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LCCN: 2014930902

SAGAMORE
PUBLISHING

1807 N. Federal Dr.
Urbana, IL 61801
www.sagamorepub.com

The authors, along with all contributors to the manual, would like to dedicate this text to all the sports medicine, athletic training, and related health care professionals.
Disclaimer

The procedures in this text are based on current research and recommendations from professionals in sports medicine and related health care professions. The information is intended to supplement, not substitute, recommendations from a qualified physician, qualified health care professional, and medical equipment specialist. Sagamore Publishing, LLC, and the authors disclaim responsibility for any adverse effect or consequences resulting from the misapplication or injudicious use of the material contained in the text. It is also accepted as judicious that the healthcare professionals, sport industry professionals, and students must work under the guidance of a licensed physician, qualified healthcare provider, and medical equipment specialist.
Preface

Being recognized as the comprehensive text in taping and wrapping techniques for healthcare professionals, the fourth edition of *The Comprehensive Manual of Taping, Wrapping, and Protective Devices* has been enhanced by the addition of selected audio and video segments, Kinesio Taping® techniques, and a visual display of protective devices. Obtaining knowledge from recognized experts in sport medicine and health care, this text displays and describes a step-by-step process in the application of taping and wrapping products along with a listing of protective devices that could be utilized in preventing injuries. *The Comprehensive Manual of Taping, Wrapping and Protective Devices* features online supplements along with instructor resources.

Online Companion Resources

Online companion resources include videos, images, and other resources the authors have provided as supplemental information for the text. These resources are found online and accessible only by creating an account using the one-time passcode provided in the back of the text on page 213. For more information about the use of or policies regarding the code for online companion resources, please visit www.sagamorepub.com.

Icon indicates that an instructional video is available for the technique using the Online Companion Resources.
Special Thanks

The authors would like to thank Sagamore Publishing, LLC, Medco Sports Medicine, Kinesio Taping, Johnson & Johnson, and Cramer Products for providing the financial support for this project. Without their support, we would not have been able to complete the 4th edition of *The Comprehensive Manual of Taping, Wrapping, and Protective Devices*. The authors would also like to thank the following individuals for their assistance in the development of this manual: Ms. Reata Strickland as cover designer; Mr. William Tremlett, Mr. Austin Shelnutt, Ms. Kelly Wright, and Ms. Kendra Wright for serving as guest reviewers, and past editors/reviewer (Mr. William Whitehill, Mr. Bud Carpenter, Mrs. Katy Curren Casey, Mr. James Dodson, Ms. A. Louise Fincher, Mr. Tim Garl, Ms. Sherry Kimbro, Mr. Donald Lowe, Mr. Henry Lyda, Mr. William McDonald, Mrs. Alice McLaine, Mr. Lindsey McLean, Ms. Lorraine Michel, Mr. Russell Miller, Mr. Ken Murray, Mr. Chris Patrick, Mr. Ralph Reiff, Mr. Ed Ryan, Dr. Patrick Sexton, Dr. Vincent Stilger, Mr. Hunter Smith, Mr. Buddy Taylor, and Mr. Charles Vosler) of the *Comprehensive Manual of Taping and Wrapping Techniques and Preventive Techniques: Taping/Wrapping Techniques and Protective Devices* for their input and expertise.

Acknowledgments

The authors are extremely grateful to the following for their meticulous review, comments, and contributions during the development and update of this book:

- E. Lyle Cain, MD, Andrews Sports Medicine & Orthopaedic Center, Birmingham, AL
- George Borden, MSc, AT-R, The Society of Sports Therapists, Glasgow, U.K.
- Samuel Brown, MS, OTC, Southern Crescent Technical College, Griffin, GA
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Part I

Basic Fundamentals
Educational Objectives

Upon completing this chapter, the reader will be able to do the following:

• Explain philosophies and principles surrounding the proper use of adhesive and elastic tape and elastic wrap applications
• Select the proper supplies and specialty items used for taping, wrapping, or protective devices
• Describe the body preparation issues (for taping and wrapping) as they relate to hair removal, skin preparation, spray adherent, skin lubricants, and underwrap or cohesive tape
• Demonstrate correct application of taping wrapping and protective devices
• Explain the purposes for supportive wrapping techniques for anatomical joints and related structures

Introduction

The fundamentals of taping techniques, wrapping techniques for support, and protective devices are important to understand due to the increased population of active individuals. Scholars, health care professionals, and medical equipment specialists collaborated on this chapter to highlight the philosophies, identifications, applications, and other key components that revolve around taping techniques, wrapping techniques for support, and protective devices.

Proper Assessment of Injury

Before applying a preventive technique (tape, wrap, and/or device), a qualified physician or qualified health care professional should complete a proper injury evaluation. Following the injury evaluation, a qualified health care professional can then recommend proper taping techniques. This ensures that proper taping and wrapping techniques and protective devices are applied for support and stabilization. Also, developing a thorough knowledge of taping application fundamentals is imperative for the qualified health care professional.

Principles of Physical Rehabilitation

Supportive techniques, in conjunction with a rehabilitation program, enhance an individual's return to activity. Please note that taping and wrapping procedures are NOT a substitute for proper injury rehabilitation. You should follow specific instructions regarding injury rehabilitation and supportive taping and wrapping techniques and protective devices, as outlined by a qualified physician or qualified health care professional. You, as the qualified health care professional, need to develop a thorough knowledge of taping application fundamentals.
Fundamentals of Taping Procedures

Philosophies of Adhesive and Elastic Tape Application

With tape application, you must consider proper angle, direction, and tension. Adhesive tape is traditionally marketed as nonelastic, white tape. Currently, multiple colors exist in adhesive tape. Elastic tape has the ability to contract and expand and is commonly used in areas that need greater freedom of movement. Elastic tape also has the characteristics of conformability and strength. Additionally, it can be placed on the body part with fewer wrinkles and at unique angles. When you apply elastic tape, you must apply proper tension. The choice of adhesive or elastic tape in the application of a preventive technique is at your discretion.

Purpose of Taping

The primary purpose for tape application is to provide additional support, stability, and compression for the affected body part. Through proper application, taping techniques can be applied to shorten the muscle's angle of pull; to decrease joint range of motion; to secure pads, bandages, and protective devices; and to apply compression to control swelling. With the availability of commercial durable medical goods (braces and sleeves), you must have a comprehensive understanding of anatomy, physiology, and biomechanics, along with indications and contraindications of taping/wrapping versus bracing.

Medical Supplies: Adhesive, Elastic, and Cohesive Tape

The terms of choice for this text will be adhesive tape, elastic tape, and cohesive tape. Adhesive tape is traditionally marketed as nonelastic, white tape. Elastic tape provides greater freedom of mobility to the affected body part and is marketed as elastic tape. Both adhesive and elastic tapes are produced in a variety of widths. Cohesive (self-adherent) tape is a dressing material that will adhere to itself but not to other surfaces. This product comes in a variety of widths, lengths, and colors. Additionally, adhesive and elastic tapes are used to secure a wrap. In the preparation of some body parts, skin protection must be considered, such as a Band-Aid with a lubricant. The metric table is displayed for international conversion use.

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inch x 2.54 = centimeter
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Selection of Proper Supplies and Specialty Items

One of the most critical aspects of taping techniques is the selection of proper supplies. Your selection depends on the number and types of sports or physical activities your organization offers and the frequency of injury in those activities. Purchasing supplies depends on budget, philosophy of medical staff regarding taping techniques, and occurrence of injury. Give special consideration to these additional supplies: benzoin (spray adherent), adhesive versus elastic tape, width of adhesive and elastic tape, cohesive tape, and length and width of elastic wraps.

Preparation of Body Part to Be Taped

In preparing the body for taping application, consider these six items:

1. **Removal of Hair (optional):** The individual should shave the affected body part. This will ensure a solid foundation for the tape, will allow for easy tape removal, and will reduce skin irritation.
2. **Clean the Area:** After hair removal, make sure the skin is clean and moisture free.
3. **Special Considerations:** Skin protection is important. Provide special care if the skin has allergies, tape or tape adherent, infections, or open and closed wounds.
4. **Spray Adherent (optional):** Spray the affected area with an adherent to aid in the adhesive quality.
5. **Skin Lubricants:** In areas of high friction or sensitivity, a skin lubricant such as a heel and lace pad will reduce the possibility of irritation.
6. **Underwrap or Cohesive Tape:** Underwrap is a foam wrap that is used when the individual is allergic to tape, whereas cohesive tape is a self-adherent tape that sticks to itself. Both of these products are used to hold heel and lace pads in place at high friction areas. The use of either underwrap or elastic tape over the entire taping area can compromise the stability of the taping technique. When applying an elastic wrap, do not use underwrap material.

Application and Removal of Taping Procedures

To tear tape, hold the adhesive or elastic tape firmly on each side of the proposed tear line. With proper tension applied on the tape, pull away the free end at an angle so that the force crosses the lines of the fabric and backcloth at a sharp angle. The tear then occurs sequentially through the backcloth. The more quickly you perform this maneuver, the more evenly tape edges will be torn. Some brands of elastic tape are extremely hard to tear by hand. Cut these elastic tape brands with scissors to ensure proper tape application and neatness.
Remove adhesive and elastic tape easily by using bandage scissors or a specially constructed tape cutter. Apply a small amount of lubricant on the tip of the cutting device to allow the instrument to slip under the tape more readily, thus allowing you to remove the tape with ease. Avoid bony prominences by moving the scissors/cutter along the natural channels or in areas of greatest soft tissue cushion. Once you complete this, remove the tape from the skin in a constant and gradual manner. It is preferred that the tape be removed in the opposite direction from which it was applied. When pulling the tape from the skin at an angle of 180 degrees, exercise care to minimize removal of skin tissue and skin irritation. It is recommended that you apply pressure to the skin (pull the skin away from the tape), which will reduce the possibility of skin irritation. The daily use of a tape remover is recommended to help keep the skin clean and to prevent skin irritations and/or infections. Tape remover and/or alcohol will aid in the removal of tape mass and adherent from the skin.

**TIPS FROM THE FIELD**

**Taping Procedures**

- Know what body part and injury to which you are providing support and/or compression.
- Cover sensitive body parts (nail/nipple) and wounds with a protective covering.
- When applying a technique, learn to stand at a comfortable and stationary position and place the body part to be taped at your elbow height.
- When practicing, start with small length and width elastic wraps so you can learn common techniques such as figure of eight and joint spica. Once you have become proficient with wraps, then use adhesive and elastic tape.
- Apply proper tension to the tape so that circulation and neurological function will not be compromised.
- When applying a taping technique, follow the tape with your hand to smooth out all wrinkles.
- Overlap tape one half of its width to avoid spaces that could cause cuts and friction burns.
- Always angle the tape in order for the tape ends to meet at the anchor strips. If you do not succeed, retry the angle at a sharper degree.
- When applying closure strips, always apply proximal to distal.
- Upon completing the taping procedure, make sure you check for neatness and gaps, adequate support, and proper function of the affected area. In certain situations, the individual might be asked to perform function tests to establish appropriate technique application.
- **PRACTICE!**
Sport-Specific Rules on Taping

If you apply supportive techniques to an individual, you should be aware of specific rules governing tape application in that particular sport. Your application must fall within the guidelines established for each sport by appropriate governing bodies.

Precautions

Before you apply any techniques, the individual’s skin temperature should be normal. To reduce the chance of skin irritation, after any therapeutic treatment, allow adequate time for the skin to return to its normal temperature. When applying support techniques, consider the safety of the individual your priority. Improper tape application can cause further injury. With all injured individuals, consult with a qualified physician. Do not use tape application with any disabling conditions.

**Fundamental Procedures of Wrapping Techniques for Support**

Philosophies of Elastic Wrap Application

Elastic wraps are primarily used to apply either compression or support to injured anatomical structures. Elastic wrap has the ability to contract and expand and is commonly used in areas that need greater freedom of movement. Elastic tape also has the characteristic of conformability and strength. As stated above, the selection of elastic wraps in the application of any preventive technique is at your discretion. You must develop a thorough knowledge regarding the fundamentals of the application of taping and wrapping procedures. During physical activity, supportive wraps are used to aid in muscle function and support and to reduce excessive range of motion. These applications are typically used in competition or practice. Spica wraps are traditionally employed at the hip and shoulder joints. Figure of eight wraps are placed over ankle, knee, elbow, and wrist and hand joints.

Purpose and Application of Elastic Wraps for Support

The primary purpose for the application of an elastic wrap is to provide support and/or compression for the affected body part. Through the proper application, wrapping techniques can be applied to shorten the muscle’s angle of pull; to decrease joint range of motion; to secure pads, bandages, and protective devices; and to apply compression to reduce swelling. During physical activity, supportive wraps are used to aid in muscle function and support, reduce excessive range of motion, and aid in securing pads after the proper placement of felt, foam rubber, and protective devices. These applications are usually used for short periods, typically for competition or practice. Common terms for these wraps are **spica**, **figure of eight**, and **pad support**. Spica wraps are traditionally employed at the hip and shoulder joints. Figure of eight wraps are placed over ankle, knee, elbow, and wrist and hand joints.

Medical Supplies—Elastic Wrap

Elastic wrap is defined as a woven fabric that also allows for expansion and contraction and is used for compression or supportive techniques. This product is typically produced in 2-in., 3-in., 4-in., and 6-in. widths. In certain situations, an extra long length is more desirable. The ankle cloth wrap is a nonelastic cloth that is 2 in. wide and between 72 in. and 96 in. in length. Additionally, adhesive and elastic tape is used to stabilize the wrap. In the preparation of some body parts, consider skin protection, such as a Band-Aid with a lubricant. Depending on the number and types of sports or physical activities an organization offers and frequency of injury in those activities, a variety of supplies should be available. Purchasing
supplies depends on budget, philosophy of medical staff regarding taping techniques, and occurrence of injury. Also, give special consideration to benzoin (spray adherent) and the length and width of elastic wraps.

**TIPS FROM THE FIELD**

Wrapping Procedures

- Know what body part and injury to which you are providing support and/or compression.
- When applying a technique, learn to tape from a comfortable and stationary position and place the body part to be wrapped at your elbow height.
- When practicing, start with small length and width elastic wraps so you can learn common techniques such as figure of eight and joint spica.
- Apply proper tension to the wrap so that circulation and neurological function will not be compromised.
- When applying a wrapping technique, follow the wrap with your hand to smooth out all wrinkles.
- Overlap wrap one half of its width to avoid spaces that could cause cuts and friction burns.
- Upon completing the wrapping procedure, make sure you check for neatness and gaps, adequate support, and proper function of the affected area. In certain situations, the individual might be asked to perform function tests to establish appropriate technique application.
- When applying a compression wrap, always start distally and wrap proximally (toward the heart).
- **PRACTICE!**

**Sport-Specific Rules on Wrapping**

If you apply supportive techniques to an individual, you should be aware of specific rules governing supportive wrap application in that particular sport or physical activity. Your application must fall within the guidelines established for each sport by appropriate governing bodies.

**Preparation of Body Part to Be Wrapped**

In preparing the body for taping application, consider these three items:

1. **Clean the Area:** Make sure the skin is clean and moisture free.
2. **Special Considerations:** Skin protection is important. Provide special care if the skin has allergies, tape or tape adherent, infections, or open and closed wounds.
3. **Spray Adherent:** If needed, spray the affected area with an adherent to aid in the adhesive quality.

**Proper Body Positioning**

Before beginning a wrapping procedure, ask the individual to assume an anatomically correct and comfortable position. When applying a technique, stand at a comfortable and stationary position and place the body part to be taped and/or wrapped at your elbow height. The wrapping techniques presented in this text are the fundamental procedures. Variations can be achieved by adapting these techniques to a particular injury situation. Always give special consideration to the following:
• purpose of the wrapping procedure
• clinical application
• correct anatomical position
• appropriate supply selection

Note: A strong knowledge of anatomy, physiology, and biomechanics is essential.

**Fundamentals of Protective Devices: Off-the-Shelf and Custom Braces**

**Philosophies of Protective Device**

The use of a protective device can be highly beneficial to the particular body part if properly selected, applied, and worn. To avoid violating the manufacturer’s specifications, follow the suggested guidelines for proper selection, application, and maintenance.

**Definition of Protective Device**

A protective device is a commercial product that is well designed and provides manufacturing liability and proper application instructions. The protective device is worn for protection, support, stability, or compression of an anatomical body part. Off-the-shelf braces are made in standard sizes and are available from merchandise in stock. In certain situations, these braces are called prefabricated braces. Custom braces are made to individual specification and fitted by qualified health care professionals and medical equipment specialists. Because these braces come in contact with the skin, it is highly recommended that daily maintenance should occur. As recommended by the manufacturer and Centers for Disease Control and Prevention (www.cdc.gov/mrsa/environment/athleticfacilities.html), proper steps in cleaning and disinfecting protective equipment should occur on a daily basis.

**Purpose of Protective Device**

The primary purpose for a protective device is to prevent an injury and to protect injured anatomical structures from further aggravation. Through proper application, a protective device can be applied to add additional protection, support, stability, and compression.

**Protective Device: Sport-Specific Equipment, Liability, and Instruction**

To ensure safety and product effectiveness, the protective device should have product liability coverage from the manufacturer and instructions for proper application. Sport-specific regulations, rules, and warnings exist concerning proper athletic equipment. Sport-specific equipment is worn as a standard uniform for participation in order to address individuals’ safety. Standards of protection have improved through combined efforts of athletic governing bodies, the American Society for Testing and Materials (ASTM), the National Operating Committee on Standards for Athletic Equipment (NOC-SA), and the Hockey Equipment Certification Council (HECC).

**Medical Device Authorization**

As required, a qualified physician or qualified health care professional must prescribe a custom brace. Prior to this occurring, a qualified physician should complete a proper injury evaluation. Upon the physician’s recommendation, a qualified health care professional and a medical equipment specialist can then recommend a custom or off-the-shelf protective device. This ensures that the proper device is applied for protection, support, stability, and/or compression. Also, the qualified health care professional and medical equipment specialist must develop a thorough knowledge of protective devices. See Figure 1.1 for an example of a Medco Sports Medicine Prescription Drug and Medical Device Authorization Form.
Dear Valued Customer,

In order to ship you prescription pharmaceuticals and/or medical devices, we must have authorization from a licensed physician or other authorized prescriber. This individual needs to fill out the form below and fax a copy of this page and a photocopy of their license to 800-222-1934.

If your School/Facility does not have a licensed physician or other authorized prescriber, but is licensed to purchase prescription pharmaceuticals and/or medical devices, please fax a copy of the license and this form for identification to 800-222-1934.

A) Name of School/Facility: _____________________________________________________________
   Attention: __________________________________ Customer #: ____________________________
   Address: ___________________________________________________________________________
   City & State: __________________________________ _________ Zip: _________________________
   Phone: __________________________________ Fax: _________________________________
   E-Mail: ___________________________________________________

B) I hereby authorize the internally designated representatives named below to order prescription products for this School/Facility. (please print)
   1. __________________________________ 2. __________________________________
   Type of authorization:  □ Unlimited  □ Limited (please attach list of products)

   Physician/Authorized Prescriber Signature: ____________________________________________
   Physician/Authorized Prescriber Name (please print): __________________________________ 
   State License Number: _______________________________________________________________
   (please include photocopy of license)

C) I hereby acknowledge that I am aware that medical devices are intended for use by a physician or a person certified or trained to use such device.

   Name (please print): _________________________________________________________________
   Title: ____________________________________________________________________________
   State License/Certification Number: ___________________________________________________
   Signature: __________________________ Date: ________________________________

Figure 1.1. Medco Prescription Drug and Medical Advice Authorization Form
Description of Protective Device
A variety of materials is used in the fabrication process of a protective device. The materials consist of different density and resilience. Low-density material absorbs force and high-density material disperses force. Resilience provides the ability to bounce or spring back into the position or shape after being stretched, impacted, or bent.

Selection of Proper Protective Device
The selection of a protective device is based on the optimal level of impacted intensity in regard to density, resilience, thickness, comfort, and specificity. In terms of appropriateness, consider age, size, skill level, and physical activity. Selecting a device that will absorb impact and disperse it before injury or stress occurs to the underlying body part is important. Because a variety of protective devices is available, a qualified physician or qualified health care professional and medical equipment specialist can determine whether the individual is best suited for an off-the-shelf or custom brace.

Application of Protective Device
The qualified health care professional, medical equipment specialist, and individual must be aware of the suggested guidelines, rules, and warnings when applying a protective device. Following the manufacturer’s instructions is imperative, as is not modifying a device without a physician’s approval. Once a device has been modified, the protection component is compromised, as the safety and liability to the manufacturer are no longer valid.

Precautions
Before applying any protective device, be aware of congenital deformities and scars that may alter the fit of the device. A protective device is an important product to prevent and protect injuries if used within the manufacturer’s rules and guidelines. When you apply the support, safety should be your priority. Therefore, do not modify protective devices that are standardized and regulated. With all injured individuals, consult a qualified physician.

When a specialty pad is needed, consider the following criteria:

1. Does the pad meet specific rules and guidelines of the sport? If NO, then do not use the pad.
2. Does the pad perform the function for which it was designed? If NO, then do not use the pad.
3. Will the pad contribute to further injury to the area or to an adjacent area? If YES, then do not use the pad.
4. Will the pad alter the function or void the warranty of a manufactured piece of equipment (e.g., helmet, shoulder pads)? If YES, then do not use the pad.

Ask and answer these and other common questions routinely before having a specialty pad constructed.

Sport-Specific Rules on Braces and Special Devices
The use of braces and special devices is beneficial if they are intelligently selected, used in the appropriate setting, correctly fitted, properly applied, and used within the rules and guidelines of the specific sport. Qualified physician approval must be obtained prior to application and use. Three common specialty supplies used in braces and special devices techniques are listed below.

Foam. Whether adhesive or nonadhesive, foam can be used in conjunction with various taping/wrapping procedures to increase efficacy of the technique. Keep these items in mind prior to applying tape or wrap to foam: proper size, thickness, shape, and foam composition.

Felt. Apply this product with many of the same considerations as with foam rubber products. Factors that you should consider in the construction and application of a felt pad are size, varying thickness, and use of either adhesive or nonadhesive felt.
Thermoplastic. This rigid material could allow the injured individual to return to practice and/or competition with an increased awareness that the injury can be protected from further harm. Because of the hard composition of this product, thermoplastic material may be restricted from some sports, be limited to a certain body part, or require padding according to the guidelines of each sport.

TIPS FROM THE FIELD

Protective Devices

- Educate individuals on the use, maintenance, applications, and limits of all protective devices worn.
- Use the manufacturer’s sizing chart as a guide for proper application of a protective device.
- Daily inspect, dispose of, and/or repair protective devices.
- Monitor proper hygiene and maintenance to avoid abnormal infection or skin irritation.
- Inspect all protective devices before and after application to ensure safety.
- Do not distribute old, worn-out, ill-fitting protective devices to other players.
- Pad all protective materials sufficiently on the exterior to prevent injury to opposing individuals.
Anatomical Planes

**Transverse Plane.** A horizontal plane at right angles to the vertical axis of the body. A plane that divides the body into a top and bottom portion.

**Frontal Plane.** A flat surface formed by making a cut, imaginary or real, through the body or a part of it. Planes are used as points of reference by which positions of parts of the body are indicated. In the human subject, all planes are based on the body being in an upright anatomical position.

**Sagittal Plane.** A vertical plane through the longitudinal axis of the body or part of the body, dividing it into right and left parts. If it is through the anteroposterior midaxis and divides the body into right and left halves, it is called a *median* or *mid-sagittal* plane.