Athletic Therapy Skills: Support Techniques

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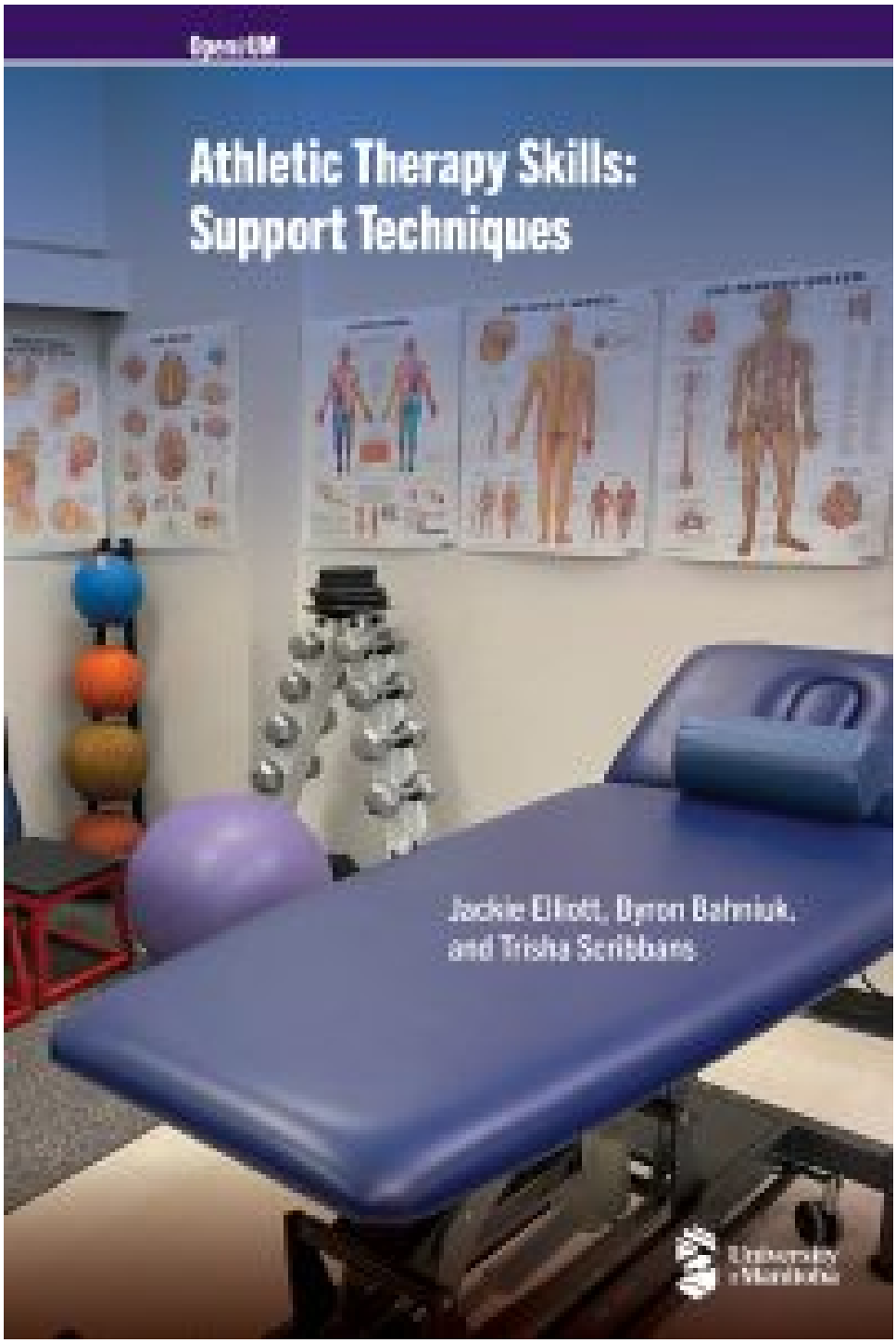
Jackie Elliott; Byron Bahniuk; and Trisha Scribbans

WINNIPEG, MANITOBA

Contents

Cover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Accessibility Statement

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We respect the Treaties that were made on these territories, we acknowledge the harms and mistakes of the past, and we dedicate ourselves to move forward in partnership with Indigenous communities in a spirit of reconciliation and collaboration.

x

Attribution

Reading the Text

Select each section below for details on navigating this resource effectively.

An interactive H5P element has been excluded from this version of the text. You can view it online here:
https://pressbooks.openedmb.ca/athletictherapy/?p=283#h5p-2

Preface

This publication, including the accompanying support techniques videos, was produced with the support of University of Manitoba Libraries and the Advance Open Ed project.

The purpose of these videos was to make them open and available to anyone. In particular, we intend to utilize these resources in the Athletic Therapy program at the University of Manitoba for the foreseeable future in many of our core Athletic Therapy and Kinesiology courses.

We would like to thank the following individuals for their contributions in the making of the videos:

- **Video editor:** Alison Shaw
- **Athletic therapy student taping models:** Abigail Sagun, Karine Boucher, Harshal Patel, Russell Pulinney, Griffin Chwaliboga, Ryan Kwon, Jadyn Hughes, Matthew Rawluk, and Rameen Baraty.
- **Music:** Produced by Addison Bahniuk.

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I

Introduction to Support Techniques

2 Athletic Therapy Skills: Support Techniques

1.

Support Technique Application Principles: Taping and Wrapping

The use of athletic tape or tensor wraps is common in a sport setting. The basic rationale for its use is to provide protection and support for an injured body part or joint, while permitting functional movement. Taping and wrapping can be beneficial providing that the injury is properly assessed, and an appropriate technique is utilized.

Purpose/Indications for Use

- Help provide external support to an injured structure.
- Help limit harmful and/or excessive movements.
- Allow pain-free functional movement.
- Permit early resumption of activities while protected.

***Benefits*:**

- Help control swelling and/or limit edema.
- Help prevent secondary complications to keep an initial injury from worsening.
- Helps prevent compensatory injury to adjacent body parts.

Contraindications for Use

- Individual has a fracture. Injuries of this nature must be properly

immobilized, splinted, and referred to emergency for follow-up care.

- Individuals have moderate to severe joint instabilities (dislocations or separations) or muscle ruptures. These types of injuries must be properly immobilized or splinted and referred to a hospital for follow-up care.
- Individual has an active infection (signs of SHARP – swelling, heat, altered function, redness, and pain). An infection must be referred for immediate follow-up care.
- Individual has obvious skin irritation (i.e., redness, blisters, cuts, etc.) that precludes taping or wrapping.
    - **NOTE**: Sometimes wounds of this nature can be bandaged and protected prior to applying a support technique.
- Individual has nerve or circulatory impairments. These conditions must be properly referred to a medical professional.
- Individual has an allergy to the available taping materials and/or supplies. Taping or wrapping may proceed if there are hypoallergenic materials available or there are appropriate barriers between the skin and supportive product.

2.

Factors to Consider Prior to Applying Support Techniques

There are several factors you must consider and questions that must be answered when executing specific support techniques. Please note that these are in no particular order.

1. A history and mini-focused assessment must be conducted prior to any tape application in order to make a well-informed decision regarding its appropriateness. The individual and their specific injury must be suitable for taping.
2. What is the injury? Has a specialist (i.e., physician or therapist) been consulted? Any imaging completed?
3. What anatomical structures have been injured (ligaments, tendon or muscle)?
4. What was the mechanism of injury (MOI)?
5. How severe is the injury (first, second, or third degree and/or grade)?
6. When did the injury occur and what healing stage is present (acute, intermediate, chronic)?
7. Is this support technique being utilized preventatively or prophylactically?
8. What is the individual's pain-free active range of motion (AROM)?
9. Does the individual have full strength?
10. Have you ruled out secondary complications or contraindications to taping (i.e., fractures, dislocations, or separations)?
11. Has the individual been taped before (for prior history)?
12. Is the individual allergic to tape products, spray, or lube? This must be

determined prior to application so that appropriate products are chosen. Hypoallergenic tape and products should be utilized by those individuals who have sensitive skin and/or allergies.

13. Given the nature of the injury, do you think that taping or wrapping can help to support (indications)?
14. Can taping or wrapping be safely applied (free of contraindications)?
15. Will the athlete be functional after taping or wrapping? Consider the requirements of the sport and any rules against or restrictions regarding the use of tape or wraps (must be sport- or activity-specific and also position-specific).
16. Does the tape or wrapping job restrict movement effectively? How familiar are you with the taping or wrapping technique you are going to provide?
17. What type of taping material(s) is/are available?

3.

Factors that Impact the Effectiveness of a Support Technique

1. Positioning a joint or body part is critically important when applying support techniques. Proper positioning ensures that the technique supports the joint or limb in functional alignment to optimize stability and thus limit abnormal or excessive motion or movement.
2. Quick dry adherent spray or “skin toughener” should be applied prior to taping. The purpose of this product is to protect the skin and allow for better adherence of the various taping or wrapping materials.
3. Support techniques applied directly to the skin (clean, dry, and well-shaved) provide the best adherence and ultimately contribute to a better fit.
4. Support techniques must not be too loose or too tight. Tape or wrap tension is important to allow for appropriate restriction of painful movements but should not compromise circulation and function.
5. Taping materials should be overlapped at least half the width of the tape or wrap. Additionally, you should avoid continuous taping as it may impair circulation.
6. Support techniques need to start with anchors and finish with locking strips.
7. Application of underwrap or pro-wrap can be utilized to protect the skin.
8. Friction pads and skin lubricant (a.k.a., heel and lace pads) should be utilized in areas on the body where irritation due to friction is likely to occur. This will reduce the formation of tape cuts or blisters.
9. Support techniques must be free of wrinkles or windows or excessively bulky areas. Ensure that you smooth down the tape or wrap as you apply various components. This also helps to mold the tape to the joint

and/or limb. Ultimately the goal is to prevent tape cuts or blisters.

10. When applying support techniques, keep the roll of tape or tensor roll in your hand whenever possible. This contributes to an efficient application and ensures that the individual applies consistent tension. Speed is important, but neatness and functionality is key.
11. Choose taping or wrapping products carefully. The quality of taping products is determined by factors which affect product durability and the product's ability to support different anatomical structures and thus prevent injury/re-injury and facilitate appropriate function and overall performance.

4.

Types and Quality of Taping Material

Selection to taping materials depends on quality, budget, and availability. According to Prentice (2024) and Perrin and McLeod (2019), taping products are generally classified into two categories—elastic and non-elastic.

Elastic (Stretch) Tape

Elastic tapes are commonly known as “stretch tapes” and are typically manufactured from cotton and have an adhesive backing. These tapes come in various widths and lengths. They are utilized when less support is required or there is a need to conform to and around highly contoured areas of the body. Due to their nature, elastic tapes are designed to stretch and move with the body, thus its primary function is to provide support and comfort while in motion.

Non-Elastic (Rigid) Tape

Non-elastic tape is typically manufactured from cotton or polyester and commonly uses a zinc oxide adhesive backing. These tapes come in various widths, lengths, and colours (often white, but a variety of colours can be purchased). Non-elastic tapes are utilized when significant motion restriction or stability are desired. Its primary function is to provide firm support to limit excessive movements.

Key Quality Indicators

Quality and durability are determined by composition of materials used in the

manufacturing process (type of material and adhesive used) and by the tensile strength, breathability, moisture resistance, stretchability, and comfort of the tape.

The material composition or fabric used in taping products determines tape's basic characteristics. Cotton tape allows for comfort and breathability, while synthetic tape is preferred for superior stretchability and durability.

Medical grade adhesives are utilized in high-quality taping products and thus ensure strong adherence in order to prevent slipping, rolling, and bunching, while also minimizing skin irritation and residue upon removal.

Tensile strength refers to the ability of the tape's resistance to tearing under force. Higher tensile strength equates to greater durability and a more robust support for tissued under strain.

Breathability refers to the ability to allow for air circulation and is critical for limiting moisture accumulation and preventing skin irritation.

5.

Tape Grades

According to Prentice (2024) and Perrin and McLeod (2019), athletic tape is graded based on four key characteristics which determine it overall performance and quality.

1. **Fabric Weave Density:** The number of vertical and horizontal threads per square inch. A higher thread count results in stronger, more durable tape and indicates superior quality.
2. **Tensile Strength:** The amount of force tape can withstand before tearing. Tapes with a high tensile strength receive a higher grade.
3. **Adhesive Quality:** This is evaluated by the adhesive's strength, its resistance to movement and moisture accumulation, and its durability over time. High-quality tapes often use medical-grade adhesives to ensure easy removal and minimization of skin irritation.
4. **Material Composition:** Common materials include cotton, synthetic, and rayon. The material dictates the tape's specific properties, such as breathability, moisture resistance and flexibility.

6.

Tape Removal

Inspect the Skin

Prior to and after removing any taping-related product, ensure that you inspect the skin in the area for any signs of skin irritation, tape cuts, and/or blisters. Presence of these may indicate an allergy or poor application. If encountered, provide wound care as needed.

Use of Proper Tools

There are several products available for removing tape products and/or skin adherent. Tape cutters, tape sharks, and bandage scissors are utilized for cutting off taping products. Tape remover comes in either a spray or a liquid form and is used to dissolve residual adhesive on the skin.

Apply Correct Technique

When pulling tape off, ensure that you are removing the tape from the body by following the direction the hair lays and by gently pulling the tape in one direction while the opposite hand presses the skin away from the tape. Do this gently. Do not tear it off quickly. Removing tape gently and appropriately will ensure that you do not cause excessive skin irritation, abrasions, and/or cuts.

Examples of products available for removing tape and/or skin adherent.

Examples of tape cutters, tape sharks, and bandage scissors.

7.

Standard Pre-Taping and Post-Taping Protocol

To ensure safety and efficacy, this standard protocol should be followed for every support technique application.

Pre-Taping Assessment

- **Mechanism of Injury (MOI):** Determines how the injury occurred (i.e., inversion, hyperextension, overuse.
- **Patient History:** Inquire about previous taping experiences and any adverse reactions.
- **Allergy Screening:** Confirm that the individual has no known allergies to adhesive sprays, lubricants, or taping products.
- **Skin Inspection:** Examine the skill for cuts, abrasions, blisters, or rashes. Do not apply tape over compromised skin,
- **Baseline Assessment:** Check and document motor function, sensation, and circulation (MSC) of the distal extremity.

Post-Taping Assessment

- **Circulation Check:** Immediately re-assess motor function, sensation, and circulation (MSC) to ensure the tape is not restricting blood flow or nerve function.
- **Integrity Check:** Manually test the joint to confirm the support technique provides the intended support and restricts painful and excessive movements.
- **Functional Testing:** Have the individual perform sport-specific or

activity specific movements to ensure the tape is comfortable, effective, and does not create new issues. Additionally, ensure that the activities you are testing are specific to the individual's position or the tasks they need to perform.

II

Foot and Ankle Support Techniques

8.

Ankle Taping Support Technique

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=69

Purpose

- Keep the ankle in a stable, “closed-packed” position (90° or neutral position).
- Prevent excessive inversion or eversion movements of the foot at the subtalar joint, thus facilitating function and improve performance.
- Protect against re-injury upon return to play or during activity.

Materials Required

- *Can of quick-drying adherent spray (a.k.a. skin toughener)*
- *2 Heel and lace pads (skin lubricant in between)*
- *One roll of pro-wrap (a.k.a. underwrap or pre-wrap)*
- *One roll of 1.5-inch athletic tape*
- *Can or bottle of tape remover*
- *Tape cutter or shark*

Pre-Tape Testing

- Determine MOI (inversion versus eversion).
- Ask if they have been taped before and it there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** In a seated position with their foot off the end of the treatment table, ankle held in a 90° dorsiflexion. Maintain this position throughout.
- **Preparation:** Apply a light mist of skin toughener or quick-drying adherent. Apply heel and lace pads over the distal Achilles tendon and in front of the ankle joint. Apply pro-wrap to the distal aspect of lower leg, ankle, and foot. Ensure it does not extend beyond the base of the fifth metatarsal and is at least 3 to 4 inches (7.5 to 10 cm) below the base of the calf muscles.
- **Anchors:** Apply 2-3 anchor strips around the leg, just below the calf muscle belly. Apply 1-2 anchors around the midfoot. Ensure that you splay their toes to prevent circulatory restriction. Do not extend further than the lower aspect of the fifth metatarsal.
- **Stirrups:** Apply three stirrups to prevent inversion/eversion of the ankle (depending on the direction the stirrups are applied).
    - ***Inversion ankle sprain****: Stirrup starts at the proximal (upper) leg anchors medially, goes over the medial malleolus, under the heel and is then pulled up the lateral side of the ankle to the proximal anchor on the outside of the leg.* **This pulls the ankle into an everted position.**

    - ***Eversion ankle sprain****: Measure out a stirrup so that it will be the correct length from one proximal leg anchor to the other proximal leg anchor. Place the stirrup on the heel and then pull up with equal force, to place the stirrups on either side of the leg anchors.* **This keeps the ankle in a neutral position.**

- **Calcaneal Strips (aka C-Strips):** Apply five to seven calcaneal stirrups. Start from either the medial or lateral distal foot anchor on one side, go behind the heel to the other distal foot anchor. Overlap by half the width of the tape, moving upwards. These strips help to prevent anterior shearing of the talus by squeezing the tibia and fibula together on the talar dome thereby maintaining a stable "closed packed" position.
- **Figure-8:** Apply two figure eights. Start on the leg or top of the foot. If you start on the leg, loop around the distal leg, cross over the front of the ankle and loop around the foot. This forms an "8". If you start on the foot, loop around the foot, cross over the front of the ankle and finish by looping around the distal leg, just above the ankle joint. These help to control forefoot movement and keep the ankle in a "closed packed" position.
- **Heel Locks:** Apply two heel locks. Start on the leg or the foot. If you start on the medial leg, you will apply the tape just above the front of the ankle, cross over the medial malleoli, go behind the heel, angle the tape downward and cover the side of the heel, go under the heel, and go back to the front of the ankle. Repeat on the lateral leg. These locks control rearfoot movement and keeps the ankle in a stable "closed packed" position.
- **Closing Strips:** Finish and close the tape job by applying "anchor-type strips" from the foot up the leg to cover any remaining windows and secure all tape ends. These strips help to ensure a smooth, winkle-free finish.

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after application**.**
- Manually assess the ankle to test the integrity of the support technique. In other words, has the support technique limited the movement(s) that are painful?
- Functionally assess the ankle to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

9.

Turf Toe Support Technique (Hyperextension)

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=71

Purpose

- Limit and prevent excessive movement of the first metatarsophalangeal (MTP) joint (big toe).
- To protect the joint during push-off movements.
- Protect against re-injury upon return to play or activity.

Materials Required

- *Can of quick-drying adherent spray (a.k.a. skin toughener)*
- *One roll of pro-wrap (a.k.a. underwrap or pre-wrap)*
- *One roll of 1.5-inch athletic tape*
- *Alternative method: strip of moleskin that is approximately 6 inches (15 cm) long (length depends on size of the foot). These turf toe straps can also be purchased commercially.*
- *Tape remover*
- *Pair of scissors*

Pre-Tape Testing

- Determine MOI (hyperextension versus hyperflexion).
- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Seated or supine position with foot off the end of the treatment table. Their foot should be in a relaxed neutral position or slightly plantarflexed.
- **Preparation:** Spray the foot and big toe with a light mist of skin toughener or quick-drying adherent. *NOTE: You **do not** have to apply pro-wrap prior to taping. This support technique should be taped directly onto the skin.*
- **Anchors:** Apply one distal anchor around the proximal phalanx of the big/great toe, utilizing a 0.5-inch (1.25 cm) strip of athletic tape. Apply a proximal anchor around the mid-foot, utilizing 1.5-inch athletic tape. Ensure to splay their foot/toes during application to avoid compromising circulation.
    - *NOTE: 2-inch or 3-inch elastic tape (i.e., Lightplast Pro) anchors can also be utilized instead of athletic tape. Utilizing elastic tape allows for a more comfortable fit and reduces the likelihood that circulation becomes compromised.*
- **Support Strips:** Apply four to six (or more) strips, depending on the size of the toe and foot. These 0.5-inch athletic tape strips extend between the proximal (mid-foot) and distal (big toe) anchors. Start at the big/great toe on the plantar aspect of the foot and extend towards the anchor on the mid-foot. Overlap by half the width of the tape and

apply the strips until they reach from the side and dorsal aspect of the big toe. Ensure to apply one at a time and create an “X”. These strips help to prevent big toe hyperextension.

- **Closing Strips:** Apply a distal anchor around the proximal phalanx of big/great toe and a proximal anchor around the midfoot.

Turf Toe Variation (Moleskin)

- Follow the first three steps outlined above.
- Cut a 6 to 7 inch (15 to 18 cm) strip of moleskin. At one end cut a “T” shape, where the top of the “T” is wide enough to cup the bottom of the big toe.
    - *NOTE: “T” straps can be purchased commercially.*
- Apply the “T” shaped end of the moleskin on the plantar aspect of the big toe and pull the long part of the strap firmly towards the heel. Smooth the moleskin down firmly to ensure good adhesion.
- Apply a distal closing strip around the big toe and a proximal closing strip around the midfoot. Ensure that their toes are splayed during application to prevent circulation compromise.

An interactive H5P element has been excluded from this version of the text. You can view it online here:
https://pressbooks.openedmb.ca/athletictherapy/?p=71#h5p-1

Moleskin strips cut into T-shapes.

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after application**.**
- Manually assess the big toe to test the integrity of the support technique. In other words, has the support technique limited the

movement(s) that are painful?

- Functionally assess the big toe to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

10.

Arch Support Technique

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=73

Purpose

- Provide support to lift and stabilize the arches of the foot, particularly the medial longitudinal arch.
- Maintain alignment and reduce arch pain and overall strain of the plantar fascia, intrinsic foot muscles and tendons, and/or ligaments of the foot.

Materials Required

- *Can of quick-drying adherent spray (a.k.a. skin toughener)*
- *One roll of 1.5-inch athletic tape (split in half)*
- *One small strip of moleskin for posterior heel*
- *One small strip of 2-inch Hypafix (a.k.a. coverall) tape for dorsum of foot*
- *One roll of 2-inch Lightplast Pro elastic tape*
- *Tape remover*
- *Pair of scissors*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain versus pathological biomechanics/malalignments versus muscular imbalances versus poor footwear).
- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Seated position with their foot off the end of the treatment table, in a relaxed, slightly plantarflexed position.
- **Preparation:** Apply a light misting of skin toughener or quick-drying adherent over the dorsal and plantar aspect of the foot. This support technique is applied directly on the skin so there is ***no need*** to apply pro-wrap prior to taping.
- **Anchors:** Apply a small strip of 2-inch moleskin (approx. 3 to 4 inches; 7.5 to 10 cm) behind the heel. Ensure that the individual has their ankle at 90° so that the skin at the posterior heel (calcaneus) is taut. This strip will help to reduce excessive friction when subsequent tape strips cross in this location.
- Apply a strip of 2-inch Hypafix (a.k.a. coverall) tape on the dorsum (top) of the foot, extending from the medial aspect of the head of the first metatarsal to the lateral aspect of the head of the fifth metatarsal.
- **Support Strips:** Using a split roll (0.5 to 0.75 inches, depending on the size of the foot), start on the medial aspect of the distal anchor, progressing around the calcaneus and finish on the plantar aspect of the foot underneath the metatarsal heads.
- Repeat on the lateral aspect by starting on the lateral aspect of the foot

at the distal anchor, progressing around the calcaneus and finish on the plantar aspect of the foot underneath the metatarsal heads.

- Repeat two more times on each side, while finishing each strip in a different location along the metatarsal heads. The ends of these trips should be found along the plantar aspect of the metatarsal heads.
- **Closing Strips:** Using a full roll, start on the lateral aspect of the heel, then pull the tape under the arch to anchor on the dorsum of the foot. Repeat this strip but overlap and move towards the metatarsal heads. This is a basic "low-dye" technique.
- **Elastic Wrap "Sock":** Finally, using 2-inch elastic tape, start on the lateral aspect of the foot, progressing towards and around the calcaneus, go under the foot and back to the start position. Continue from here, to the top of the foot, then around the dorsum of the foot to the first MTP joint, progressing under the metatarsal heads, and finish up by contouring and "bending" the tape until you get to the fifth MTP joint. From this point, progress along the dorsum of the foot, towards the medial aspect of the calcaneus, around the posterior calcaneus, along the plantar aspect of the foot towards the first MTP. Continue to the dorsum of the foot with minimal tension on the tape and wrap the foot to cover any windows that would be present on the plantar aspect.

Post-Tape Testing

- Check motor control, sensation and circulation (MSC) after application**.**
- Manually assess the foot to test the integrity of the support technique. In other words, has the support technique limited the movement(s) that are painful?
- Functionally assess the foot to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

11.

Heel Cup Support Technique

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=154

Purpose

- To provide support and compression of the calcaneal fat-pad.
- To alleviate pain associated with condition like plantar fasciitis or heel spurs.

Materials Required

- *Can of quick-drying adherent spray (a.k.a. skin toughener)*
- *One roll of 1.5-inch athletic tape (split in half)*
- *One roll of 2-inch Lightplast Pro elastic tape*
- *Tape remover*
- *Pair of scissors*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain versus pathological biomechanics/malalignments versus muscular

imbalances versus poor footwear).

- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Seated position with their foot off the end of the treatment table, and their foot in a relaxed, dorsiflexed position.
- **Preparation:** Apply a light misting of skin toughener or quick-drying adherent to the heel. This support technique should be taped directly on the skin. You ***do not*** have to apply pro-wrap prior to taping.
- **Anchors:** Apply one full strip of tape from the lateral aspect of the heel, behind the heel, to the medial aspect of the heel (just under the malleoli). Next, apply one strip of tape from the lateral heel, under the heel, to the medial heel.
    - Repeat these two strips, overlapping the tape by half in a basketweave manner, to cover all the skin exposed within the initial two anchors.
- **Closing Strips:** Using 2-inch elastic tape, apply a figure eight to cover the anchors in order to secure the tape ends.

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after application**.**
- Manually assess the ankle and to test the integrity of the support technique. In other words, has the support technique limited the movement(s) that are painful?

- Functionally assess the ankle and heel to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

III

Lower Leg Support Techniques

12.

Achilles Tendon Support Technique

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=75

Purpose

- To limit excessive dorsiflexion, thereby reducing strain on the Achilles tendon (limit tendon movement, offload pressure, and reduce pain).
- To provide support following a calf muscle injury (strain) or Achilles tendinopathy.

Materials Required

- *Can of quick-drying adherent spray (a.k.a. skin toughener)*
- *Two heel and lace pads (lubricant in between)*
- *One roll of pro-wrap (a.k.a. underwrap or pre-wrap)*
- *One roll of 1.5-inch athletic tape*
- *One roll of 3-inch Lightplast Pro elastic tape*
- *One roll of 2-inch elasticon (can also utilize Lightplast Pro elastic tape but elasticon is stronger and will not tear)*
- *Tape remover*
- *Pair of scissors*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain versus pathological biomechanics/malalignments versus muscular imbalances versus poor footwear).
- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Lying prone position on the treatment table with their lower leg off the end of the table. Provide support with a towel under their knee and thigh to reduce discomfort. Their foot should be in a relaxed, slightly plantarflexed position.
- **Preparation:** Apply a light misting of skin toughener or quick-drying adherent to the lower leg and foot. Place heel and lace pads over the distal Achilles tendon and over the anterior ankle tendons. Apply pro-wrap from the top of the calf muscle to the mid-foot.
- **Anchors:** Using 3-inch elastic tape, apply two anchors around the mid-foot, followed by three anchors on the upper calf.
- **Support Strips:** Apply elastic tape from the top of the foot anchors, around lateral aspect of the foot, over the heel and back up to the top of the calf anchors. Repeat again, starting from the medial aspect of the top of the foot, under the heel and back up to the top of the calf anchor. Lastly, apply another strip from the bottom of the foot, over the heel to the top of the calf anchors. Ensure to smooth down the elastic tape as you go and crimp the edges to adhere the layers together.
- **Closing Strips:** To finish, re-apply closing strips to the foot and calf using the elastic tape.

NOTE: *This technique places the ankle in a plantarflexed, unstable position. To ensure comprehensive joint stability and prevent a subsequent ankle sprain, a standard* ***Ankle Support Technique (Inversion)*** *should be applied over this base layer before the individual return to sport and/or activity.*

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after application**.**
- Manually assess the ankle to test the integrity of the support technique. In other words, has the support technique limited the movement(s) that are painful?
- Functionally assess the ankle to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

IV

Knee Support Techniques

13.

Patellar Tendon Support Technique (Cho-Pat)

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=77

Purpose

- Relieve pain associated with patellar tendinopathy (a.k.a. jumper's knee) or Osgood-Schlatter's disease.
- Offset the load on the distal pole of the patella or tibial tuberosity by reducing the strain on the patellar tendon during physical activity.

Materials Required

- *Can of quick-drying adherent spray (a.k.a. skin toughener)*
- *One roll of pro-wrap (a.k.a. underwrap or pre-wrap)*
- *One roll of 1.5-inch athletic tape*
- *One roll of 2-inch or 3-inch Lightplast Pro elastic tape*
- *Optional: Small piece of PPT blue foam*
- *Tape remover*
- *Pair of scissors*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain

versus pathological biomechanics/malalignments versus muscular imbalances versus poor footwear).

- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e. cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

Option #1: Roll Up Technique

- **Individual Positioning:** **S**eated position on the edge of their chair, with their knee slightly flexed (approx. 60 to 70°).
- **Preparation:** Apply a light misting of quick dry adherent or skin toughener. Wrap pro-wrap from just above the patella to below the tibial tuberosity. This will help to prevent pinching at hamstring tendons in the popliteal fossa area and to cover the proximal aspect of the lower leg.
- **Support Strips:** Starting at the anterolateral aspect of the knee, between the line of the inferior pole of the patella and the tibial tuberosity, wrap 2-inch or 3-inch elastic tape around the lower leg. Repeat this step three times. When completed, tightly roll up the pro-wrap and elastic tape from the bottom and top. This will create a band positioned midway between tibial tuberosity and the distal pole of patella.

Option #2: Twist Technique

- **Individual Positioning:** Same as described above.
- **Preparation:** Same as described above.
- **Support Strips:** Starting at the anterolateral aspect of the knee,

between the inferior pole of the patella and the tibial tuberosity, wrap 2-inch or 3-inch elastic tape around the knee. After completing a revolution, pinch or fold the elastic tape and start twisting the tape repeatedly to create a band. Lay this band flat over the patellar tendon. Flatten the elastic tape again and continue to wrap around the knee (take care not to pull too much as this could potentially impair circulation or cause pinching). Once the tape is passed around the knee, you can twist it a second time to make a second band. Complete the support technique by flattening the tape again and wrap it around the knee. Roll up excess or tear off any excess pro-wrap.

Option #3: Pad Technique

- **Individual Positioning:** Same as described above.
- **Preparation:** Apply a light misting of quick dry adherent or skin toughner. Cut a small piece of dense foam padding (PPT blue or camping beige foam) and place it between the inferior pole of the patella and the tibial tuberosity, directly over the patellar tendon. Apply pro-wrap from mid-patella to below the tibial tuberosity.
- **Support Strips:** Apply three strips of 3-inch elastic tape around the knee to secure the piece of foam between the distal pole of the patella and the tibial tuberosity. Finish by applying three strips of athletic tape directly over the piece of foam for added tension and security.

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after application**.**
- Manually assess the knee to test the integrity of the support technique. In other words, has the support technique limited the movement(s) that are painful?
- Functionally assess the knee to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

14.

MCL/LCL Sprain Support Technique (Excessive Valgus or Varus Fan)

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=79

Purpose

- Provide stability for the knee joint following medial and/or lateral collateral (MCL and LCL) ligament sprains by limiting excessive valgus and/or varus movements.
- Provide support and improve stability during recovery and return to play.

Materials Required

- *Can of quick-drying adherent spray (a.k.a. skin toughener)*
- *One roll of pro-wrap (a.k.a. underwrap or pre-wrap)*
- *One roll of 1.5-inch athletic tape (split in half)*
- *One roll of 3-inch Lightplast Pro elastic tape*
- *Two Heel and lace pads (lubricant in between)*
- *Tape remover*
- *Pair of scissors*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain versus pathological biomechanics/malalignments versus muscular imbalances versus poor footwear).
- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Standing position with their knee slightly bent (knee over toes or approximately 30°), with their heel raised on a roll of athletic tape.
- **Preparation:** Apply lubricated heel and lace pads in the popliteal space (behind the knee) over the hamstring tendons as this will reduce friction and prevent tape cuts or blisters. Apply a light misting of quick-dry adherent and follow with the application of pro-wrap, from mid-calf to mid-thigh.
- **Anchors:** Apply two anchors to the calf and two or three anchors to the thigh using 3-inch elastic tape. Ensure to overlap each strip of tape and anchor at least one full strip onto the individual's skin for better adhesion.
- **Support Strips:** Using a roll of athletic tape, apply a strip of tape from the anterior aspect of the lower calf anchor up towards the medial aspect of the thigh anchor. Apply another strip from the posterior-medial aspect of the calf up towards the anterior aspect of the thigh anchor. This will create an "X". Remember to crimp or fold the tape as it passes joint lines as this will reduce chances of the tape ripping during movement. Repeat the above two steps and finish with a total of three X's (hence the term "fan" technique). Ensure that these strips

cross at the joint line and overlap slightly. ***NOTE: Do not restrict the movement of the patella (kneecap).*** Repeat the entire process on the other side of the knee.

    - ***NOTE:*** *If this is done correctly, there is a diamond-shaped area, without any tape around the patella.*

- **Closing Strips:** Finish the technique by re-applying calf and thigh anchors utilizing 3-inch elastic tape.

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after application**.**
- Manually assess the knee to test the integrity of the support technique. In other words, has the support technique limited the movement(s) that are painful?
- Functionally assess the knee to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

V

Hip and Thigh Support Techniques

15.

Hip Joint/Hip Flexor Support Technique (Spica Wrap)

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=81

Purpose

- Provide support to reduce stress on muscular structures (*hip flexors – iliopsoas and rectus femoris*) and limit excessive extension, in order to reduce pain and promote healing during recovery and/or upon return to play.
- Provide compression to limit pain and inflammation.

Materials Required

- *One 4-inch or 6-inch tensor bandage/tensor (Double length roll recommended but depends on size of the individual)*
- *One roll of 1.5-inch athletic tape*
- *One roll of 3-inch Lightplast Pro elastic tape*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain versus pathological biomechanics/malalignments versus muscular imbalances versus poor footwear).

- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Standing position with their knee slightly flexed (knee over toes; approximately 30°), trunk leaning forward and their weight supported on the leg being wrapped. Place a roll of athletic tape under their heel.
    - ***NOTE:*** *Wrap should be applied directly onto skin but can be applied over compression shorts.*
- **Application:** Apply the tensor bandage starting at the medial aspect of the thigh and wrap it posteriorly around the thigh for two revolutions and then pull it up over the hip joint, over the buttocks, to the other side of the pelvis. Ensure to "hook" it over the iliac crest. From the iliac crest, continue wrapping the tensor across the abdomen, towards and around the thigh again. The wrapping should produce an "X" over the antero-lateral aspect of the hip. Repeat this pattern until the tensor is used up. Maintain appropriate tension throughout the wrapping process. The direction of pull should gently encourage hip flexion.
- **Closing Strips:** Using 3-inch elastic tape, re-trace the entire spica pattern and secure the elastic tape ends with strips of 1.5-inch athletic tape.

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after application**.**
- Manually assess the hip joint to test the integrity of the support

technique. In other words, has the support technique limited the movement(s) that are painful?

- Functionally assess the hip joint to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

16.

Groin Support Technique (Groin/ Adductor Wrap)

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=83

Purpose

- Provide support to reduce stress on muscular structures (*groin muscles – adductor brevis, longus. magnus & gracilis*) and limit excessive abduction and external rotation movements, in order to reduce pain and promote healing during recovery and/or upon return to play.
- Provide compression to limit pain and inflammation.

Materials Required

- *One 4-inch or 6-inch tensor bandage/tensor (Double length roll recommended but depends on size of the individual)*
- *One roll of 1.5-inch athletic tape*
- *One roll of 3-inch Lightplast Pro elastic tape*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain versus pathological biomechanics/malalignments versus muscular

imbalances versus poor footwear).

- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Standing with their weight placed on the injured leg and their knee slightly flexed (knee over toes; approximately 30°). The affected limb is relaxed, their hip is adducted and their foot is slightly internally rotated. Place a roll of athletic tape under their heel.
    - ***NOTE:*** *Wrap should be applied directly onto skin but can be applied over compression shorts.*
- **Application:** Apply the tensor bandage starting at the lateral aspect of the thigh and wrap it posteriorly around the thigh for two revolutions and then pull it up across the abdomen and pelvis to the other side of the hip. Ensure to "hook" it over the iliac crest on this side. From the iliac crest, continue to wrap the tensor across the lower back and pelvis, towards and around the thigh again. The wrapping should produce an "X" over the antero-medial aspect of the hip. Repeat this pattern until the tensor is used up. Maintain appropriate tension throughout the wrapping process. This spica pattern should gently pull the thigh in abduction.
- **Closing Strips:** Using 3-inch elastic tape, re-trace the spica pattern and secure the elastic tape ends with strips of 1.5-inch athletic tape.

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after

application**.**

- Manually assess the hip to test the integrity of the support technique. In other words, has the support technique limited the movement (s) that are painful?
- Functionally assess the hip to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

17.

Herringbone Support Technique (Quadriceps)

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=85

Purpose

- Help to alleviate pain associated with muscular strains, particularly of the quadriceps.
    - *NOTE: This techniques can also be utilized following strains of the hamstrings, adductors, and/or abdominal muscles.*
- Provide support and compression to injured muscles and thus facilitate recovery or facilitate function upon return to play.

Materials Required

- *Can of quick-drying adherent spray (a.k.a. skin toughener)*
- *One roll of 1.5-inch athletic tape*
- *One roll of 3-inch Lightplast Pro elastic tape*
- *Tape remover*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain versus pathological biomechanics/malalignments versus muscular

imbalances versus poor footwear).

- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Seated on the treatment table with their leg extended and a bolster or rolled towel under their knee.
- **Preparation:** Apply a light misting of quick dry adherent or skin toughner.
- **Anchors:** Using 1.5-inch athletic tape, apply two vertical anchors. One on the lateral aspect of the thigh above the knee joint to just below the greater trochanter of the femur. The other on the medial aspect of the thigh above the knee joint to the groin area.
- **Herringbone Strips:** Starting distally, apply a strip from the medial anchor, across the thigh, at an oblique angle, to the lateral anchor. Apply another strip, starting from the lateral anchor, across the thigh to the medial anchor. This creates an “X”. Repeat these steps and move proximally up the thigh. Ensure to overlap these strips by half the width of the athletic tape. You should not leave any gaps or openings.
- **Closing Strips:** Finish by re-applying the vertical anchor strips on the lateral and medial aspect of the thigh to secure the end of the herring bone or “X” strips. For added compression and durability during activity, apply 3-inch elastic tape over the entire tape technique. Ensure to start distally and move proximally.

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after

application**.**

- Manually assess the leg to test the integrity of the support technique. In other words, has the support technique limited the movement (s) that are painful?
- Functionally assess the leg to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

VI

Shoulder Support Techniques

18.

Shoulder Support Technique (Spica Wrap)

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=89

Purpose

- Provide support to stabilize the shoulder/glenohumeral (GH) joint following an injury or to secure a protective pad or ice pack in place.
- Provide support to reduce stress on muscular structures and limit excessive abduction and external rotation movements, in order to reduce pain and promote healing during recovery and/or upon return to play.

Materials Required:

- *One 4-inch or 6-inch tensor bandage/tensor (Double length roll recommended but depends on size of the individual)*
- *One roll of 1.5-inch athletic tape*
- *One roll of 3-inch Lightplast Pro elastic tape*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain versus pathological biomechanics/malalignments versus muscular imbalances versus poor footwear).

- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Standing with their arm in internal rotation, and their hand resting on their hip or lower back.
- **Application:** Secure the wrap around the bicep, beginning on the outside of the arm, and wrapping around the arm for one full rotation. Continue diagonally across the chest, under their opposite arm, across their back, and over the AC and shoulder joint, and finish around the arm again. This creates a figure-8 or spica pattern. Repeat until tensor is completely used. Maintain consistent and moderate tension (25% to 50%) to avoid compromising circulation.
- **Closing Strips:** Secure the tensor wrap by re-tracing the spica pattern using with 2-inch or 3-inch elastic tape. Secure the elastic tape ends using three or four strips of 1.5-inch athletic tape.

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after application**.**
- Manually assess the shoulder to test the integrity of the support technique. In other words, has the support technique limited the movement(s) that are painful?
- Functionally assess the shoulder to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

19.

Acromioclavicular (AC) Joint Separation Support Technique

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=87

Purpose

- Provide support for a sprained AC joint by helping to approximate the clavicle and acromion thereby reducing pain and stress on the ligaments and promoting recovery.
- Provide support and improve stability during return to play.

Materials Required

- *Can of quick-drying adherent spray (a.k.a. skin toughener)*
- *One roll of 2-inch cover roll or Hypafix*
- *One roll of 1.5-inch Leukotape*
- *Tape remover*
- *Pair of scissors*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain versus pathological biomechanics/malalignments versus muscular

imbalances versus poor footwear).

- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Seated position by a treatment table, with their elbow supported on the table. Ensure that the shoulder area is passively elevated.
- **Preparation:** Apply a light misting of quick-drying adherent or skin toughener to their shoulder, upper chest, and upper back.
- **Anchors:** Cut four strips of Hypafix tape to be used as anchors. Two will be placed over the lateral aspect of the clavicle, from anterior chest (below clavicle) to just below the scapular spine. The remaining two Hypafix anchors will be placed starting from the vertical clavicular anchors to the deltoid tubercle. Overlap each strip by half the width of the Hypafix.
- **Support Strips:** Apply two strips of Leukotape from the chest to the scapular anchors. These strips function to hold down the lateral end of the clavicle. Next, apply three longer strips of Leukotape from the deltoid tubercle anchor to the clavicular strips of Leukotape, crossing over the acromioclavicular (AC) joint. One starts from the central aspect of the upper arm, over AC joint to the vertical clavicular strips. From the same starting pointing on the upper arm, the second extends up, over the AC, and finishes slightly anterior on the vertical clavicular strips. The third extends up, over the AC, and finishes slightly posterior on the clavicular strips. Finish this by applying two additional strips of Leukotape vertically from chest to upper back, covering the vertical tape ends.
- **Closing Strips:** Cover all of the ends of the Leukotape with small

pieces of Hypafix tape.

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after application**.**
- Manually assess the shoulder to test the integrity of the support technique. In other words, has the support technique limited the movement (s) that are painful?
- Functionally assess the shoulder to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

VII

Elbow Support Techniques

20.

Elbow Joint Support Technique (Hyperextension "Fan")

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=91

Purpose

- Provide support for the elbow and limit excessive and/or painful elbow hyperextension following ligamentous sprains and muscular or joint capsule strains.
- Reduce pain and stress on musculoskeletal structures to promote recovery and improve stability and function upon return to play.

Materials Required

- *Can of quick-drying adherent spray (a.k.a. skin toughener)*
- *One roll of 1.5-inch athletic tape*
- *One roll of pro-wrap (a.k.a. underwrap or pre-wrap)*
- *One roll of 2-inch or 3-inch Lightplast Pro elastic tape*
- *Tape remover*
- *Pair of scissors*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain

versus pathological biomechanics/malalignments versus muscular imbalances versus poor footwear).

- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Seated position with their elbow slightly flexed and the fist of their opposite limb supporting under their elbow.
    - *NOTE: Position the individual's elbow within their pain-free ROM (not in full hyperextension).*
- **Preparation:** Apply a light misting of quick-drying adherent or skin toughner over the upper arm, elbow, and forearm. Apply pro-wrap from mid-forearm to mid-upper arm.
- **Anchors:** Using 2-inch or 3-inch elastic tape, apply two to three anchor strips around the upper arm, above belly of biceps brachii. While applying these anchors, have the individual flex or lightly tense their bicep muscle. Next, apply two to three anchors around the forearm, below forearm flexor belly muscles. Again, have the individual flex or tense their forearm muscles during application.
- **Support Strips:** Starting from the medial aspect of the forearm anchor, apply a strip of 1.5-inch athletic tape to the anchor on the lateral aspect of the upper arm, crossing over the cubital fossa of the elbow anteriorly. Next, apply a strip of tape from the lateral aspect of the forearm anchor, across the elbow to the medial aspect of the upper arm anchor. Repeat these steps three times. This will create an "X" over the cubital fossa. Ensure to smooth down the strips of tape to secure appropriately.
    - ***TIP:** The fan or "X" can be assembled on the table first*

using 1.5-inch athletic tape. Ensure that you measure out the appropriate length from forearm anchor to arm anchor (plus extending 1 to 2 inches, 2.5 to 5 cm, longer). Once assembled, apply to the individual's arm.

- **Closing Strips:** Re-apply the elastic tape anchors around the forearm and arm to secure the end of the support "fan". Apply a couple of strips of 1.5-inch athletic tape over the ends of the elastic tape strips to secure them in place.

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after application**.**
- Manually assess the elbow to test the integrity of the support technique. In other words, has the support technique limited the movement (s) that are painful?
- Functionally assess the elbow to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

VIII

Wrist Support Techniques

21.

Wrist Sprain Support Technique (Hyperextension or Hyperflexion Bar Block)

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=170

Purpose

- Provide support for the wrist and prevent excessive and/or painful hyperextension/hyperflexion movements following ligamentous sprains or muscular strains.
- Reduce pain and stress on musculoskeletal structures to promote recovery and improve stability and function upon return to play.

Materials Required

- *Can of quick-drying adherent spray (a.k.a. skin toughener)*
- *One roll of pro-wrap (a.k.a. underwrap or pre-wrap)*
- *One roll of 1.5-inch athletic tape*
- *Optional: Small piece of dense foam, approximately 3 by 2 inches (PPT blue foam)*
- *Tape remover*
- *Pair of scissors*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain versus pathological biomechanics/malalignments versus muscular imbalances versus poor footwear).
- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Seated position with the closed fist, of their opposite limb, under their elbow. Position their wrist in either a neutral or slightly extended or flexed position (just shy of the painful range of motion). Ensure that their splay their fingers during application to prevent to circulatory constriction.
- **Preparation:** Apply a light misting quick-drying adherent or skin toughener to the wrist region.
- **Bar Block Application:** To prevent ***hyperextension*** place a small piece of PPT blue foam on the dorsal aspect of the wrist joint, between distal ulna and distal radius (horizontally). Apply pro-wrap over the piece of foam to ensure it is held firmly in place. To prevent ***hyperflexion***, place the piece of PPT blue foam on the palmar aspect of the wrist, at the distal wrist crease (horizontally). Apply pro-wrap over the piece of foam to ensure it is held firmly in place. Next, apply three to five strips of 1.5-inch athletic tape around the distal aspect of the wrist to secure the small piece of foam.

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after application**.**
- Manually assess the wrist to test the integrity of the support technique. In other words, has the support technique limited the movement(s) that are painful?
- Functionally assess the wrist to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

22.

Wrist Sprain Support Technique (Hyperextension or Hyperflexion "Fan")

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=93

Purpose

- Provide support for the wrist and prevent excessive and/or painful hyperextension/hyperflexion movements following ligamentous sprains or muscular strains.
- Reduce pain and stress on musculoskeletal structures to promote recovery and improve stability and function upon return to play.

Materials Required

- *Can of quick-drying adherent spray (a.k.a. skin toughener)*
- *One roll of pro-wrap (a.k.a. underwrap or pre-wrap)*
- *One roll of 1.5-inch athletic tape*
- *Tape remover*
- *Pair of scissors*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain

versus pathological biomechanics/malalignments versus muscular imbalances versus poor footwear).

- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Seated position with the closed fist, of their opposite limb, under their elbow. Position their wrist in either a neutral or slightly extended or flexed position (just shy of the painful range of motion).
- **Preparation:** Apply a light misting quick-drying adherent or skin toughener to the wrist and hand. Apply pro-wrap from the distal aspect of the forearm, over the wrist and into the palm. Before passing into the palm, put the pro-wrap on stretch to make it taut and pierce over the individual's thumb (creating a hole for the thumb to pass through).
- **Anchors:** Using 1.5-inch athletic tape, apply two to three anchors around the distal aspect of the wrist joint. Apply another anchor from the distal wrist, across the back of the palm (below the knuckles) and into and around the palm. Finish back on the wrist anchors. This creates a figure-8 pattern.
    - *NOTE: Make sure to fold or tweak the tape as it passes the web of the thumb. As you apply these anchors, ensure that the individual splays their fingers to eliminate issues regarding circulatory constriction.*
- **Support Strips (Fan):** To prevent ***hyperextension***, apply a strip of tape from the palm anchor medially, to the wrist anchor laterally. Apply another strip from the lateral aspect of the palm anchor to the medial aspect of the wrist anchor. This will create an "X" or fan over the wrist joint. Repeat this process two or three times. To prevent ***hyperflexion***,

apply a strip of tape from the back of the hand anchor medially, to the wrist anchor laterally. Apply another strip from the lateral aspect of the back of the hand anchor to the medial aspect of the wrist anchor. This will create an "X" over the wrist joint. Repeat this process three times.

- **Closing Strips:** Finish either of these support techniques by re-applying hand and wrist anchors. Remove or trim any excess pro-wrap around their knuckles and thumb.

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after application**.**
- Manually assess the wrist to test the integrity of the support technique. In other words, has the support technique limited the movement (s) that are painful?
- Functionally assess the wrist to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

IX

Thumb and Finger Support Techniques

23.

Thumb Sprain Support Technique (Hyperextension and Abduction)

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=95

Purpose

- Provide support for the thumb to prevent excessive and/or painful hyperextension or abduction movements following a ligamentous sprain (MCL or medial/ulnar collateral; LCL or lateral/radial collateral).
- Reduce pain and stress on musculoskeletal structures during recovery and improve stability and function upon return to play.

Materials Required

- *Can of quick-drying adherent spray (a.k.a. skin toughener)*
- *Two rolls of 1.5-inch athletic tape (one full and one split roll)*
- *Tape remover*
- *Pair of scissors*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain

versus pathological biomechanics/malalignments versus muscular imbalances versus poor footwear).

- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Seated with their elbow on a bolster and their forearm outstretched. Their hand should be in a “Hold a Cup” or “C” position (thumb is slightly extended and abducted). This positions the thumb in slight opposition and protects the ulnar collateral ligament.
- **Preparation:** Apply a light misting of quick-drying adherent or skin toughner to the thumb, palm and wrist. No pro-wrap is needed for this support technique, as it is more effective to be taped directly onto the skin.
    - *NOTE: Some individuals like pro-wrap, so if you are applying it, ensure you wrap it from the distal forearm, around the wrist and into the hand. While applying make sure that their thumb is pushed through the pro-wrap.*
- **Anchors:** Apply one anchor around the proximal phalanx of the thumb using a 0.5-inch (1.25 cm) strip of athletic tape. Next, apply one anchor around the wrist using a full strip of athletic tape. Follow this anchor by applying a 0.5-inch (1.25 cm) strip of athletic tape from the back of the wrist anchor, through the thumb webspace (fold or crimp the tape as you pass this area to reduce the chances of impairing circulation), across the palm, around the wrist and ending on the wrist anchor. Ensure that the individual maintains the “C” position of the hand while applying these anchors to ensure that circulation does not become compromised.
- **Support Strips (Spica or Pigtail):** Using a split roll of athletic tape,

apply a strip from the medial aspect of the thumb anchor to the wrist anchor. Repeat another anchor from the lateral aspect of the thumb anchor to wrist anchor. This creates an "X" over the metacarpal-phalangeal (MCP) joint. Repeat the "X" strips three times, overlapping slightly each time.

    - *NOTE: Ensure that you do not pull the thumb into excessive extension or abduction while applying these "X" strips.*

- **Support Strips (Hoods):** Next, apply three or four "hoods" from the posterior aspect of the wrist anchor to the palm, using full strips of the athletic tape. Start proximally and move distally towards the thumb, overlapping the strips slightly.
- **Closing Strips:** Finish the support technique by re-applying the thumb and final spica loop anchors. This will secure all tape ends.+

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after application**.**
- Manually assess the thumb to test the integrity of the support technique. In other words, has the support technique limited the movement(s) that are painful?
- Functionally assess the thumb to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

24.

Thumb Sprain Support Technique (Thumb Checkrein and Buddy Finger)

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://pressbooks.openedmb.ca/athletictherapy/?p=97

Purpose

- Provide support for the thumb to prevent excessive and/or painful hyperextension or abduction movements following a ligamentous sprain (MCL or medial/ulnar collateral; LCL or lateral/radial collateral).
- Reduce pain and stress on musculoskeletal structures during recovery and improve stability and function upon return to play.

Materials Required

- *Can of quick-drying adherent spray (a.k.a. skin toughener)*
- *One roll of 1.5-inch athletic tape (split in half)*
- *One small piece of padding (can use a heel and lace pad, rolled piece of pro-wrap or PPT blue foam)*
- *Tape remover*

Pre-Tape Testing

- Determine MOI (traumatic injury versus repetitive overuse strain versus pathological biomechanics/malalignments versus muscular imbalances versus poor footwear).
- Ask if they have been taped before and if there were any issues encountered.
- Rule-out allergies to sprays and/or taping products.
- Inspect the skin for any signs of soft tissue injury (i.e., cuts, abrasions, blisters).
- Check motor, sensation, and circulation (MSC) before execution of the support technique.

Components and Execution Procedures

- **Individual Positioning:** Seated with their elbow on a bolster and their forearm outstretched. Their hand should be in a “Hold a Cup” or “C” position (thumb is slightly extended and abducted). This positions the thumb in slight opposition and protects the ulnar collateral ligament.
- **Preparation:** Apply a light misting of quick-drying adherent or skin toughner to the thumb, palm and wrist. No pro-wrap is needed for this support technique, as it is more effective to be taped directly onto the skin.
- **Support Strips (Checkrein):** Apply a 0.5-inch (1.25 cm) strip of athletic tape around the base of the proximal phalanx of the index finger and continue around the proximal phalanx of the thumb, returning to the proximal phalanx of the index finger. Repeat this step again. Ensure that you pinch the layers of the tape together in the web space between the thumb and index finger. Next, apply a small strip of tape (a.k.a. locking strip) around the band of tape connecting the thumb and index finger. Apply another 0.5-inch (1.25 cm) strip of athletic tape from the middle phalanx of the index finger to the middle finger in same location. This adds strength to the overall finger/thumb checkrein and aids in prevention of injuries happening to the index finger and associated joints.

- **Support Strips (Buddy Finger):** For added strength and protection, connect the index finger to the middle finger using a strip of 0.5-inch athletic tape around the middle phalanx of each finger. Ensure that you put a piece of foam, lace pad or rolled up piece of pro-wrap between the index and middle finger (web space) prior to taping them together.

Post-Tape Testing

- Check motor control, sensation, and circulation (MSC) after application**.**
- Manually assess the hand and fingers to test the integrity of the support technique. In other words, has the support technique limited the movement(s) that are painful?
- Functionally assess the hand and fingers to test the integrity of support technique. This testing should be specific to the individual's sport or activity and specific to their position in that same sport or activity.

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