament Correction
- Place affected joint to be treated in neutral position (no tension on the tissue)
- Apply base of KT just inferior to the distal ligamentous attachment of the ligament (lateral collateral ligament)
- Stimulates mechanoreceptors to normalize tissue function
- Improves proprioception to stabilize ligaments
KT Tissue Stretch Concept
Ligament Correction
®

Slide 124

Stabilizing the KT, pull the middle 1/3 of tape with moderate to full (50-100%) available tension and lay the tape along the course of the ligament (lateral collateral ligament).

Slide 125

Tails with no tension.

Slide 126

Completed KT ligament correction.
Slide 127

**KT Tissue Stretch Concept**

- Place affected muscle/tendon in an elongated position of tension.
- Apply base of KT to the distal attachment of the tendon with no tension.

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**KT Tissue Stretch Concept**

- Stabilize the base of the KT tape.
- Apply to the musculotendinous unit with moderate to severe (50-75%) available tension.
- Note tension is less than ligament correction.

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Slide 129

**KT Tissue Stretch Concept**

- As the KT reaches the musculotendinous junction, decrease tension to light to very light (15-25%) available tension, applying rest of the KT to the distal end of the lower leg.
Slide 130

KT Tissue Stretch Concept
Tendon Correction

No tension applied to the tails of KT

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KT Tissue Stretch Concept
Tendon Correction

Completed KT tendon correction

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KT Muscle Inhibition applications can rest overused muscles
KT Muscle Facilitation applications can improve and correct movement patterns
Muscle balance can be re-established
KT Corrective techniques can offer immediate changes to target tissue metabolism

Kinesio Taping Method
Overuse Concept
Slide 133

KT Tissue Stretch Concept Technique

VIDEO

Slide 134

Kinesio® Taping Method

Inflammation Concept

• When the space between the skin and other tissues is compromised, fluid dynamics are altered and may cause inflammation and pain
• Kinesio® Taping Corrective Techniques can help decompress tissue, redirect edema and relieve pain

Slide 135

Kinesio® Taping Method

Channeling Concept

• Kinesio® Tex Taping alleviates pain and facilitates lymphatic drainage by lifting the skin
• This is demonstrated by convolutions in the tape
• If convolutions are not immediately evident, there are micro convolutions with movement
• Taping patterns can improve the pressure gradients for fluid movement
Circulatory and Lymph Physiological Effects

- The lymphatic drainage system contains both superficial and deep lymphatic vessels which can become filled in response to localized inflammation.
- Kinesio Taping takes advantage of the mechanical connection of the anchoring filaments to the endothelial cells.
- My-way of connection to the dermal layer the lymphatic channels can be "opened up" by the elastic qualities of the tape, creating the characteristic convolutions on the tape.
- This allows for the lymph obligatory load to fill the lymphatic capillaries toward areas of decreased pressure under the Kinesio Tape which allows fluid to move more freely.
- The elastic property of Kinesio Tape also creates a gentle massage with movement.

Pressure changes and movement of the skin open and close the initial lymphatic vessels via filament attachments as well.
- The effect of taping muscles enhances the deeper lymphatic mechanisms.
- Kinesio Taping on the superficial lymphatics encourages edema movement.
- The edema reduction removes heat and chemical substances in tissue, improving circulation and reducing trigger points.
- Decreasing pressure and chemical receptors reduces pain and improves the return of normal sensation.
- The lymphatic system is generally a low-pressure operating system. Inappropriate external pressure or partial gradients, scar tissue, or a range of chronic superficial tissue changes can easily close it down. This ultimately may result in an inflammatory outcome.

KT Lymphoedema "Channeling" Technique

- KT using fan cut, tape into 4, 5 or 6 strips with a base
- The base is applied without tension slightly above the cisternae to which the lymphatic drainage is being directed
Slide 139

Slide 140

Slide 141
Use of Kinesio Tape increases the amount of lymph and the speed of lymph flow.

This happens because the tape strips raise the skin.

There is a reduction of pressure below the Kinesio strips, and interstitial fluid can better circulate to the affected area.

With the latter and the possibility of movement, interstitial fluids are increased by way of the lymphatic vessels.

Nociception, which is perceived as pain at the conscious level of the brain, shares pathways in the nervous system with movement and proprioception.

Most nociception is relayed to the brain via relatively slow nerves.

When tape stimulates proprioceptors and other sensory receptors in the skin (most of which travel to the brain on much faster nerves than pain) it has a pain-gate effect.

In simple terms, nociception will bombard the brain and be perceived as pain, and the less "interference" there is to the nociception signals, the more pain is perceived.
Nociception

According to the pain gate theory, when larger, faster nerve fibers start to fire more, as in the case of stimulating skin or moving the body, this "closes the gate" to the nociception signals and down-regulates the perception of pain.

People innately deal with pain in similar ways:

- For example, when you hit your body against something hard and it hurts you tend to rub the area and it feels better or if you cut yourself in the kitchen chopping vegetables you run cold water over the cut and the pain decreases dramatically.
- "Walking it off" helps reduce the pain of many sports injuries because the movement decreases the sensation of pain.

This is all due to the pain-gate effect.

Kinesio® Taping Method
Pressure Concept

- Pressure on the skin is transmitted to deeper tissues.
- Pain receptors send signals of discomfort to the brain, which are interpreted as pain.
- The Kinesio® Taping Method includes applications that relieve pressure directly and indirectly.

KT Space Correction
"Lifting" Technique

- Move the joint to full available range of motion to increase tissue tension under the KT.
- Tear the paper backing away from the body, leaving the backing on the tails.
- Holding the tails, pull the middle 1/3 of the KT to light to moderate (25-50%) available tension, and apply the middle 1/3 of the tape to the affected area.

This is all due to the pain-gate effect.
Slide 151

- Apply the tails at both ends without tension

Slide 152

- Rub the tape vigorously to activate the adhesive to complete the application of an I strip Space Correction “lifting” Technique

Slide 153

- Move the joint to full available range of motion to increase tissue tension under the KT
- Tear the paper backing away from the body, leaving the backing on the tails
- Holding the tails, pull the middle 1/3 of the KT to light to moderate (25-50%) available tension, and apply the middle 1/3 of the tape to the affected area
Slide 154

- Apply the tails at both ends without tension.

Slide 155

- Rub the tape vigorously to activate the adhesive to complete the application of a Donut Cut Space Correction "lifting" Technique.

Slide 156

- Move the joint to full available range of motion to increase tissue tension under the KT.
- Tear the paper backing away from the body, leaving the backing on the tails.
- Holding the tails, pull the middle 1/3 of the KT to light to moderate (25-50%) available tension, and apply the middle 1/3 of the tape to the affected area.
KT Space Correction
“Lifting” Technique
Web Cut

- Apply the tails at both ends without tension

KT Space Correction
“Lifting” Technique
Web Cut

- Rub the tape vigorously to activate the adhesive to complete the application of an Donut Cut Space Correction “Lifting” Technique

KT Scar Tissue Technique

- Do not apply Kinesio Tape on a scar until it is well healed. This would be when the scar is in its middle to later remodeling stage of healing. (Around 2-4 weeks after the wound is closed).
- Applying tape too early could cause extensive damage to the tissue, slowing down wound healing.
- Be extra careful with patients with diabetes, venous insufficiency, and peripheral neuropathy.
- Recommended that gentle manual techniques be provided as soon as the wound is closed prior to starting KT scar tissue techniques.
Slide 160

KT Scar Tissue Technique

- Assists in the softening of scar tissue and reducing adhesions and pitting.
- Makes the scar soft, flat and pliable and ultimately reduces the risk of contractures.
- Low load/prolong duration stress on scar tissue, softens and remodels scar tissue
- Applied stress to the scar helps to lay down collagen fibers in a more parallel pattern. Stress can be provided in the form of pressure or stretch.

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KT Scar Tissue Technique

- Mechanical pressure with a corresponding stretch applied to a scar will eventually remodel the hypertrophic scar
- Mechanical pressure is applied directly to the scar as soon as the development of hypertrophic scar is clinically evident, whorl like and nodular formations will change resulting in the reorientation of collagen fibers to elongated parallel patterns.
- Future contracture and hypertrophy is prevented or diminished.
- Can accelerate the natural healing process.

Slide 162

KT Scar Tissue Technique

- S/P open reduction with external fixation or surgical scars
- KT used to assist in the softening of scar tissue and reduction of pitting
- with directional pull is used to assist in the softening of scar tissue and to reduce adhesions
Position patient in maximal muscular, fascial/skin elongation of the area of the scar.

Lay down an “I” tape with 25-50% stretch.

Rub the tape after application to adhere the tape.

Place cross strips with pulling the base strip in the desired direction with 25-50% stretch in tape.

End on the tape.
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Kinesio Taping Method

Pain Concept

- The 5 physiological effects of KT Method can address pain.
- Testimonials of pain relief are by far the most common report.

Slide 167

KT Functional Correction Technique

- Spring Assist or Limit a motion
- Changes the perception of joint position through increased tension of the skin
- Body will adjust joint position to normalize the increased tension on the skin
- "I" strip length should be 4 inches above and below the joint
- Place joint or muscle to be assisting dorsiflexion and resisting plantarflexion, place the joint in dorsiflexion
- Begin with tape at distal end of joint minimum of 2 inches no tension

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KT Functional Correction Technique

- Apply light to full tension and adhere second base minimum 2 inches no tension
**Slide 169**

**KT Functional Correction Technique**

- Place hand on each base, moving the joint into plantarflexion (ie assisting dorsiflexion and inhibiting plantarflexion)
- To finish, move hands toward middle and activate adhesive prior to releasing tension

**Slide 170**

**KT Functional Correction Technique**

- Completed KT Functional Correction Technique

**Slide 171**

**KT Treatment Example: Cerebral Palsy**

- Scapula is elevated
- Asymmetry with head, neck and trunk

*Please note that the images are not part of the text.*
KT Treatment Example: Cerebral Palsy

Look at the changes:
- What was inhibited?
- What was facilitated?
- You cannot tell just from looking at the tape

KT Treatment Example:
Cerebral Palsy

- Lower Trapezius facilitation
- Trunk Extensors to activate and shift weight
- External Rotation to align humerus

Evidence based practice
**Slide 175**

**Shoulder Pain**

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**Thelan et al.**

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**Purpose**

- To compare the short-term effect of a therapeutic KT application on reducing pain and disability in subjects with RTC tendonitis/impingement versus sham KT taping

**Population**

- 18-24yo College Students; (n = 27)
- + Hawkins-Kennedy, + Empty Can, + Pain Before 150° elevation in any plane
- - Fracture, - GH Dislocation/Subluxation, - Cervical Involvement, - Shoulder Surgery < 12 months

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**Slide 176**

**Shoulder Pain**

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**Thelan et al.**

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**Intervention**

- 15-25% Stretch Y-Strip for Supraspinatus
- 15-25% Stretch Y-Strip for Deltoid
- 50-75% Stretch Y or I-Strip Coracoid Process -> Posterior Deltoid

**Outcome**

- Only significant difference between groups found on day 1 with treatment group achieving greater abduction (19°)
- Both groups over 6 days demonstrated improvements in all outcome measures
- Attrition was high 7/27, due to scheduling conflicts

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**Slide 177**

**Lower Trunk ROM**

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**Yoshida et al.**

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**Purpose**

- To determine the effects of KT on lower trunk flexion, extension and lateral flexion

**Population**

- 30 healthy subjects (15f, 15m)
- Average age (26,20)
- Volunteered
- Were excluded if had LBP within 6 months of trial
Slide 178

Lower Trunk ROM
Yoshida et al

Intervention
- Cross-over Study
- 15-25% stretch with Y-Strip
- Place base above sacrum
- Attach tails on each erector spine group with light tension

Outcomes
- Taping significantly increased flexion (17cm) over non-taping
- No control group
- Needs more detailed measurements

Slide 179

Traumatic Patella Dislocation
Osterhues

Purpose
- To demonstrate the use of KT for control of pain, restriction of quadriceps muscle contraction and altered sense of weight bearing stability in patella dislocation rehabilitation

Population
- 49 yo female PT who sustained a traumatic left knee patella lateral dislocation while cross country skiing

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Traumatic Patella Dislocation
Osterhues

Intervention
- 10% Stretch Y-Strip from the insertion to origin
- Base placed without tension
- Tails across medial retinacular tissue and lateral quadriceps border with paper off tension
- Treatment also included:
  - IFC, ice with compression, static and dynamic balance training, stationary bike, ROM exercises, massage

Outcome
- Reduced pain with activity 4 weeks after injury with KT use function comparable to Atkin et al. (2000) study which put timetable at 6 months
- Tests with NeuroCom Balance Master higher for taped condition than non-taped, however both numbers outside (below) normal ranges
Slide 181

**Purpose**
- To describe the functional arm and hand skills for children admitted into a rehab program subsequent use of KT

**Population**
- 15 Children (10f, 5m) Ages 4-16
- 4 SCI, 2 TBI, 3 Brain Tumor, 2 CVA, Seizure, CP, 2 Birth Defects
- Motor weakness or abnormal muscle tone
- Grades of 3 or more on Mod. Ashworth were excluded
- Trace on MMT or sensory issues were also excluded
- No cognitive or motivation issues

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**Intervention**
- Wide variety of KT techniques, Individualized

**Outcome**
- Melbourne Assessment
  - 16 pt questionnaire measuring upper limb function
  - Designed for CP population
  - Scores significantly improve pre-test to post-test as well as 3 days after taping
  - Hard to draw specific treatment from study
  - Overall function improved in group average immediately after taping limiting learning curve
  - Increase of 5 on MA immediately after application
  - Increase of 10 on MA 3 days after application

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**Clinical Implications**

- **Why use it**
  - Tool in the toolbox
  - Treats patient for 72-120 consecutive hours
  - Feeling of treatment -> encourage movement
  - Placebo or Treatment?
  - Versatile

- **Pros**
  - Some evidence proves theories
  - PTs/OTs/STs provide treatment
  - Applicable to multiple pt populations
  - Constant treatment
  - Some evidence proves theories
  - Expensive
  - Requires practice
  - Skin reaction
Precautions & Contraindications

- Do not overstretch the tape as this can cause blistering of the skin.
- Do not apply to the same area more than once without specific instructions from your therapist.
- Do not apply to fragile skin or early healing tissue.
- Do not apply to skin that has been treated with radiation because these fragile tissues may not be able to take the stress of tape application and removal.
- Do not apply over, or near, known cancer sites.
- Do not apply to an area of cellulitis or infection.
- Do not apply over an open wound.
- Do not apply to an area where there may be a blood clot.
- Do not apply if there has been an allergic reaction to the adhesive on this product.