BIKE 1 COURSE INSTRUCTOR MANUAL

The Bike 1 course is designed for the entry-level bike patroller or bike host. The content prepares patrollers and hosts for their potential duties and provides a broad knowledge base to start with and build upon with their patrol. Not all topics and information in this course will apply to every patrol or patroller; instead, it will provide a shared foundation for all patrollers or hosts working within the biking context. This course contains an online and in-person component. Also, check with your local area protocol for additional information.

Course Outcomes

After completing this course, learners should be able to:

- Perform a bicycle safety check to identify whether equipment is in safe and working order before use.
- Identify different types of cycling protective equipment and recommended use.
- Describe different types of bikes and their components.
- Explain various methods of transportation/evacuation used by bike patrollers.
- Describe standard practices for scene management.
- Summarize introductory information on Adaptive Cycling and Cyclists.

Prerequisite Courses

- Bike Fundamentals

Additional Requirements

- Bike 1 Instructor-Led Skills (ILS) Session - In-person Skills Component

Resources

This course requires permission from local area management or land management agency/ concessionaire and a patrol representative regarding mountain terrain and equipment use. The module also involves instructor staffing sufficient in number and expertise to deliver a practical, high-quality learning experience.

Educational Materials And Related Resources:

Outdoor Emergency Care (current edition)

Outdoor First Care

Bike Patrol Fundamentals (current edition) www.nsp.org

NSAA Mountain Bike Responsibility Code

Instructors	Instructors should hold current Bike program instructor credentials.
Course Prerequisites	Bike Fundamentals
Course Co-requisites	**Bike 1 Instructor-Led Skills Session**
Evaluation Format	This course contains a hybrid type of instruction; both online and in-person portions must be completed. Hands-on evaluations are required, and evaluation guidelines are provided, but modifications may be instituted according to local protocol.

What to Expect

Topics this course will cover:

The online portion of the Bike 1 course is organized into a series of modules delivered through an interactive player. Modules are approximately 15-20 minutes long if listened through and all elements clicked. Modules include:

- Module 1: Bike Safety
- Module 2: Bike Equipment
- Module 3: Outdoor Emergency Transportation – Trail
- Module 4: Scene Size Up
- Module 5: Introduction to Adaptive Cycling

The Instructor Led Skills (ILS) session of the Bike 1 course will confirm the knowledge and skills introduced or reviewed in the online course. The Bike 1 ILS is intended to last at least 4 hours, not to exceed 8 hours. The Bike 1 ILS will be flexible to facilitate local patrol environments, requirements, and equipment availability. All students must satisfactorily complete the core skills identified in the Bike 1 ILS Requirements in every session.

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Module 1: Bike Safety

This module sets a foundation for you as a Bike Patroller or Host. Safety is one of the primary responsibilities of Bike Patrollers and Hosts, so pre-ride bike safety checks and proper identification and use of personal protective equipment are building blocks of promoting a safe biking experience.

Module Objectives

After participating i n this module and subsequent skills components, you should be able to:

- Recite and explain the ABCDE Quick Check.
- List several different types of cycling protective equipment.

Have you ever gone for a bike ride and had something breakdown, which ruined the ride?

Even with preventive maintenance, breakdowns may occur.

The "ABCDE Quick Check" is a bicycle safety check that can help patrollers identify safety issues before a bike ride. ABCDE Quick Check can help identify deficiencies or problems that may be quickly fixed or could require additional repair. This mnemonic helps the patroller complete an inspection of their bicycle before every ride to help identify if it is in safe and working order.

Safety checks should be done every time you get ready to ride a bike. Not completing a safety check of your bike prior to a ride might result in injury to yourself or others.

Section 1: Bike Safety Check ABCDE Quick Check

The NBP's "ABCDE Quick Check" is a version of a bicycle safety check. This mnemonic helps the patroller complete an inspection of their bicycle before every ride to ensure it is in safe and working order. These checks can identify deficiencies or problems that may be quickly fixed or could require additional repair. If you cannot address the identified issue found with this safety check, the bicycle should be serviced by a qualified bicycle mechanic. Even with these checks and preventive maintenance, breakdowns may occur. Below is a highlight of what each letter of the mnemonic means and some pointers for each:

"A" - Air.

- The "A" stands for Air. You need to check that you have air in your components, including tires and shocks. Select each part to learn more.
    - Whether your wheels are set up with tubes or tubeless, your tires need sufficient air pressure to provide traction and control adequately.
    - Shocks may also be a component of your bicycle. Shocks provide suspension to the front or rear of the bike. Some suspension systems use both air and spring setups. Become familiar with the suspension system of your bicycle and the pressures recommended by the manufacturer.

"B" - Brakes.

- There are many types of brakes on bicycles. Becoming familiar with the functionality of your specific braking system is essential. When checking your brakes, the patroller must verify proper engagement and function.
    - Start by holding down the brake lever and trying to move the bike back and forth.
    - Visually inspect the contact points of the brakes and rotor or rim. Visualize the brake pads for wear and have them replaced based on the manufacturer's recommendations.
    - Check the lever for cracks; when held down, there should be room between the lever and the handlebar.
    - Inspect the cable and housing. Confirm no fraying or kinks. The cables should move freely through the housing. Hydraulic brakes should be checked for leakage.
    - Check the headset
        - Turn the handlebars 90 degrees to the bike while holding the brakes. Hold one hand on the headset and move the bike forward

and backward, feeling if there is any "play" in the headset. If there is, have the headset serviced by a qualified mechanic.

"C" - Cassette/Chain/Cranks

- The cassette should be checked for excessive signs of wear. One sign of excessive wear is chain skipping or improper shifting.
- The chain should be inspected for wear and lubrication, and the chain should be cleaned and lubricated based on the manufacturer's recommendations. Chains can stretch with use and should be regularly maintained or replaced. There are chain wear gauges commercially available.
- The Crank consists of the pedals, crank arms, and bottom bracket.
    - Check the pedals for functionality; they should spin freely.
    - Check the crankset, grab both arms and attempt to move them side to side. There should be no play when moving side to side. If there is, the bottom bracket may need to be serviced by a qualified mechanic.

“D” - Derailleur/Dropper Post/Drop test

- The derailleur is how you shift gears. Inspect the derailleur for debris, excessive wear, or broken pieces.
- Check the functionality of your dropper post if it is so equipped.
- The drop test is a check to help identify other issues.
    - Start by lifting your bike a few inches off the ground. Carefully drop the bike down and listen for clunks or other abnormal sounds. Further, investigate any abnormal noises.

"E" - Emergency/Extra Supplies

- Before heading out on a ride, ensure you have needed emergency supplies and provisions. In the event of a mechanical issue, tools and supplies will be necessary for field repairs. Likewise, extra fluids for hydration and energy are a wise idea if you plan a longer-duration ride.

    - Spare tubes, patch kit, or tubeless tire repair kit
    - Pump and/or CO2 cartridge(s)
    - Basic tools (tire levers, bike multi-tool, etc.)
    - Water
    - Energy bar(s) such as Clif Shot blocks, GU packets, Clif bars, etc.

Quick (releases)

- If your bicycle is equipped with quick-release levers, it is imperative to confirm they are sufficiently secured. Quick release needs to be tight but not too tight.
    - Quick Release Video
    - Most quick-release levers have the words "Open" and "Closed." Open means it is not secure, and the wheel is not fastened.
    - With the wheel centered in the fork (or frame), adjust the quick release by opening it, holding both ends and turning one clockwise until you feel some resistance when you close the lever. At this point, try to close the lever. The adjustment is correct when you can fully close the lever but with some effort (the lever should leave its impression in the palm of your hand). If you can only close the lever part way, open it, unscrew the adjustment slightly, and try again. The bearing in the wheel may be compressed if over-tightened. Some seat posts also have quick-release levers and should be checked.
    - Wheel quick releases should be on the non-drive side of the bicycle.

Check (ride)

- Lastly, take a check ride to confirm everything is working correctly.
    - Twist the stem, handlebar, brake, shift levers, and seat to ensure they are tightly secured.
    - Work through the gears and confirm that the brakes are functioning.
    - Make sure the seat, handlebars, and levers are positioned correctly.
    - Listen for any abnormal noises.

National Bike Patrol ABCDE Quick Check.pdf

The NBP Bike ABCDE Quick Check			
A = AIR	Check Tires	Check Shocks	
B = BRAKES	Check brakes engagement and visualize brake pads	Check levers, cables, and housing	Check Headset
C = CASSETTE/CHAIN/CRANKS	Check the cassette for wear/debris	Check the chain for wear and lubrication	Check Crank for play
D = DERAILLEUR/DROPPER/DROP	Inspect derailleur	Check Dropper post	Drop test bike
E = EMERGENCY/EXTRA SUPPLIES/ENERGY	Consider extra tubes, repair supplies, CO2 cartridge(s) and/or pump	Consider sufficient water/hydration drink for your ride	Consider energy bars, etc.
QUICK-RELEASES	Confirm Quick releases are closed, or Axle Nuts/Thru Axles are tight	Confirm any other quick-released are secured	
CHECK RIDE	Check gears and brakes	Confirm seat, handlebars, and levers	

Section 2: Personal Protective Equipment

Personal Protective Equipment for cycling has evolved over the decades. Technology and research have provided lighter, sleeker, and all-around better protection for the cyclist. This section will review some of the most common equipment available.

Helmet - Wearing a helmet while riding a bike is essential for several reasons. First and foremost, helmets can help prevent serious head injuries in an accident. The brain is one of the most delicate and vital organs in the body, and a traumatic injury to the head can have life-altering consequences. A helmet can help absorb a collision's impact and protect the brain from serious injury.

Several styles of cycling helmets are available, each with unique features and benefits.

- Road helmets: These are designed for road cycling and are typically sleek and aerodynamic. They are lightweight and well-ventilated, making them comfortable for long periods. They may include a visor to shield the eyes from the sun.

- Urban/Commuter helmets: These are designed for everyday use in the city. They have a classic design and often come with built-in visors or even integrated lights to increase visibility in traffic. They are also usually more versatile and can be used for different types of riding, like cycling, skateboarding, and rollerblading.

- Mountain biking helmets: These helmets are designed for off-road cycling and are more rugged than road helmets. They typically have greater coverage of the back and sides of the head and a visor to protect the eyes from branches and other debris. They also have more vents to keep riders cool while cycling on rough terrain.

- Full-face helmets: These are designed for downhill mountain biking and BMX riding. They have a chin guard that provides additional protection for the lower face and jaw. They are also designed to be worn with goggles.

- Youth helmets: These are designed specifically for children and come in smaller sizes. They are designed to meet the same safety standards as adult helmets but are often more colorful and have fun designs to appeal to kids.

- All the helmets should comply with the safety standards for cycling helmets, such as the CPSC (Consumer Product Safety Commission) or the EN 1078 standards in Europe. Some helmets also include additional features like a built-in rear light, communication systems, adjustable fit systems, a Multidirectional Impact Protection System (MIPS), and removable pads for cleaning.

- It's important to note that, regardless of the style of the helmet, it should fit properly, be worn correctly, and be in good condition to protect the rider adequately.

- https://www.nhtsa.gov/sites/nhtsa.gov/files/8019_fitting-a-helmet.pdf

Eye Protection - Proper Eye protection while riding, including googles, sunglasses, and helmet visors, is important for the following reasons:

- Protection from debris: When riding a bike, it's common to encounter debris such as branches, rocks, and gravel, which can cause serious eye injuries if they come into contact with the eyes. Eye protection, such as goggles or sunglasses, can help shield the eyes from these hazards and prevent injuries.

- Protection from the sun: The sun's ultraviolet (UV) rays can cause eye damage, including cataracts and age-related macular degeneration. Wearing eye protection can help to block these harmful rays and protect the eyes from long-term damage.

- Improved visibility: Eye protection can also help to improve visibility by reducing glare and enhancing contrast. This can be particularly important when riding in bright sunlight or on snow or water.

- Wind protection: Riding at high speeds can cause the wind to dry out eyes, making it uncomfortable and difficult to see. Goggles or sunglasses can help to protect the eyes from the wind and prevent dryness and irritation.

- In conclusion, wearing eye protection while mountain biking is essential for protecting the eyes from debris, sun, wind, and dust, improving visibility and

comfort. It's vital to choose the right type of eye protection for the activity, whether it's goggles or sunglasses, and that they fit comfortably and securely.

Gloves - Not only do they add an extra layer of protection in case of an accident, but they also improve grip and control on the handlebars. Several types of cycling gloves are available, each with its unique features and benefits.

- Extra Information
  - Road cycling gloves: These gloves are designed for road cycling and are typically sleek and lightweight. They often have a thin layer of padding on the palms to absorb vibrations and reduce hand fatigue. They also have good ventilation to keep the hands cool and dry.
  - Mountain biking gloves: These gloves are designed for off-road cycling and are more rugged than road gloves. They typically have more padding on the palms and fingers to provide extra protection and reduce impact from rough terrain. They also have a better grip and can be reinforced to protect the knuckles.
  - Urban/Commuter gloves: These are designed for everyday use in the city. They typically have a simple design and are often fingerless to allow for easy use of mobile devices and other items. They also have a good grip on the palm.
  - Winter cycling gloves: These gloves are designed for cold-weather riding. They are typically insulated and waterproof to keep the hands warm and dry. They also have a good grip, and they can be reinforced to protect the knuckles.
- In addition to the type of cycling, the fit and comfort of the gloves are also important. It's important to choose gloves that fit well and that are not too tight or too loose. It's also important to consider the weather conditions and ensure the gloves protect the hands from the elements.

Shoes - Cycling shoes are designed to increase power and efficiency, protect the foot, and improve cycling comfort. Several types and styles of cycling shoes are available, each designed for specific types of cycling. Select each type to learn more.

- Road cycling shoes: These shoes are designed for road cycling and are typically sleek and aerodynamic. They have a stiff sole that helps to transfer power from the rider's foot to the pedals. They are often lightweight and well-ventilated to keep the feet cool and comfortable. They have a cleat system that attaches to the pedal; this allows the rider to pull up on the pedals and push down, providing more power and efficiency.

- Mountain biking shoes: These shoes are designed for off-road cycling and are more rugged than road shoes. They typically have a more aggressive tread pattern for better traction on rough terrain. They also have more flexible soles than road shoes, which allows for more comfortable walking when it's necessary to dismount and carry the bike. They also may have a cleat system that attaches to the pedal.

- Urban/Commuter shoes: These shoes are designed for everyday use in the city. They typically have a simple design and can also be worn off the bike. They may or may not have a cleat system and are often designed to be used with flat pedals.

- Winter cycling shoes/boots: These shoes are designed for cold-weather riding. They are typically insulated and waterproof to keep the feet warm and dry. They may also have a thicker sole for added warmth. They can be used with cleats or without, depending on the rider's preference.

  - The fit and comfort of the shoe are also important. Choosing a shoe that fits well and has adequate ventilation to prevent overheating is essential. It's also important to consider the weather conditions and ensure the shoe can protect the foot from the elements. Cycling shoes are designed to increase power and efficiency, protect the foot, and improve cycling comfort. It's also essential to match the shoe with the type of cycling and the weather conditions.

Pedals - Besides these types of cycling shoes, the types of pedals you will be using also need to be considered. There are three main types of cycling pedals: clips, clipless, and flat.

- Clip pedals (or Toe Cages): These pedals have a caged clip that holds the shoe toe box in place. This keeps the shoe from sliding off the pedal.

- Clipless pedals: These pedals work with a shoe with a cleat on the bottom that attaches to the pedal. The cleat holds the rider's foot in place, and the rider can pull up on the pedal and push down, providing more power and efficiency.

- Flat pedals: These pedals typically do not have any mechanism to hold the rider's shoe in place, although some include small pegs to aid in the grip of a shoe's sole. The rider's shoe rests on the pedal. This type of pedal is often used for more casual or off-road riding and allows for quick and easy entry and exit. Combination pedals (clips on one side, flat on the other) also exist.

- In summary, clip pedals and clipless pedals provide a more efficient power transfer and better control, while flat pedals allow for quick and easy entry and exit. The choice of pedal type will depend on the rider's preference and the type of cycling they will be doing.

Clothing - Cycling clothing has become a significant market for manufacturers. Cyclists want riding clothing that is light and durable and provides the features they need for different riding environments. Lightweight, durable, wind-blocking, moisture-wicking, abrasion protection, thermal regulation, comfort, and appearance are all things to consider when choosing cycling clothing.

- Safety Measures

  - Reflective Clothing: Make sure to wear reflective clothing, especially when riding when one might experience darkness.

  - Bike Lights: Use bike lights, such as flashing red lights, when commuting or when traveling by bicycle, which is expected during dark hours.

Protective pads - Protective pads are an essential piece of cycling gear designed to limit injuries. Pads are generally made of a hard plastic that absorbs impact during a fall and are also made with soft interior padding for comfort. There are several types of pads designed for specific body areas.

- Elbow pads: These pads are designed to protect the elbows from impact in case of a fall. They are often made of a hard plastic shell that can help to absorb the impact and reduce the risk of injury.

- Knee pads: These pads are designed to protect the knees from impact in case of a fall. They are often made of a hard plastic shell that can help to absorb the impact and reduce the risk of injury. They also have soft padding inside for comfort and to wick away sweat.

- Shin pads: These pads are designed to protect the shins from impact in case of a fall. They are often made of a hard plastic shell that can help to absorb the impact and reduce the risk of injury. They also have soft padding inside for comfort and to wick away sweat.

- Back protector: This may include chest plates; these protectors are designed to protect the spine and back from impact in case of a fall. They are often made of a hard plastic shell that can help to absorb the impact and reduce the risk of injury. They also have soft padding inside for comfort and to wick away sweat.

- Hip pads: These pads are designed to protect the hips from impact in case of a fall. They are often made of a hard plastic shell that can help to absorb the impact and reduce the risk of injury. They also have soft padding inside for comfort and to wick away sweat.

- It's important to note that these pads should be worn with appropriate clothing, as they can provide limited protection if worn alone. It's also essential to ensure the pads fit properly and are worn correctly to ensure maximum protection.

Module Summary:

You have now completed Module 1: Bike Safety and should better understand the NBP's ABCDE Quick Check and Cycling Protective Equipment.

You should now be able to:

- Recite and demonstrate the ABCDE Quick Check
- List several different types of cycling protective equipment

Module 2: Bicycle Equipment

This module reviews the different categories and locations of different bike parts, which is necessary information to know whether a bike is safe to /'.

Module Objectives

After participating in this module and subsequent skills components, you should be able to:

- Identify standard parts of a bike.
- List common recommended tools and spare parts.
- Summarize different classes of E-Bikes.

Bicycle equipment can be complicated and sometimes overwhelming, but every rider should know it. In this chapter, we will highlight common parts of the bicycle. Bicycles vary greatly, and there is no way we can cover all variants, so follow the manufacturer's guidelines and recommendations for your bike.

Legal Issues

Performing mechanical repair on another person's bike could lead to legal action if an injury results from the patroller's actions. Supplying the rider with tools and advice to fix their bike to minimize the patroller's liability should an injury occur is always preferable. In addition, the riders will learn how to repair themselves. Check with your resort or land manager to see if there is a policy regarding mechanical aid.

Section 1: Bike Equipment Introduction

Most bikes can be divided into four main categories of parts: the frame, fork/suspension, brakes, and wheels.

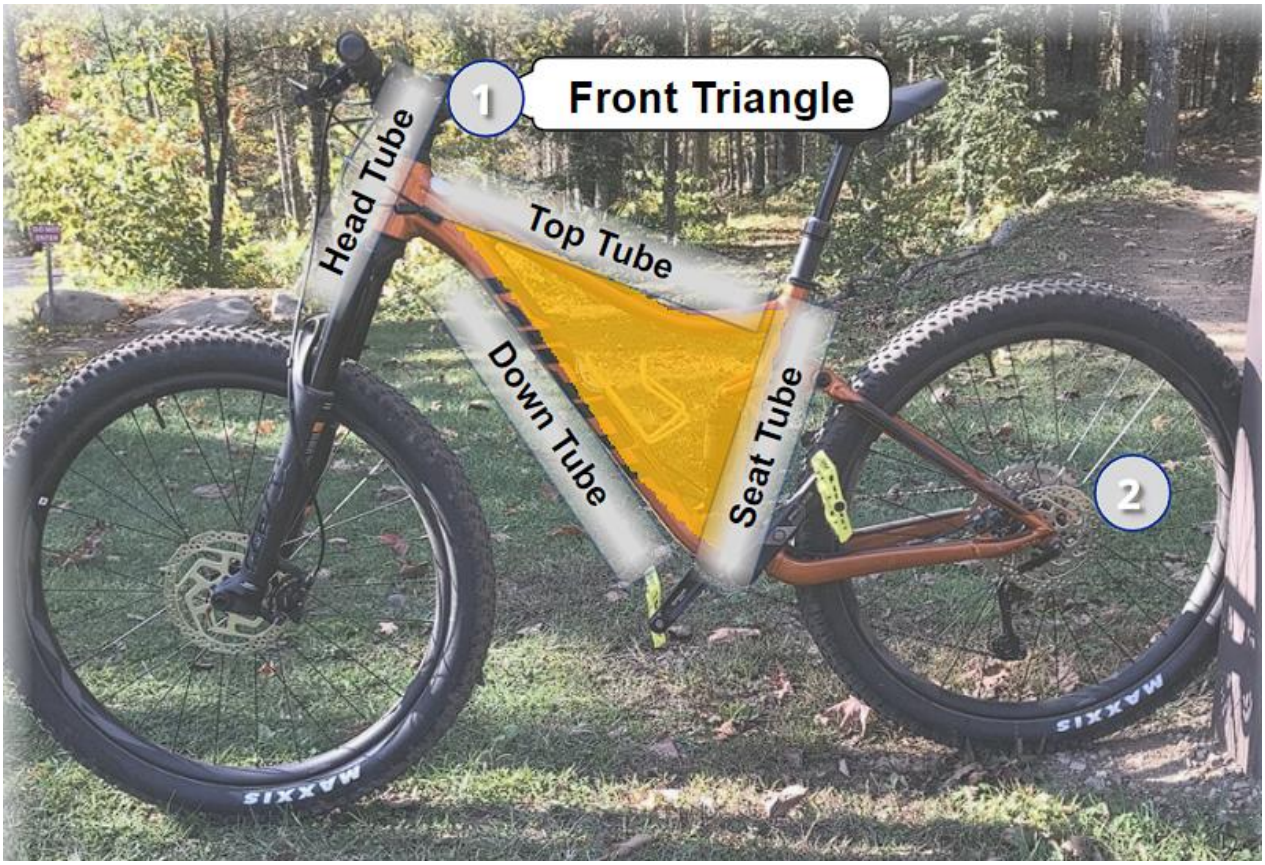
Each category contains multiple components that allow the bike to move, stop, and go over obstacles smoothly. Knowing these components will help you ensure your bike is in good working order.

- Frame
    - The central structure to which all other parts of the bicycle, such as the wheels, handlebars, pedals, and drivetrain, are attached. The frame plays a crucial role in determining the bike's overall design, strength, stability, and riding characteristics.

Different frames offer varying levels of comfort, durability, and performance, making it essential for cyclists to select the frame that best suits their needs.

- Fork/Suspension
    - The fork is the front component that holds the front wheel and is essential for steering, while suspension refers to systems that absorb shocks and impacts to enhance rider comfort and control, mainly when riding on uneven surfaces. Front suspension is common on mountain bikes, while some advanced models have both front and rear suspension for maximum off-road performance.
    - Suspension refers to systems that absorb shocks and impacts to enhance rider comfort and control.
- Brakes
    - Brakes are mechanical or hydraulic systems designed to slow down or stop a bicycle by creating friction between a braking surface and the wheel(s).
- Wheels
    - Wheels are one of the fundamental components of a bicycle, responsible for supporting the bike's weight, transmitting power from the pedals to the ground, and providing stability and control while riding. Bicycle wheels come in various sizes and styles to suit different types of bicycles.

Frame: The bike frame can be divided into front and rear triangles. The suspension, wheels, and brakes are mounted to the bike frame.



1. Front Triangle
    a. The top tube connects the top of the head tube to the top of the seat tube.
    b. The down tube connects the head tube to the bottom bracket shell.
    c. A seat post is a tube that extends upwards from the bicycle frame to the saddle. It can be static and adjusted with an Allen wrench. It can also be a dropper post, which can be adjusted quickly with a lever on the handlebar.
    d. The saddle, or seat attached to the seat post, is what the rider sits upon while peddling.
    e. The bottom bracket connects the crankset to the bike, allowing it to rotate when the rider peddles.
    f. The headset is a bearing assembly that keeps the bike fork attached to the bike. It allows the rider to turn the bike using the handlebars.

2. Rear Triangle
    a. The rear triangle has attachment points to the bottom bracket, chain stay, and seat stay.
    b. Seat stays diagonally down the bike frame's rear and connects the seat tube to the rear wheel dropouts. They can be static or a pivot point for the rear suspension.
    c. The chain stays connects to the bottom bracket to the bike's rear dropouts where the wheel connects.

Handlebars:

The handlebar is the steering control for the bike. The handlebar will have the following components installed: grips, shift levers, brake levers, and accessories such as a bell, dropper post lever, or bike computer.

1. Grips
    a. Grips are essential to keep control of the bike. It is the primary contact point from the rider's hands to steer the bike. They are typically made of a soft, grippy compound to maintain a positive grip on the handlebar.
2. Shift Lever
    a. The shift lever or shifter controls the bike gearing. Some bikes can have two shift levers, one for the front derailleur and one for the rear. Newer mountain bikes only have one shift lever located on the right handlebar.
3. Brake Lever
    a. The brake lever allows the rider to slow or stop the bike. There are two brake levers on most mountain bikes: the left brake lever for the front wheel and the right brake lever for the rear wheel. The brake lever can utilize a cable to the brake or hydraulic fluid to stop the bike.
4. Dropper Post Lever
    a. The dropper post lever is an accessory item on some mountain bikes. It connects to the seat post with a cable to allow the rider to lower and raise the seat post during riding. Some newer models of dropper posts are electronically remote-controlled and do not have cables but do have batteries.

5. Bell
    a. An accessory item used to alert other riders or pedestrians of their presence.

Drivetrain:

The drivetrain of the bike is the transmission. It allows the rider to power the bike and change gears based on the speed they would like to go.

1. Crankset
    a. Consists of three components: the chain ring, cranks, and pedals. The chain is moved by the cogs on the chain ring, which is moved by the cranks and the attached pedals. Riders can use flat pedals or clipless pedals to move the cranks.
2. Chain
    a. Is made up of a series of metal links that ride on the cogs of the chain ring to the rear wheel cassette.
3. Derailleur

a. Is how you shift gears. A bike can have one or two derailleurs, one on the crankset and one on the rear cassette. The shift levers on the handlebar controls the derailleurs.

Fork and Suspension:

The fork is the part of the bike where the front wheel is mounted. The fork also allows the rider to steer the bike turned by the handlebar. The suspension can be in the front suspension fork or the rear triangle. Suspension (commonly referred to as shock) allows the bike to ride smoothly on rough terrain and maintain traction by keeping the tires planted on the ground.

1. Front Forks
    a. Can be static or have suspension.
2. Stem
    a. Connects the handlebar to the steering tube, the top part of the fork.
3. Rear Shock
    a. Is on many mountain bikes and can be an air or coil shock.

Brakes:

The brakes are part of the bike that allows the rider to regulate the speed of travel, just as brakes on a car or motorcycle. Brakes work by applying friction to the surface. There are two main types of bike brakes: Disc and Rim brakes.

1. Disc Brakes
    a. Disc brakes or brake calipers on a bike are located on the lower section of the front fork and the rear section of the rear triangle. The bike rotor is connected to the wheel hub. Disc brakes can be cable-driven or use hydraulic fluid to compress the calipers onto the disk.

2. Rim brakes
    a. Rim brakes are pulled together by a cable routed from the brake lever. They apply pressure onto the wheel rim to slow or stop the bike.

Wheels:

Wheels are the complete assembly of hubs, spokes, rim, and tire. The tires are usually the only part of the bike in contact with the ground. Tires are specific to each kind of bike.

The rim houses the tire, the spokes provide support and connect to the hub. The hub connects to the fork or rear triangle dropout. Tires are specific to each kind of bike.

1. Rim
    a. Houses the tire.
2. Spokes
    a. Provide support and connect to the hub.
3. Hub
    a. Connects to the fork or the rear triangle dropout.

Tires:

- Mountain bike tires have knobs/thicker tread to allow for better traction in dirt.
- Road bike tires are smoother, allowing for less rolling resistance and moving quickly on flat surfaces.
- A valve stem is a port for adding or releasing air to the inner tube.
    - There are two types of valve stems, Presta and Schrader. Schrader are most common in cars and most bikes. Presta are found in higher end road and mountain bikes.

Section 2: Tools and spare parts

Riders should be prepared with essential tools and parts to make the repairs needed to get home if problems arise.

The following tools and parts are recommended for patrollers to be familiar with and carry on them.

[Tools] A good multi-tool should have Allen wrenches, a Philips screwdriver, and maybe a T25 Torx wrench. A quality bike tool kit would provide many of these tools in a small, compact package.

[Parts] A kit should also include the following spare parts.

An appropriate size tube, tire wrenches (2-3), and a way to inflate the tire be it either a hand pump or CO2 cartridges.

Always carry a spare master or quick chain link for your specific chain. Even if you do not know how to replace it, If someone with the skill is there, there are many different types and sizes.

A quality bike tool kit would provide many of these tools in a small, compact package.

NBP Tools and spare part recommendations.pdf

Resources for further learning:

- Flat Tire
  - How to Fix a Flat Tire on a Bicycle
- Broken Chain
  - How to Replace a Chain on a Bike - Sizing & Installation
  - How to Fix a Broken Bicycle Chain
- Derailleur adjustment
  - How to Adjust a Rear Derailleur – Limit Screws & Indexing
- Headset Adjustment
  - Tech Tuesday #30: Headset Adjustment
- Spoke/Wheel Repair
  - Calvin's Corner: On-The-Ride Bike Repair - Truing a Wheel with a Broken Spoke

Legal Considerations

Performing mechanical repair on another person's bike could lead to legal action if an injury results from the patroller's actions. Supplying the rider with tools and advice to fix their bike to minimize the patroller's liability should an injury occur is always preferable. In addition, the riders will learn how to repair themselves. Check with your patrol, resort, or land manager to understand any policy regarding mechanical aid.

Section 3: E-Bicycles

E-bikes are a growing and rapidly evolving segment of the biking community. Knowing the basic differences between classes and what your land manager allows is important.

Working with your resort or land managers to identify the rules and regulations concerning E-bikes within your patrol area is recommended.

- **Class 1** E-Bikes are low-speed pedal-assisted bicycles with a 20 mph top assist speed. There is no throttle. All speed is controlled by the amount and force of pedal strokes.
- **Class 2** E-Bikes are low-speed, throttle-assisted bicycles with a motor that may be used exclusively to propel the bicycle without pedaling. These bikes have a 20 MPH max throttle or e-assist top speed.
- **Class 3** E-Bikes are higher-speed, pedal assist-only bicycles that are capable of assist speeds up to 28 MPH. They do not have a throttle.
- **Unclassified** E-Bikes are bicycles with an electric motor greater than 750 Watts. They have unrestricted motor-assisted speed with pedal assist and/or throttle. These bikes are considered motor vehicles and not an assisted bicycle.

Module Summary

You should now be able to:

- Identify standard parts of a bike
- List common recommended tools and spare parts
- Summarize different classes of E-Bikes

Please ensure you have completed the required viewing before proceeding to subsequent modules.

You may now want to familiarize yourself with the parts of your own bike and assemble your basic tools and spare parts kit.

Module 3:
Outdoor Emergency Transportation - Trail (OETT)

This module will introduce patrollers to the various types of extrication devices and special requirements for handling patients on the trail. Bike patrollers and hosts need to recognize extrication challenges in a trail setting.

Module Objectives

After participating in this module and subsequent skills components, you should be able to:

- Describe some considerations for transporting and moving an injured guest.
- Define the one-wheeled litter and its function.
- Identify other transportation methods.

Section 1: OEC Skills Review

Many individuals who become injured on the trail can self-extricate or self-extricate with assistance. Some will require transportation by others. It is crucial to understand and recognize the different stabilization methods and how they impact transportation methods. The judgment of the patroller in determining stabilization and transportation needs is paramount to the health of injured guests.

Patients may be able to remove themselves (ambulatory) from an accident scene depending on the circumstances surrounding the injury. If they are unable to remove themselves (non-ambulatory), patrollers need to be able to recognize potential head/spinal injuries as well as the special considerations for moving these patients. It is also important to recognize when others will need transportation or assistance.

Patients may be able to remove themselves (ambulatory) from an accident scene.

It is essential for patrollers to be able to:

- Recognize potential head/spinal injuries.
- Recognize special considerations for moving these patients.
- Recognize when others will need transportation or assistance.
-

Body Mechanics:

When it comes to lifting a patient, understanding body mechanics is central to the art of practicing good lifting techniques. These techniques help protect your own body while helping the patient. The keys to good lifting techniques are:

- Know your physical limitations. Get help if the lift is too heavy to handle alone safely.
- Lift with your legs, not your back.
- Bend your knees.
- Keep your back straight.
- Keep your head up as you lift.
- Make sure to communicate with others when performing a lift.

For more information, refer to OEC 6th Edition Chapter 5.

Patient Lifts:

There are various methods described in OEC 6 for the movement of patients in both urgent and non-urgent circumstances. Different injuries will require other techniques. Knowing and understanding each of the following movements will help the patroller move a patient when needed.

Look at the following images to determine what method is being used. Drag and drop the terms with their corresponding images.

- Human Crutch

- Two Person

- Chair Carry-

- Shoulder Drag

- Underarm-Wrist Drag

- Bean/Bridge Lift

- Extremity Lift

- Log Roll

*For more information, refer to OEC 6th Edition Chapter 5

Section 2: One-Wheeled Litter

Extrication of patients from the uneven terrain typically encountered in a biking environment presents some hazards. A one-wheeled litter is one of the devices used when transporting a patient on rough or uneven terrain. Many rescue units, fire departments, and bike parks use a one-wheeled litter to aid in various extractions.

One-wheeled litters have a detachable wheel, making it easier for rescuers to travel longer distances with a patient. Some models also have features such as handles on both ends that allow rescuers the ability to leverage the litter for better control. Many models also include brakes to assist in controlling descents/ascents.

Safety:

Prior to using a one-wheeled litter, it is imperative that it be inspected. The following safety checks should be performed to ensure patient safety:

- Check tire pressure.

- If equipped with brakes, ensure they are in good working order.
- Make sure all connection points are correctly assembled and secured.
- Inspect for damage or wear to the frame and components.
- Confirm all straps are present and in good usable condition.

Use:

One-wheeled litter typically requires four rescuers to operate, but some models will allow fewer rescuers. The terrain a one-wheeled litter is used on may require more advanced equipment such as belay systems or pulleys. Area management determines the guidelines for using this specialized equipment.

Loading:

There are many ways to load/unload a one-wheeled litter. The size and condition of patients and environmental issues are all factors when determining how to load. Patients can be loaded from a standing position or a lying down position. Backboards, scoops and other lifting devices can be beneficial for loading a patient into the litter. Patients may be loaded into the litter before attaching the wheel.

Traveling:

Traveling with a litter is a coordinated effort. The litter should be kept perpendicular to gravity, not the slope. Communication between the users is key. Rescuers should warn others of upcoming hazards. The role of the rescuers is to stabilize the litter and let the wheel carry the weight. Be aware of the need for braking either by belay or by brakes. Never rely solely on those stabilizing the litter to also provide the braking.

Navigation:

It is essential to know where you are, where you are going, and the route selected to between the two. Therefore, a basic understanding of navigation, map reading, and orientation skills are key. Be familiar with how to read analog maps and landmarks. If you are using digital maps, be sure to download the map to be certain it is available in cases of diminished cell signal.

Section 3: Other Extrication Options

Patrollers can employ many other methods to transport patients. Skeds, litter, or improvised are some of the options available. Some areas may have ATVs, UTVs, or other vehicles available for patient transport. These vehicles generally allow patients to be transported longer distances faster. Additional training is required for the operations of these vehicles. Your local area manager will determine local protocols governing the use of these vehicles.

SKED:

A SKED may be used to extricate a patient who has fallen over the side of a trail or to prepare for aerial transport. They may also be used to place into a litter for further transport.

Improvised Litters:

Improvised litters are those that are fashioned from materials the rescuer is carrying with themselves or from the patient's belongings as well as items in the environment. Common items include ropes, trekking poles, and pack frames.

For more details, refer to the NSP Mountain Travel and Rescue or Nordic Training manuals.

Patient Bike Transport:

A patient's own bike may be a viable means of transport for patrons with injuries where they can maintain a sitting position. A patroller walking the patient out on the patient's bike may be an alternative method to get a patient to further care.

Advanced Techniques:

Rope rescue rigging, floatation devices, extrication tools (KED), vegetation removal or other specialized equipment may be required to address some incidents. Area management determines the protocols for use of these advanced techniques. There are also many advanced techniques you can use with a one-wheeled litter, including applications with high and low-angle rescue. These are above this level but knowing that more advanced applications exist is helpful.

Litters without Wheels:

Litters may be used without wheels. In these instances, the litter may be carried over reasonable ground by a team of 4 to 6 litter bearers. In rough ground it is better to have rescuers stay stationary and pass the litter up through the team - this requires 8 to 12 rescuers to make a smooth transport.

Helicopters:

Helicopters may be needed or used in some situations. Military rescue units, forest service short haul or specialized rescue helicopters may be able to winch a patient up without landing. These patients should first be placed in a solid litter or a SKED for lifting. Transport to a helispot where a helicopter can land is another possibility. Helicopter transport is resort-dependent and requires significant extra training. Note that this is a very specialized and expensive option for transport.

Module Summary

You have now completed Module 3: Outdoor Emergency Transportation - Trail (OETT) and should better understand trailside transportation methods, devices, and considerations.

You should now be able to:

- Describe the considerations for moving an injured guest.
- Define the one-wheeled litter and list its potential uses.
- Identify other methods of extrication or moving injured guests.

Please ensure you have completed the required viewing before proceeding to subsequent modules.

You may now want to familiarize yourself with the transportation equipment that your resort or area utilizes.

Module 4: Scene Size Up

This module will discuss the different types of Area Management and basic scene management techniques commonly used while working in a cycling incident.

Module Objectives

A Bike Patroller or Host may be the first on the scene of an incident and will be responsible for protecting those involved. Scene Size Up is the first step in establishing a general overview of the incident and the surrounding area. After participating in this module and subsequent skills components, you should be able to:

- Define 3 different areas and their management approaches.
- Summarize the process and considerations for scene size up in off-snow contexts.

Section 1: Introduction to Area Management

Many winter ski patrol members are used to patrolling at the typical ski environment, with defined runs and clear opening and closing hours and procedures. But bike patrols can have very diverse environments, hours, and procedures.

There are 3 common types of land managers which a bike patrol may operate.

1. Resort or park-based.
2. Patrols that work on public lands (City, County, State, Federal)
3. Patrols that work in multi-land manager systems (public and private, or for-profit systems)

It's essential to know the area management type so that you understand the relationship with the land manager.

1. Resort or park-based.
    - These parks often work the same way as a typical ski place.
    - They have opening and closing hours.
    - They are often (though not always) lift or shuttle served.
    - Patrol members must be there from open to close
    - The land manager is often a for-profit organization
    - In these parks, the relationship is with the owner/general manager of the resort
2. Patrols that work on public lands (City, County, State, Federal)

- Some bike patrols work on public lands, like a park or national forest
- These places often do not have clear opening and closing hours
- They may have paved trails or trails on dirt or gravel
- The public can use the area at many different times, even when patrol members are not around, and are multi-use trails, not just for cyclists
- The land manager is usually a governmental organization, such as a parks department, or a non-profit entity or trust
- In these situations, the relationship is with the administrator in the agency or designated park manager.

3. Patrols that work in multi-land manager systems (public and private, or for-profit systems)
    - These patrols often serve multiple locations or park systems
    - Each location may serve different user groups
    - There are multi-land manager and constituencies with whom the land managers represent
    - The difficult part of working in multi-land manager systems is that the rules and guidelines may differ based on the location that the patrol member is serving. Patrol members in multi-land management systems must know how to apply these local guidelines.

Indigenous Lands

When looking at public lands, it's imperative to acknowledge and recognize indigenous and native lands. Be mindful of the Indigenous past, present, and future of a particular location, as it helps unlock our own place within that relationship, and the present and future of a particular location, as it helps unlock our own place within that relationship. To learn more about how to make land acknowledgments, visit Nativegov.org.

Section 2: Scene Size-up

It is essential to establish a first impression when first at a scene as it is crucial in determining what actions should be taken.

NSP's Scene Size Up simplifies and helps organize our approach to an incident. The following are the 5 steps to scene size up:

1. Ensure the Scene is Safe
2. Determine Mechanism of Injury

3. Take Standard Precautions
4. Determine the Number of patients
5. Consider Additional Resources

Refer to OEC 6th Edition Chapter 7

Ensure the Scene is Safe

It is imperative that Bike Patrollers stay safe and do not put themselves or others in danger.
The first step in scene size-up is to ensure the scene is safe.

- Ensure the scene is safe for the injured and others.
- Move the injured, when possible, to a safer location
- Place markers or another person to stop or warn riders
- Manage hazards within area management's guidelines

Bystanders/witnesses can be used to help flag/warn riders coming down the trail.

Determine MOI/NOI

The **Mechanism of Injury (MOI)** is what causes the trauma to the individual.

- Examples of mechanisms of injury could be physical collisions with a tree, a vehicle, or a fall from a ridge.

If not trauma, then understand what the **Nature of Illness (NOI)** is.

- Examples of the nature of illness could be heat stroke, dehydration, diabetic situation, or a heart attack.

Knowing the MOI and/or the NOI will help form your first impression of what first aid is required.

Refer to OEC 6th Edition Chapter 7 Patient Assessment (pg. 147) and Chapter 18 Principle of Trauma (pg. 380).

Take Standard Precautions

While sizing up the scene, ensure Standard Precautions are in place by practicing **Body Substance Isolation (BSI)**.

*BSI is the practice of isolating all bodily substances (blood, urine etc.) of patients from rescuers in order to decrease disease transmission.

BSI will keep a patroller safe from hazardous materials and bloodborne pathogens.

- Examples: Gloves, glasses, masks etc.

Determine the Number of Patients

Determine the number of patients involved; if there is more than one patient, quickly prioritize the severity of each person involved.

*Refer to Outdoor Emergency Care 6th Edition, Chapter 7 Patient Assessment and Chapter 4 Incident Command and Triage.

Consider Additional Resources

You should also consider what additional resources are needed and what special equipment is needed for extrication and transportation.

Additional Personnel resources include,

- Additional Patrollers,
- other area/resort employees,
- EMS,
- Law Enforcement,
- Electric Company, and more.

Special Equipment Needs include

- Medical Supplies (Splints, backboards)
- Extrication Tools
- Transportation

Module Summary

You have now completed Module 4, Scene Size Up, and should better understand basic area management.

You should now be able to:

- Define 3 different areas and their management approaches.
- Summarize the process and considerations for scene size up in off-snow contexts.

You have now completed the online portion of module 4. Please ensure you have completed the required viewing before proceeding to the skills component and subsequent modules.

Next Steps:

- Be sure to attend the Skills session to apply these concepts into practice. Your skills session with utilize equipment used in your patrol and patrol environment. There may be the opportunity to introduce or demonstrate other equipment.

Module 5: Introduction to Adaptive Cycling

This module will introduce adaptive cycling and some of the considerations that patrollers and hosts need to be aware of when encountering adaptive athletes and their equipment.

Module Objectives

Recent advances in both access and technologies have aided a much more diverse user group access to the sport of cycling. Adaptive equipment allows cyclists of all abilities to enjoy riding. Patrollers need to be prepared in the special considerations of adaptive athletes and their equipment. After participating in this module and subsequent skills components, you should be able to:

- Describe common types of cycling diverse abilities.
- Summarize different types of adaptive cycling equipment.
- Describe special considerations when engaging with adaptive athletes.

Section 1: Types of Disabilities

As the popularity of cycling increases, so does the diversity of riders and the patrollers' chances of encountering and interacting with various adaptive athletes.

Cyclists using adaptive equipment are diverse, with many different disabilities or diverse abilities and types of special gear. It's essential to realize that all persons with disabilities are unique, not solely defined by their impairment or disability.

This section will introduce 5 general impairment or disability categories a patroller or host may encounter. This list is not all-inclusive. ***We will not be addressing treatment.*** This section is intended only to provide introductory information.

1. Developmentally Disabled
2. Cognitively Impaired
3. Blind / Visually Impaired
4. Deaf / Hard of Hearing
5. Physical Disabilities

Developmentally Disabled

The term "developmentally disabled" describes individuals with a condition or a set of conditions that significantly affect their physical or emotional development, often resulting in limitations in their ability to perform everyday activities or participate fully in society.

Diagnosis or Conditions:

- Attention-deficit/hyperactivity disorder (ADHD)
- Autism spectrum disorder
- Cerebral palsy
- Down syndrome
- Fragile X syndrome
- Intellectual disability
- Language disorders
- Learning disorders
- Tourette syndrome

Cognitively Impaired

Cognitively impaired refers to individuals with a diminished or impaired cognitive function compared to the average population. Cognitive impairment refers to difficulties in various aspects of thinking, reasoning, memory, and problem-solving.

Diagnosis or Conditions:

- Dementia
- Amnesia
- Delirium
- Alzheimer's disease
- Attention deficit disorder
- Epilepsy-related cognitive dysfunction
- Fronto-temporal dementia
- Mild cognitive impairment
- Normal pressure hydrocephalus

Blind / Visually Impaired

Blind or visually impaired is a term used to describe individuals who significantly reduce their ability to see or are entirely unable to see.

Diagnosis or Conditions:

- Amblyopia (lazy eye)
- Astigmatism
- Cataracts

- Color blindness
- Diabetic retinopathy
- Glaucoma
- Hyperopia (farsightedness)
- Age-related macular degeneration

Deaf / Hard of Hearing

Deaf or hard of hearing is a term used to describe individuals with varying degrees of hearing loss, ranging from mild to profound. These individuals may experience limitations in their ability to hear sounds, including speech and environmental sounds.

Diagnosis or Conditions:

- Heredity Sensory-Neural Impairment
- Neurological Disorder/Syndrome
- Cerebral Palsy
- Meningitis
- Physical Abnormalities or Obstructions
- Hearing loss due to Age or Environmental Noise Exposure

Physical Disabilities

A physical disability is a condition or impairment affecting a person's physical functioning, mobility, dexterity, or stamina. These disabilities can result from various causes, including congenital conditions, injuries, illnesses, or degenerative disorders.

Diagnosis or Conditions:

- Stroke
- Cerebral Palsy
- Multiple Sclerosis
- Spinal Cord Injury
- Traumatic brain injury
- Para/Quadriplegia
- Muscular dystrophy

Section 2: Adaptive Equipment

Adaptive bikes have unique features that allow them to operate more effectively for persons with impairments or disabilities. Adaptive equipment technology will enable cyclists of all abilities to enjoy riding on all terrains and is modified to fit a rider's needs.

This section will introduce you to many different types or categories of adaptive cycling equipment.

The types and categories of adaptive cycling equipment are constantly changing and advancing.

1. Mountain Bike Tricycles/Quadricycles
2. Wheelchair bicycles
3. Tandems (two and three wheels)
4. Comfort bicycles
5. Recumbents
6. E-bikes (Electric or Electronic bikes)

Mountain Bike Tricycles/Quadricycles

Adaptive tricycles and quadricycles are three or four-wheeled cycles designed to improve balance intended for off-road use and typically have rugged suspension systems. These bicycles can be hand or foot-pedaled, and more and more have electric motors to assist the rider.

Wheelchair bicycles

There are many types of adaptive wheelchair bicycles, and most of them incorporate a wheelchair into the design or a platform for a wheelchair to attach to it.

Tandems (two and three wheels)

Adaptive tandem bicycles are designed for two people to ride together. They are usually two or three wheels, but some styles have four.

Comfort bicycles

Adaptive comfort bicycles are designed to make cycling more accessible for the rider. They are often modified to fit the needs of an individual rider. Some features of adaptive comfort bicycles include a large comfortable seat, backrest, and pedals on the front of the body. They also typically have front suspension forks, seat post suspension, drop-center, and angled North Road-style handlebars.

Recumbents
Adaptive recumbent bikes are designed with a reclining seat that distributes the rider's weight over a larger area, supporting the back. These bicycles can be either hand or foot-powered and are typically tricycles but can also be quadricycles.

E-bikes (Electric or Electronic bikes)

Electric bikes (e-bikes) have a motor and battery pack that assists when you pedal or have throttle controls to propel the bicycle.
Virtually every category above has E-bike options or versions.

Section 3: Adaptive Cycling Special Considerations

Now that you have been introduced to adaptive cycling, some of the cognitive and medical conditions that may be associated with adaptive athletes, and different equipment, let us look at some considerations when the patroller may interact with an adaptive athlete.

Developmental and Cognitive Impairment Considerations

Recall that the term "developmentally disabled" is used to describe individuals who have a condition or a set of conditions that significantly affect their physical or emotional development.

Recall that the term "cognitively impaired" describes individuals with a diminished or impaired cognitive function compared to the average population.

Select each card to learn more about how to attend to a cyclist with developmental/cognitive impairments.

First Aid Considerations

- When determining mental status, ask the caregiver/family/friend what is "normal" for this cyclist.
- Seek out a caregiver to get complete S.A.M.P.L.E. information.
- Check for MedicAlert tags.
- These cyclists may be anxious that your treatment will cause further pain; be gentle!
- Ask permission before touching them. Have other patrollers do the same.
- Be prepared to treat for seizures if necessary.

Communication Considerations

- The best way to interact is to:
    - - be friendly and reassuring
    - - maintain eye contact
    - - kneel down at their level
    - - listen carefully
    - - show interest in what the cyclist has to say
- Do not speak to mentally disabled adults as if they were children but use simple words.
- Be sure the cyclist is understanding -- not just agreeing -- with you

- Be patient, it may be hard to draw out the information you need.
- A speech impairment does not necessarily mean the person can't understand you.
- The strategy is also applicable to non-English speakers or altered mental status.

Immobilization / Extrication / Transportation Considerations

- Be sure to explain what you are doing in advance and demonstrate the task.
- Hypotonia and Spasticity are associated with some syndromes that cause cognitive impairment and must be considered before transportation. (added to and reordered text)
- **Hypotonia** is a term that describes decreased muscle tone,
- **Spasticity** is a condition that causes muscles to become stiff or rigid. It can also cause muscles to contract simultaneously when you try to move.
- Be extra careful when lifting and splinting.

Blind or Low Vision considerations

Recall that the term "blind or visually impaired" is used to describe individuals who significantly reduce their ability to see or are entirely unable to see.

Select each card to learn more about how to attend to a cyclist who is blind or has low vision.

First Aid Considerations

- When providing first aid, consider that pupil response may be hard to assess.
- Explain in advance what you are going to do.
- ASK PERMISSION before touching them.
- Don't have too many hands on the patient at once

Communication Considerations

- Greet as you would any other person, but be sure to introduce the cyclist to all patrollers and others who are present at the scene.
- Announce as transportation equipment or other helpers show up at the scene. Explain the activity taking place.
- Speak directly to the blind person, not through their companion/pilot. Do not shout.

- Verbally close a conversation and announce if you leave the room or walk away from their side. And announce who else enters or leaves the scene.

Immobilization / Extrication / Transportation Considerations

- Be sure to explain in advance what you are doing when extricating and transporting.
- Place equipment next to them and let them touch it.
- When guiding, offer your arm to hold onto and walk to the side. Come to a complete stop before steps, curbs, doorways, etc.
- Guide dogs are trained to be alert to their owners and are "on duty" whenever in their harness. Do not allow distraction by petting or feeding.

*The ADA allows guide dogs in any public building.

Deaf / Hard of Hearing considerations

Recall that the term deaf or hard of hearing describes individuals with varying degrees of hearing loss.

Select each card to learn more about how to attend to a cyclist who is deaf or hard of hearing.

First Aid Considerations

- When providing first aid, do not lose any hearing aids or cochlear implant equipment (they are expensive.)
- Do not cover both eyes unless necessary.

Communication Considerations

- Speech/lip reading is imperfect. When in doubt, write notes. Especially for SAMPLE.
- Use their phone and text them. Use voice-to-text apps to text their questions.
- Speak face-to-face. Remove masks, full-face helmets, balaclavas, and neck gaiters from your mouth area.
- Not all congenitally profoundly deaf have fully intelligible speech, but they may be understandable in context and/or with closed-end questions.

Immobilization / Extrication / Transportation Considerations

- Be sure to communicate clearly the action to be taken

- demonstrate in advance
- speak face-to-face.

Physically Disabled considerations

Recall that the term physical disability refers to a condition or impairment that affects a person's physical functioning, mobility, dexterity, or stamina.

Select each card to learn more about how to attend to a cyclist who has a physical disability.

First Aid Considerations

- When providing first aid, consider that the biker may not feel pain at the injury sight, so be sure to check for:
  - - bleeding
  - - deformities
  - - redness
  - - bruising
  - - swelling
- Be aware that some cyclists may wear one, two, or no prostheses while on the trail.
- Watch for tenderness and poor circulation in limbs.
- Traction can worsen Spasticity in cyclists with Cerebral Palsy.
- Be aware of Autonomic Dysreflexia in cyclists with spinal cord injury.

Communication Considerations

- Communication may be normal, but some difficulty could be present due to secondary diagnoses or impairment.

Immobilization / Extrication / Transportation Considerations

- When transporting, DO NOT remove orthoses (braces) or prostheses (limbs) without asking permission.
- If there is pain or swelling at the site where the prosthesis attaches, check for trauma.
- Be aware that it could take several patrollers to extricate a cyclist from an adaptive bike for loading onto a litter.

Autonomic Dysreflexia

Autonomic Dysreflexia is caused by the body's sympathetic nervous system's inability to properly sense and react to specific stimuli.

It is a hypertensive (high blood pressure) crisis that can cause:

- severe sweating
- goosebumps
- flushed feeling
- feeling of impending doom
- increased Spasticity
- communication/cognition impairment.

Stimulus could be a broken bone -- or simply skin caught in a zipper.

Autonomic Dysreflexia is considered a life-threatening emergency.

*For more information, refer to OEC 6th Edition, Chapter 32, pages 742-743.

Module Summary

You have now completed Module 5: Introduction to Adaptive Cycling and should better understand the types of impairments and how to address those patients with impairments.

You should now be able to:

- Describe common types of cycling diverse abilities.
- Summarize different types of adaptive cycling equipment.
- Describe special considerations when engaging with adaptive athletes.

You have now completed the online portion of module 5. Please complete the required viewing before proceeding to the skills component and subsequent modules.

Next Steps:

- Be sure to attend the Skills session to apply these concepts into practice. Your skills session will utilize equipment used in your patrol and patrol environment. There may be the opportunity to introduce or demonstrate other equipment.

Resources for further learning:

National Ski Patrol Outdoor Emergency Care, 6th Edition, Chapter 32
DAV.org
moveunitedsport.org
specialolympics.org
adaptivesports.org

Course Summary

Next Steps

- Register and complete the skills component: Bike 1 Instructor-Led Skills Session.

Before starting on a patrol or host unit, members need to be an "active" patroller or host in good standings, which includes:

- For patrollers: Being up to date with Outdoor Emergency Care (OEC) and/or OEC refreshers
- For hosts: Being up to date with Outdoor First Care (OFC).
- Being up to date with your National and Local membership dues.

Bike 1 Instructor-Led Skills Session Resources

Instructor-Led Skills (ILS) Session Overview

The Bike 1 Instructor Led Skills (ILS) Session is intended to affirm the knowledge learned or reviewed in the Online Modules. The ILS should be used to establish the base knowledge and apply local patrol requirements or protocols.

Bike Patrolling is diverse; the differences between Downhill, Cross-Country/Backcountry, and Urban patrol environments are extensive, and it is impossible to cover everything each one needs or requires.

Bike 1 ILS Requirements

The session should last no less than 4 hours but can be longer if the hosting patrol, Bike IOR, and Bike IT agree. This session can also be split into a multi-day session if needed. The following are the mandatory topics that must be covered for every Bike 1 ILS session, regardless of the patrol environment or electives.

M1- Bike Safety

1. ABCDE Quick Check
2. PPE – Helmet Fitting https://www.nhtsa.gov/sites/nhtsa.gov/files/8019_fitting-a-helmet.pdf

M2 – Bike Equipment

1. Bike Part Categories Identification
    a. Frame
    b. Fork/Suspension
    c. Brakes
    d. Wheels
2. Tools and Spare Parts
    a. Legal Considerations of Performing Repairs
    b. Review NBP Tools and Spare Parts recommendations
3. E-Bikes
    a. Review Class 1, Class 2, Class 3 and Unclassified

b. Review Local E-bike policies

M3 – Outdoor Emergency Transportation – Trail

1. Describe the difference between Ambulatory and Non-Ambulatory Patients
2. Identify Resources available in your patrol environment
3. Demonstrate Proper Patient Lifting Techniques
    a. Human Crutch
    b. Chair Carry
    c. Bean Bridge Lift
    d. Underarm Wrist Drag
    e. Shoulder Drag
    f. Log Roll
    g. Extremity Lift
    h. Two Person Lift & Carry
4. Navigation
    a. Map Reading
    b. Orientation
    c. Local Patrol environment
5. Review Extrication Options that are available

M4 - Scene Size-up

1. Review 3 Different areas and their management approaches
2. Define MOI/NOI
    a. MOI – Mechanism of Injury
    b. NOI – Nature of Illness
3. Review the five steps of scene size-up
    - Ensure the Scene is Safe
    - Determine Mechanism of Injury
    - Take Standard Precautions
    - Determine the Number of patients
    - Consider Additional Resources
4. Review Additional Resources
    a. Personnel
        i. Additional Patrollers
        ii. Other Area/Resort Employees
        iii. Fire/EMS
        iv. Law Enforcement
    b. Equipment
        i. Medical Supplies

ii. Extrication Tools
iii. Transportation

M5 – Adaptive Cycling

1. Describe common types of cycling diverse abilities
2. Summarize six different types of Adaptive cycling equipment
3. Review Autonomic Dysreflexia

Bike 1 ILS Skills Sheets

BIKE 1: MODULE 1 Bike Safety Checks

ILS Module 1 Bike Safety Checks: This module session is intended to review and answer students' questions about the ABCDE Quick Check which at the end of this session, they shall accurately demonstrate on their bicycles. Next, the student shall be able to accurately demonstrate and evaluate each student's ability to perform a proper helmet fitting according to the NHTSA guidelines. Lastly, the instructor can review and answer questions about cycling personal protective equipment relevant to their patrol environment.

The ABCDE Quick Check and Helmet Fitting are mandatory skills needed to pass this ILS Module.

ILS Module 1 Objectives

- Student will demonstrate the ABCDE Quick Check
- Student will perform a proper helmet fitting
- List several different types of cycling protective equipment

ABCDE Quick Check

A = Air

- Tires correct pressure and no damage
- Shocks pressure correct

B = Brakes

- Bike won't move if brakes engaged
- Rim or rotor contact points accurate
- Brake lever doesn't touch handlebar
- Brake cables move freely and no leakage of hydraulic brake fluid

- Headset has no play

C = Cassette / Chain / Crankset

- Cassette skipping or shifting improperly?
- Chain lubed and clean
- Crankset - Pedals spin freely
- Crankset has no play

D = Derailleur / Dropper Post / Drop Test

- Derailleur is clean with no debris
- Dropper post moves saddle freely
- Dropped bike has no clunks

E = Emergency / Extra Supplies

- Emergency Supplies

    - Tubes
    - patch kit
    - tubeless tire repair kit
    - pump (or CO2 cartridge)
    - tire levers
    - multi tool
    - quick link
- Extra Supplies
    - Water
    - energy bars

Quick Releases

- Open and close securely
- Axle nuts/thru-axle tight

Check Ride

- Twist stem, seat, handlebars, brake and shift levers
- Gears and brakes function correctly
- Seat, handlebars, levers are positioned correctly
- Any abnormal noises?

Proper Helmet fitting https://www.nhtsa.gov/sites/nhtsa.gov/files/8019_fitting-a-helmet.pdf

1. Size: Place on your head, level and adjust the sizing pads or fit ring until the helmet is snug.
2. Position: The helmet should sit level on your head and low on your forehead; one or two fingers-widths above the eyebrow.
3. Side straps (if equipped): Adjust the slider on both straps to form a "V" shape under, and slightly in front of the ears. Lock the sliders in place.
4. Buckles: Center ~~of~~ the left buckle under the chin. On most helmets, the straps can be pulled from the back of the helmet to lengthen or shorten the chin straps.
5. Chin Strap: Buckle the chin strap. Tighten the strap until it is snug, so that no more than one or two fingers fit under the strap.
6. Final Fitting:
    - Does it fit right? - Open your mouth wide, the helmet should pull down on your head. If not refer to step 5 to retighten.
    - Does the helmet rock back or forward more than 2 fingers above the eyebrows? - If yes, unbuckle and adjust the strap.
    -

PPE = personal protective equipment

- Helmet for road, urban/commuter, MTB, DH/BMX, youth
- Glasses/goggles for debris, wind, and sun protection, improved visibility
- Gloves for road, urban/commuter, MTB, winter
- Shoes for road, urban/commuter, MTB, winter
- Pedals are clip, clipless, flat
- Clothing for style and protection
- Pads for elbows, knees, shins, back, hips

Bike 1: M2 Bicycling Equipment

ILS Module 2 Bicycle Equipment: This module session is intended to review and answer students' questions about bicycling equipment and help them become more familiar with their bicycles. Next, the student should be able to list some recommended tools and spare parts and why they are recommended. Lastly, the instructor will review and answer questions about the three classes and unclassified E-bikes and review local E-bike policies and protocols.
The 4 Bike part categories, Tools and Spare parts, and finally, E-Bikes are mandatory skills needed to pass this ILS Module.

ILS Module 2 Objectives

- Identify standard parts of bikes which is generic to all types of bikes
- List recommended tools and spare parts
- Understand the classes of E bikes

List the 4 main components of all bikes:

- Frame
- Fork and Suspension
- Brakes
- Wheels

Discuss and understand each of these component areas

- Frame: Two major component parts of the frame
  - The front and rear triangles
    - Be able to discuss the frame parts that make up each triangle
- Handlebar: Grips, shifters, brake levers, accessories
- Drivetrain: Crankset, chain, derailleur
- Fork/Front suspension: front fork, stem
- Brakes: Discuss the two types, advantages and disadvantages of each
  - Rim or caliper brakes
  - Disc brakes
- Wheels: Hub, spokes, rim
- Tires: Discuss:
  - Different tread patterns -uses
  - Tube vs tubeless
  - Two types of valve stems

Legal Considerations and Spare Tools and Parts

- The legal considerations of performing repairs, local polices affecting you.

- The knowledge of how to repair and tools needed for each of the following:
    - Flat tire
        - tire levers, pump, spare tube, patch kit
    - Broken chain
        - chain break tool, spare link, master link
    - Replace a chain
        - Chain tool, spare link/chain, master link
    - Derailleur adjustment
        - screwdriver, hex wrench
    - Spoke / wheel repair
        - spoke wrench (various sizes)

E-Bikes

- Class 1. Pedal assist, max speed 18mph
- Class 2. Pedal Assist and throttle, max speed 18 mph
- Class 3. Pedal assist, max speed 28 mph
- Unclassified -

Bike 1: M3 Outdoor Emergency Transportation – Trail

ILS Module 3 Outdoor Emergency Transportation - Trail: This module session is intended to review and answer students' questions about the OEC Skills review of Ambulatory and Non-Ambulatory patients, and proper patient lifting techniques which at the end of this session, they shall accurately demonstrate each of the lifts. Next, the student should be exposed, familiarized to and review local patrol policies with any local patrol extrication and transportation options. Lastly, the instructor can review and answer questions about other extrication options and equipment that may not be currently available to their patrol environment.
The following are mandatory skills needed to pass this ILS Module:

- Ambulatory Classifications
- Transportation Resources
- Proper Lifting Techniques
- Navigation

ILS Module 3 Objectives

- Describe the difference between Ambulatory and Non-Ambulatory Patients
- Identify Resources available in your patrol environment
- Demonstrate Proper Patient Lifting Techniques
- Review Navigation
- Review other Extrication Options that are available

OEC Skills Review

- Describe the difference between Ambulatory and Non-Ambulatory Patients
    - Identify an Ambulatory Patient
    - Identify a Non- Ambulatory Patient
- Identify Special Considerations for Patient Movement
- List Possible Recourses Needed
    - Resort / Park Staff
    - Governmental Staffing
        - Fire & Rescue
        - EMS
        - Park Rangers
- Demonstrate Proper Patient Lifting Techniques
    - Human Crutch
    - Chair Carry
    - Bean Bridge Lift
    - Underarm Wrist Drag
    - Shoulder Drag
    - Log Roll
    - Extremity Lift

- Two Person Lift & Carry

One Wheeled Litter (If available)

- Describe the Parts of the One Wheeled Litter
  - Toboggan / Litter
  - Handles
  - Detachable Wheel
  - Brakes
- Inspect The One Wheeled Litter
  - Inspect the Toboggan / Litter
    - Inspect the Litter / Toboggan for damage or wear to the frame and is free of cracks or defects that would cause the litter to fail.
    - Ensure that all connection points are free of defects.
    - That all connection points are secured and assembled correctly.
    - Check the Tire Pressure and condition of the Tire.
    - Check the Condition of the brakes if equipped and that they are in good working order.
    - Confirm that all straps are present and in good usable condition.
- Describe terrain that may require more advanced equipment or systems to extricate patients.
  - Describe or demonstrate a Belay System
  - Describe or demonstrate a mechanical advantage system.
- Loading and Unloading the One Wheeled Litter
  - List factors that affect loading and unloading.
    - Patients size
    - Patient's injuries
    - Environmental Issues
  - Demonstrate Loading a patient from the standing position.
  - Demonstrate loading the patient from lying down.
- Demonstrate loading a patient in a One Wheeled Litter using;
  - Backboard
  - Scoop stretchers
  - Or any other lifting device used in your area.
- Demonstrate traveling with the One Wheeled Litter
  - Litter kept perpendicular to the gravity, not the slope.
  - Good Communications.
  - Rescuers warn others of hazards.
  - Stabilize the litter and let the wheel carry the weight.
  - Be aware of braking, either by belay or brakes.
  - Never rely solely on those stabilizing to provide braking.

        - Know your access points, roads, slopes etc. specific to your area.
- Demonstrate how many it safely takes to use a One Wheeled Litter.
- Navigation
    - Demonstrate;
        - Map reading
            - Reading Analog maps & landmarks
            - Reading and using digital maps
        - Orientation
            - North, south, east, west.
        - Know your trails / park

Other Extrication Options

- List other extrication options in your area or resort.
    - Examples
        - Skeds
        - Improvised litters
        - ATV / UTV's
        - Other vehicles
        - Patients bike
- List and demonstrate any advanced techniques used in your area / park
    - Rope Rescue Rigging
    - Flotation Devises
    - Extrication Devises i.e. Ked or another device
    - Vegetation removal
    - Specialized equipment
- Litters and Stretchers without wheels
    - Military style stretchers and litters
        - Demonstrate the use of the types of litter used in your area / park.
            - This may include using 4 to 6 bearers on stable ground and 8 to 12 if the stretcher is passed up through the team.

- Helicopters
    - Discuss your local protocols as to how helicopters are used in your region, resort, park.

Bike 1: Module 4 Scene Size-up

ILS Module 4 Scene Size-up: This module session is intended to review and answer students' questions about the 3 different types of area management types and how their patrol facilitates their safety operations. Then, the student should be able to explain the difference between MOI and NOI. Next, the student should be able to list the six steps to a scene size-up and the reasons why they are important. Lastly, the instructor will review and answer questions about additional resources available including personnel and equipment.
The following are mandatory skills needed to pass this ILS Module.

- Describe the 3 different types of Area Management
- Define MOI/NOI
- List or demonstrate the steps of a Scene Size-up

ILS Module 4 Objectives

- Define 3 different areas and their management approaches
- Summarize the process and consideration for scene size up in off-snow contexts

Discussion about types of patrols

Some advantages and disadvantages of resort/park-based operations

Advantages	Disadvantages
Radio protocols	Limited hours for riding
Access to Extrication equipment	Less riding for patrol
Medical center/aid room	Need highly experienced riders
Training in transporting to base	Need OEC qualified as primary (OFC for secondary)
Specific hours of opening	Patrol must be present to operate
Immediate access to land manager	May have limited cell coverage
Visibility to multiple trail users	

Some advantages and disadvantages of bike patrols that work on public lands

Advantages	Disadvantages
Cell phones for communication	Delayed access to land manager
Open trail access	Lack of radio support
Typically, free trail access	Multiple users and potential trail conflicts
Year-round availability for multiple trail users	Delay in transport to next level of care
	Extrication may be by a 3rd party

	No medical center/aid room
	May have limited cell coverage

Some advantages and disadvantages of patrols that work in multi-land manager systems

Advantages	Disadvantages
Cell phones for communication	Multiple land managers who have differing expectations and signage
Open trail access	Lack of radio support
Typically, free trail access	Multiple users and potential trail conflicts
Year-round availability for multiple trail users	Delay in transport to next level of care
Multiple riding locations	Extrication may be by a 3rd party
Visibility to multiple trail users	Ensuring coverage for events
	No medical center/aid room
	May have limited cell coverage

Scene size-up

1. Ensure the scene is safe
    - Ensure the scene is safe for the injured and others
    - Manage hazards within area management's guidelines
    - Move injured and bike off trail when appropriate
    - Bystanders/witnesses can be used to help flag/warn riders coming down the trail
2. Determine MOI/NOI
    - Mechanism of Injury
    - Nature of Illness
3. Take Standard Precautions
    - BSI
4. Determine Number of Patients
    - Refer to OEC 6th Edition, Chapter 7 Patient Assessment and Chapter 4 Incident Command and Triage
5. Consider Additional Resources
    a. Personnel
        - Additional Patrollers
        - Other Area/Resort Employees
        - EMS
        - Law Enforcement
        - SAR Resources
    b. Equipment
        - Medical Supplies
        - Extrication Tools

- Transportation

Example Safety scenario

Injury: Broken clavicle
Location: Below a drop, not visible from above, side of racecourse
Number injured: 1
Scene: Cross-country Race
You are patrolling a cross-country race.

- Scene-size up: Identify number of injured (1) and where they are on the course along with equipment (bike) and rescue equipment
- Scene safety: Make sure injured, rescuer, and all equipment is out of the way
- Contact land manager, race director, and patrol command. Report needs for extrication and whether the crash impacted the racecourse

Bike 1: Module 5 Adaptive Cycling

ILS Module 5 Adaptive Cycling: This module session is intended to provide an opportunity to engage with adaptive athletes. These interactions are optional. The module session is to review and answer students' questions about the five categories of Cycling Diverse abilities. Next, the instructor should discuss and help the student identify different types of adaptive cycling equipment. Lastly, the instructor will review and answer questions about Autonomic Dysreflexia.
The following are mandatory skills needed to pass this ILS Module.

- Describe five types of Cycling Diverse Abilities
- Summarize 6 types of adaptive cycling equipment
- Describe Autonomic Dysreflexia

ILS Module 5 Objectives

- Describe common types of cycling diverse abilities.
- Summarize different types of adaptive cycling equipment.
- Describe special considerations when engaging with adaptive athletes.

Describe common types of cycling diverse abilities

- Developmentally Disabled
- Cognitively Impaired
- Blind / Visually Impaired
- Deaf / Hard of Hearing
- Physical Disabilities

Summarize different types of adaptive cycling equipment

- Mountain Bike Tricycles/Quadricycles
- Wheelchair bicycles
- Tandems (two and three wheels)
- Comfort bicycles
- Recumbents
- E-bikes (Electric or Electronic bikes)

Review Autonomic Dysreflexia

Autonomic Dysreflexia is caused by the body's sympathetic nervous system's inability to properly sense and react to specific stimuli. It is a hypertensive (high blood pressure) crisis that can cause:

- severe sweating
- goosebumps
- flushed feeling

- feeling of impending doom
- increased Spasticity
- communication/cognition impairment.

Stimulus could be a broken bone -- or simply skin caught in a zipper.

Autonomic Dysreflexia is considered a life-threatening emergency.

*For more information, refer to OEC 6th Edition, Chapter 32, pages 742-743.

Bike 1: Bike Patrol Basics Student Skills Check Sheets

Bike 1 Module 1: Bike Safety Student Check Sheet

The student shall satisfactorily complete the following ABCDE Quick Check

National Bike Patrol ABCDE Quick Check

Student Name			
	Satisfactory	Needs Improvement	Comments
A = Air			
Check Tires			
Check Shocks			
B = Brakes			
Check brakes engagement and visualize brake pads			
Check levers, cables, and housing			
Check Headset			
C = Cassette/Chain/ Cranks			
Check the Cassette for wear/debris			
Check the Chain for wear and lubrication			
Check Crank for play			
D = Derailleur/ Dropper/ Drop			
Inspect derailleur			
Check Dropper post			
Drop test bike			
E = Emergency/Extra Supplies/Energy			
Confirm extra tubes, repair supplies, CO2 cartridge(s) and/or pump			
Confirm sufficient water/hydration drink for your ride			
Consider energy bars, etc.			
Quick-Releases			
Confirm Quick releases are closed, or Axle Nuts/Thru Axles are tight			
Confirm any other quick-releases are secured			
Check Ride			
Check gears and brakes			
Confirm seat, handlebars, and levers			

The student shall perform a Proper Helmet fitting on their helmet.

NHTSA Proper Helmet Fit pdf

Student Name			
	Satisfactory	Needs Improvement	Comments
Size			
Helmet is level and adjust sizing pads if needed			
Adjust fit ring until helmet is snug			
Position			
Helmet should sit level on your head and low on forehead			
One or two finger widths above the eyebrow			
Side Straps (if equipped)			
Adjust the slider on both straps to form a “V” shape under, and slightly in front of the ears			
Lock the sliders in place			
Buckles			
Center the left buckle under the chin			
Chin Strap			
Buckle the chin strap. Tighten the strap until it is snug, so that no more than one or two fingers fit under the strap.			
Final Fitting			
Buckle the chin strap. Tighten the strap until it is snug, so that no more than one or two fingers fit under the strap.			
Confirm that the helmet does not rock back or forth more than 2 fingers above the eyebrow			

Bike 1 Module 2: Bicycling Equipment Student Check Sheet

The student satisfactorily completes the following Identification of Bicycling Equipment and Considerations.

NBP Recommended Tools and Parts List

Student Name			
	Satisfactory	Needs Improvement	Comments
Bike Part Categories			
Frame			
Fork/Suspension			
Brakes			
Wheels			
Tools and Spare Parts			
Review Legal Consideration of Performing Repairs			
Review NBP Tools and Spare parts lists			
E-Bikes			
Describe Class 1, Class 2, Class 3 and Unclassified E-bikes			
Review Local E-Bike Policies			

Bike 1 Module 3: Outdoor Emergency Transportation – Trail Student Check Sheet

The student satisfactorily completes the following OET-T skills and knowledge.

Student Name			
	Satisfactory	Needs Improvement	Comments
Ambulatory Classification			
Describe the difference between Ambulatory and Non-Ambulatory			
Transportation Resources			
Identify Transportation Resources available in your local patrol environment			
Proper Patient Lifting Techniques			
Human Crutch			
Chair Carry			
Bean Bridge Lift			
Underarm Wrist Drag			
Shoulder Drag			
Extremity Lift			
Two Person Lift & Carry			
Log Roll (OFC assist only)			
Navigation			
Demonstrate Basic Map Reading			
Demonstrate Orientation			
Review Local Patrol Environment Navigation resources			
Other Extrication Options			
Review Other Extrication Options			

Bike 1 Module 4: Scene Size-up Student Check Sheet

The student satisfactorily completes the following Scene Size-up Considerations.

Student Name			
	Satisfactory	Needs Improvement	Comments
Area Management Types			
Resort Based			
Public Land			
Multi-Land manager-			
MOI/NOI			
Define Mechanism of Injury			
Define Nature of Illness			
5-Steps of Scene Size-up			
Ensure Scene is safe for injured and others			
Determine Mechanism of Injury			
Take Standard Precautions			
Determine the Number of Patients			
Consider Additional Resources			

Bike 1 Module 5 Adaptive Cycling Student Check Sheet

The student satisfactorily completes the following Adaptive Cycling Considerations.

Student Name			
	Satisfactory	Needs Improvement	Comments
List Types of Cycling Diverse Abilities			
Developmentally Disabled			
Cognitively Impaired			
Blind / Visually Impaired			
Deaf / Hard of hearing			
Physical Disabilities			
Describe Different types of adaptive cycling equipment			
Mountain Bike Tricycles/Quadricycles			
Wheelchair bicycles			
Tandems (two seats) (two or three wheels)			
Comfort bicycles			
Recumbents			
E- Bikes			
Autonomic Dysreflexia			
Describe Autonomic Dysreflexia			
Identify that autonomic Dysreflexia can be a life-threatening emergency			