CIS, (Climbing Innovations System) a compilation of climbing techniques using the HitchHikerXF to make tree climbing with a rope safe and versatile.

Foundational Concepts

- **Warnings and Cautions.**
- The ends of our climbing lines are the most versatile yet most of the time are left lying on the ground.
- Simple is safe and versatility adds function.
- Tree climbing is a different discipline then rock climbing or industrial access. Examples of climber being belayed and SPRAT hang.
- Climbing system to match the environment. (Note the tree climbing competition setting)
- Trees lack a rated anchor point and are not engineered for our use. In fact, a tree is the weakest where a climber requires the greatest strength.

The HitchHikerXF, simply safe and versatile.

- Read over the manual. https://climbinginnovations.com/wp-content/uploads/2022/04/HHxf-manual-WITH-Cord.pdf
- Simple.
- No sensitive linkages or components.
- Is the HHxf 'Rated'? The ‘rating’ is in the hitch
- Lacks installation errors...upside-down, backwards, missed capture, etc.
- Slic Pin vs carabiner, easy to see, # of actions to disconnection failure (9). Example of a snap or sticking carabiner.
- Captive eye vs non captive eye with swivel or ring vs other connection types. Rope bridge is a preferred connection. Advantages vs disadvantages.
- Hitch based system. As trustworthy as the Blakes Hitch.
- No eye.
- Adjustments for wear on the hitch cord.
- Low exposure (big top).
- Slack vs. Taut climbing line in SRT vs Doubled Moving Rope. (Some devices are much more susceptible to issues but because the swing arm is self-orienting performance and engagement are enhanced.

2.2.19 Infractions of the work-positioning/fall-protection rule will result in lost points or disqualification at the discretion of the judges. Infractions include failure to manage slack (not having so much slack in the climbing line that the loop of slack hangs below the competitor’s knee), or brief instances of being open to a fall or climbing above the tie-in point. Flagrant disregard for this rule will result in disqualification.

ANSI Z133

3.9.7 Failure to maintain a taut climbing system or climbing above the tie-in point.

TCIA Climbing Competition Rule Book.

- What is the “climbing system”? Anchored and tensioned rope, multicender, rope bridge or connection to the harness and the harness connected to the climber.
- Difference between taut system and slack system, both SRT and moving doubled rope. Self-tending vs non-self-tending examples of rope walking ascent and limb walking.
- Side spring without a vertical mechanical spring.
- User adjustable tension for engagement, tending and a climbers weight.
- Hitches. How to tie, type of hitch material and size, use, smooth rotation for ultimate control. Modified Catalan, Innovation Hitch or Distel tucks, # of wraps, how to adjust, length of tail, Dog Bone orientation vs. Hitch Climber Pulley, what about ‘stretch’?
- Some adjustment may be necessary and easily accomplished.
- Rope flattening has little effect.
- Swing arm or no swing arm.
- Not the typical flop seen with rope walking or SRT movements.
- Primary and secondary uses.
- Multiple configurations.
- SRT.
- Doubled moving rope.
- Seamless switching. Demonstrate SRT ascent to Doubled Moving Rope descent.
- Dragging tail.
- Controlled Speedline.
- Highline or vertical line already under tension.
- 3:1
- 5:1
- On Bight redirect using a Quickie.

Setting it up

- Slic Pin vs. Carabiner (Climbers have their own priorities and familiarities)
- Friction hitches, wraps, Catalan and with added Distel tucks, tension (the spring). Other friction hitches and the Dog Bone form factor. (HH hitch, VT, Swabish, Distel, Knut, Michoacan, so many more.
- Proper hitch material and size. Aramid fibers vs Polyester and Nylon.
- Connection to the Dog Bone, Double Overhand knot, Stevedore knot.
- The adjustable bridge and adjustable tending device, taut system during rope walk ascent and limb walking.
- Using the secondary as a lanyard in cinched configuration for rope walking a questioned anchor.
- Getting on rope and the sequence to prevent errors.
- Where to attach a knee ascender. Short explanation on rope walking, foot goes to knee and knee goes to the HHxf, keep everything below the HHxf. Straight up and down, no balance, floating SAKA uses all the leg muscles.

Setting the first support point

Basically 3 scenarios

- In my opinion the ends of our climbing lines are the most functional and versatile yet most people place their anchors and support/suspension points in the middle and leave the ends on the ground. This can lead to initial high points in the weakest parts of the canopy because of the difficulty in advancing them.
- Define support/suspension point vs anchor and anchor termination, (The location on a climbing line where load tension terminates. A climbing line has two ends and a midline. The 'functional' end of the climbing line is where the anchor is and the tension from the load terminates.)
- Scenario 1

  The support/suspension point and anchor height are less than half the length of your climbing line. In other words, your rope has gone up-and-over and come back down and you still have rope laying on the ground next to you.
- Scenario 2.

  The support/suspension point and anchor height are equal to half the length of your climbing line. In other words, one end of your line has gone up and come back down and now you just have both ends touching the ground.
- Scenario 3.

  The support/suspension point and anchor height are greater than half the length of your climbing line. In other words, one end of your climbing line has gone up and started coming back down but does not reach the ground when the opposite end Is about to leave the ground.

Options when sending up your anchor.

- Anchor choices, AP Butterfly, Running APB, other knots, screw link, Quickie, Carabiner, others.
- Just send up the anchor and it won't be retrievable from the ground. Your ability to manipulate it is also hindered. May be appropriate for arial rescue.
- Send up the anchor with the retrieval line tied in a monkey fist or in a small bag.
- Depending on the height, attach the tail to the anchor with a life support connection.
- Consider attaching your secondary system and sending it up.
- Consider using your secondary system on ascent or lanyard cinched for sketchy support/suspension points.

Additional notes or thoughts when setting support/suspension points.

- “But a base anchor gives me backups and I don't have to isolate".
- It also potentially doubles the load at your support/suspension point, makes your anchor vulnerable to ground contact, and the back side of your climbing system vulnerable to damage.
- Recognizes as well that your fall to the backup will be twice the distance.
- Because the support/suspension point is more difficult to advance or to move there is a temptation to set it higher, in a weaker part of the tree, without good visibility for inspection.
- Crown or canopy anchors need not be isolated from the ground and are easily advanced or moved or isolated once in a tree.
- Load and force considerations should be appropriate for the structure used.

Testing the support/suspension

- Slip knot to slip knot, two person sustained load or tied-off lanyard with single load.
- In tree testing? Close inspection, real time feel, secondary while maintain primary.
- Placement near the stem and at the branch union if possible. NO COMPROMISE.

Moving or advancing the anchor or support/suspension point and moving thru the canopy.

- Running Alpine Butterfly.
  No hardware.
  Retrieval with caution.
  Vertical or horizontal.
- Quickie, properly used. Use of a tight eye vs a large loop Alpine Butterfly.
  Better Retrieval.
- Redirects that are not retrievable from the ground.
- Life support vs. non-life support.
- Maintaining the life support/suspension point while setting up a re-direct.
- End of line configuration when clearing the Quickie while retrieving the climbing line. Vertical or horizontal.
- Ring and Ring.
  Similarities to a base anchor.
  Above or below support/suspension.
  Vertical or horizontal.
- OnBight redirect.
  Cinched with Quickie. (Important limb failure considerations)
  Retrieval.
  3:1 consideration.
- Using the tail for a second system, secondary support/suspension or anchor.
  Clean-up as you go approach to moving in the tree.
  Terminated ends (both) to climbing line.
  Similarities to 2 lines.
  Verses unused tail of climbing line that does not get used.
  The dragging loop argument.

Primary and secondary support/suspensions when warranted.

Using and choosing techniques.

- Shared load vs multiplied load. If between suspension points it is likely a shared force. If outside or on the end of suspension point(s) it is likely force multiplier.

Aerial Rescue Considerations

- •Two-person load.

  Adding friction. Plug vs figure 8 or Munter. (hands free/hands required)

  •Consider a separate kit with primary and secondary pre-installed.

  •When adding load give consideration to the support/suspension point and base or cinched anchors.
- How to use the secondary system for a victims rescue line and configurations for Mechanical Advantage. How much weight can be lifted?

  Lifting with the arms or lifting with the legs.