

Orienteering Canada

Technical Skills Progression

Active Start to Train to Train 2

March 2016 Draft



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Comments on this Document

This document is part of Orienteering Canada's ongoing Athlete Development Matrix project.

The technical skills progression contained in the following pages is the first part of what will become a much larger document - the Athlete Development Matrix (ADM) itself. The goal for the final document is to include skills progressions for all 9 LTAD stages for the four major skill domains: technical/tactical, physical, mental / psychological, and life skills. Eventually this will include late entry athletes (those who start orienteering as teenagers or adults). The final ADM will contain additional information about how to put the skills progressions into a more practical context for the following user groups: instructors (those who are teaching skills particularly to younger orienteers), coaches (those who are guiding and training athletes in a seasonal or multi-seasonal development approach), athletes, parents, and teachers less familiar with orienteering as an organized sport.

This technical skills progression currently covers only the first five stages of the LTAD (Active Start through Train to Train 2). It serves as a starting point for disseminating this information to the orienteering community. It is a draft that will be revised over time as we develop our ADM and as such we would greatly appreciate any feedback about the content on the following pages and in the chart (separate document). Please address comments to juniordevelopment@orienteering.ca.

Within each stage, the skills have been broken down to identify all of the elements that need to be taught to young or new orienteers. If you use this to teach orienteering and find that any skills aren't broken down enough, or are confusingly broken down or explained please make a note of that and let us know.

Within each stage, the skills are listed in the order we feel they are best taught. This doesn't mean that that is the order you need to teach them in; experience may tell us we have the order wrong. Consider this order a guide and teach the skills in the order that you feel makes the most sense for your program. With that in mind we have broken up some skills that, at first glance, would make more sense taught back to back. That has been done because it was felt that athletes would be better served learning other skills in between, to give the first skill time to gel before moving on to the next part of that skill. Skills 9-11 and 14 in Train to Train 2 is a good example of this.

Throughout the document skills are annotated with coloured phrases such as **Terrain and Feature Understanding** and **Compass**. These phrases represent sets of skills that lead directly from one to another. Skills within a set do not necessarily need to be taught back to back (and in many cases should not be) but earlier skills in a set build a direct foundation for later skills in the set. There are many skills in the progression that belong to multiple sets. These have been marked with different coloured phrases.

Note that these phrases are also the sets in the Technical Skills Development Chart which shows the skills grouped using these phrases as each set develops through the LTAD Stages. This document can be viewed at Orienteering.ca/resources/long-term-athlete-development/. It is worth noting that skills are sometimes included in sets that, at first glance, don't make sense. For example, figuring out what

direction to travel by orienting the map to the terrain (FUNdamentals skill 11) is included as a compass skill. It is important to remember that these sets are intended to show the direct chain of progression and not just what set any individual skill might fall into.

One final note to instructors and coaches: the terminology in this document is standard 'orienteeing lingo' and is not necessarily the best language to explain concepts to young athletes. It is best to use clear language that they will understand (e.g. checkpoint instead of control) to explain different concepts at different ages.

Kate and Jeff

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I Active Start (0-6)

At this stage children should be developing physical and cognitive skills across a wide variety of activities. Kids should be encouraged to play outdoors in an unstructured environment. Programs at this stage do not need to be sport specific. However, we do encourage programs that get kids into the natural environment and using various forms of maps. Any programs in the Active Start stage should be teaching through games as much as possible.

Technical Skills

1. Develop familiarity with trails and prominent features (boulders, lone trees, bridges, etc) (Terrain and Feature Understanding)
2. Develop familiarity with map (Map Reading and Interpretation) (Fundamental Orienteering Knowledge / Race Prep & Execution)
 - a. Get kids used to holding maps (Map Holding, Folding, and Orienting) (Fundamental Orienteering Knowledge / Race Prep & Execution)
3. Learn what we are looking for ie) controls (Finding Controls/Control Flow) (Fundamental Orienteering Knowledge / Race Prep & Execution)
4. Develop familiarity with equipment ie) punching system (Finding Controls/Control Flow) (Fundamental Orienteering Knowledge / Race Prep & Execution)

II FUNdamentals (7-9)

This is a critical stage for the development of physical literacy. It is during this time that the foundations of many advanced skills are laid down.

Children need to participate in a variety of well-structured activities that develop basic skills. Activities and programs need to maintain a focus on fun, and formal competition should only be introduced minimally.

Skill development for children this age is best achieved by combining unstructured play in a safe and challenging environment, with quality instruction from knowledgeable teachers/leaders/coaches, in community recreation activities, schools, and minor sports programs. This is generally a good age for kids to enrol in fun orienteering programs.

From a technical skills perspective, children at this stage should be getting used to reading maps to find controls in parks and easy forest environments. Map and navigation activities should be simple and fun. Children do not need to be using compasses or looking at control descriptions.

Technical Skills

1. What do all orienteering maps have? ex) map name, north lines, course, scale, legend, pointing north, etc (Map Reading and Interpretation) (Fundamental Orienteering Knowledge / Race Prep & Execution)
2. Know how the Start, Finish, and Controls are marked on the map (Map Reading and Interpretation) (Fundamental Orienteering Knowledge / Race Prep & Execution)
3. Hold map in one hand always out in front of you (between you and the direction you are going) (Map Holding, Folding, and Orienting)
4. Learn what basic map colours mean (green is vegetation, yellow is fields, etc.) (Map Reading and Interpretation)
5. Learn basic terrain features and be able to identify them ex) boulder, knoll, etc. (Terrain and Feature Understanding)
6. Learn what basic map symbols mean (boulder is black dot etc.) (Map Reading and Interpretation)
7. Identify basic features in the terrain and then locate them on the map (Terrain and Feature Understanding) (Map Reading and Interpretation)
 - a. Features such as fences, paths, trails, lone trees, playground, water features, shelters, bridges, etc
8. Practice running along linear features e.g. trail or stream (Linear Features)
9. Orient the map north using major linear features (without calling them linear features) (Map Holding, Folding, and Orienting)
10. Orient the map using multiple point features (triangulate your position on the map) (Map Holding, Folding, and Orienting)
11. Figure out what direction to travel (Map Holding, Folding, and Orienting) (Compass)

- a. Orient map (relative to yourself not the terrain) with the direct of travel facing out from your bellybutton.
 - b. Rotate yourself as a unit with your map¹ until the map is oriented using a major linear feature or several point features. The direction you are facing is the direction you want to go.
12. Understand that controls are always beside a feature in the terrain ([Finding Controls/Control Flow](#))
13. Verify that you're at the right control by matching the map control code to the punch code ([Finding Controls/Control Flow](#)) ([Fundamental Orienteering Knowledge / Race Prep & Execution](#))
14. After you punch a control orient the map and figure out which direction to go and identify which trail (if applicable) to take to the next control. ([Route choice](#)) ([Continuous Map Reading and Route Planning](#))

¹ It is critical that orienteers move with the map straight out in front of themselves while orientating at this stage and DO NOT turn their wrists to make things line up! One solid unit.

III Learn to Train (10-12)

This is one of the most important periods of motor development for children, and represents a window of accelerated adaptation to motor co-ordination (skills).

In late specialization sports such as orienteering, too early specialization can be detrimental to later stages of skill development and to refinement of fundamental sport skills.

At this stage, children are developmentally ready to acquire the general sports skills that are the cornerstones of all athletic development.

An orienteering program for kids in this stage should continue to focus on outdoor fun as well as fundamental orienteering and running skills. However, the program can be more structured than one designed for kids in the FUNdamentals stage.

From a technical skills perspective, kids in the Learn to Train stage should still be focused on map reading. They should start to think critically about what they are seeing on the map and how that translates to what they see around them and what they might see coming up. They do not yet need to be using a compass or reading control descriptions.

Technical Skills

1. Identify features on the map and then locate them in the terrain (**Terrain and Feature Understanding**) (**Map Reading and Interpretation**)
2. Know what a distinct linear feature is (**Linear Features**)
3. Identify (in terrain) features as linear and distinct. (**Linear Features**) (**Terrain and Feature Understanding**)
4. Identify (on map) features as linear and distinct. (**Linear Features**) (**Map Reading and Interpretation**)
5. Identify linear (distinct) features as handrails, catching features, or collecting features (**Linear Features**)
6. Hold map oriented to you: (Map Holding, Folding, and Orienting) (**Compass**)
 - a. Identify the handrail (on the map) you are going to follow
 - b. Line that handrail sticking straight out from your tummy
7. Fold map parallel to direction of travel: (Map Holding, Folding, and Orienting) (**Compass**)
 - a. Fold your map so this direction has the fold running parallel to it (approx. 1-2 inches)
 - b. Orient yourself and the map (the line/handrail should still be sticking straight out from your tummy) to the terrain
8. Understand that the control flag will be at a feature in the middle of the control circle (**Finding Controls/Control Flow**)
9. Identify the feature (on the map) in the middle of the control circle (the control feature) (**Finding Controls/Control Flow**) (**Map Reading and Interpretation**)

10. Look for the control feature in the terrain as you approach it (i.e. don't just look for the flag) (**Finding Controls/Control Flow**) (**Terrain and Feature Understanding**)
11. Place your thumb along the handrail (direction) you are going to travel (Map Holding, Folding, and Orienting)
 - a. Re-fold map at every change in direction / transition to new handrail and orient yourself so you're point in the right direction
12. Create route using multiple linear features (**Route Choice**) (**Continuous Map Reading and Route Planning**)
 - a. Identify a series of handrails that lead from one control to the next
 - b. *Think ahead, "What will I see next?" (be aware of handrail changes along your route)*
 - c. Know what to do when you get to a new (distinct) linear feature (orient your map, confirm your location, begin next phase of route along new handrail)
 - d. Look ahead for what you expected to see and match it with what you do see.
13. Choosing from multiple routes: How will I get from one control to the next? (**Route Choice**)
 - a. Identify multiple different series of handrails that lead from one control to the next
 - b. Identify which series of handrails is shorter
 - c. Act on route choice
14. Vegetation: (**Map Reading and Interpretation**)
 - a. Understand that the darker green an area is on the map the thicker the vegetation / forest is in the terrain
 - b. Identify in the terrain the different between distinct and indistinct vegetation boundaries
15. Mentally check off / be aware of features along the handrail you're following. (**Look Wide, Run Straight**)
16. Recover from following the wrong trail / feature (**Relocation**)
 - a. Stop (Admit you are lost right away!)
 - b. Figure out where you were last (the earlier you stop the easier this is)
 - c. Retrace your steps - go back to a junction, trail, or the last control

Coaching Tip:

- Explain for each map the juniors are on what feature(s) they should be looking for to bail out to / follow to safety. E.g. Watershed run downhill.

IV Train to Train 1 (13-14)

During Training to Train 1, young athletes consolidate their basic sport-specific skills and tactics. This is a window of accelerated adaptation to aerobic, speed, and strength training.

Optimal aerobic trainability begins with the onset of PHV (peak height velocity), which is the major growth spurt during maturation (see LTAD Guide's Glossary of Terms).

During competitions, athletes strive to win and to do their best, but the major focus of training is on learning the basics as opposed to competing.

Because athletes commonly start orienteering as late as this stage, it is important to remember that athletes should have mastered the skills from earlier stages before they attempt to learn the more advanced skills listed in the Train to Train 1 stage. The skills in this stage rely heavily on the foundation laid earlier. They build on the concepts of handrails, collecting, and catching features, as well as foundational map reading skills including keeping the map consistently oriented. Athletes start exploring contours in this stage and begin using attackpoints to simplify and run with more confidence.

At this stage athletes should learn how to use a compass to orient the map and to take a bearing. Athletes should also be introduced to international control descriptions.

Technical Skills

1. Identify on the map less distinct / less obvious features as linear (vegetation boundaries / edges of fields, ridges, re-entrants, etc.) ([Linear Features](#)) ([Map Reading and Interpretation](#))
2. Recognize in the terrain less distinct / less obvious features as linear (vegetation boundaries / edges of fields, ridges, re-entrants, etc.) ([Linear Features](#)) ([Terrain and Feature Understanding](#))
3. Identify a leg as a simple route choice leg or not ([Route Choice](#))
4. Choose a route on a simple route choice leg ([Route Choice](#))
 - a. Identify the different route choice options
 - b. Pick which of the different route choices are the best **for you**²
5. Keep thumb near where you are to keep in contact with the map (maintains your position on the map from where you started to where you have progressed to) (Map Holding, Folding, and Orienting)
6. Navigate from one distinct linear feature to the next cutting through the terrain³ ([Simplification](#))
 - a. Know where you are when leaving the linear feature.
 - b. Orient the map and leave the linear feature in the right direction.

² This means choosing a route that suits your skills (physical and technical strengths and weaknesses) and current stage of development in order to achieve the greatest success in execution.

³ Navigating "off-trail". This skill sets young orienteers up to understand how to use a compass with a bearing to navigate across longer distances of off trail terrain.

- c. Know roughly what you are going to be running through (white, light green, etc. will anything push you around)
 - d. Know what linear feature you are going to hit next and which direction you are going to turn once you get there.
7. Execute a small course using consistent route decision making as detailed above ([Route Choice](#)) (Tactical)
8. **Choose your own Adventure** - Teach either first depending on your terrain and athletes

Compass Work (Compass)	Contour Work (Map Reading and Interpretation)
<ul style="list-style-type: none"> a. Hold compass flat b. Give needle time to settle c. Travel due North / WSE using compass (Hone understanding of travelling the cardinal and intercardinal directions by playing a map-less compass game with athletes) d. Orient the map using compass needle (clue: N side of Map will have the writing / numbers oriented so you can read them) e. Point yourself in the direction you want to travel using compass to orient your map f. Look up and pick a feature in the distance along the direction you want to travel g. Travel along a bearing on a map and check needle direction periodically 	<ul style="list-style-type: none"> a. Understand and identify in the terrain the following basic and common contour shapes and features: <ul style="list-style-type: none"> i. Continuous slope ii. Hill iii. Knoll iv. Depression v. Reentrant vi. Spur vii. Saddle b. Understand how the above basic and common contour shapes and features are represented on the map.

- 9. Look for distinct features to the left and right of your handrail and then locate them on your map. (This tells you how far along the handrail you are. ([Look Wide, Run Straight](#)))
- 10. Understand what an attackpoint is and what makes a good attackpoint (Something big, something you can't miss - e.g. obvious trail junction) ([Simplification](#))
- 11. Understand how to use an attackpoint (look for your attackpoint and then start looking for your control) ([Simplification](#))
- 12. Understand the concept of control descriptions: They tell you what the control code is and describe the control feature ([Finding Controls/Control Flow](#))

13. Start learning common international control description symbols (will vary depending on what is common in the local terrain) ([Finding Controls/Control Flow](#))⁴
14. Choose a route using the following steps (CAR - Control, Attackpoint, Route): ([Route Choice](#)) ([Simplification](#))
 - a. Identify the Control feature
 - b. Identify possible Attackpoints (ideally located just outside the control circle)
 - c. Identify multiple routes to one or more of the Attackpoints
 - d. Pick which of the different Route choices are the best **for you**
15. At every control, have a plan for getting to the next controls, and commit to it (don't change your route part way through)⁵ ([Route Choice](#)) ([Continuous Map Reading and Route Planning](#))
16. Understand where you can plan ahead (and run faster) versus where you need to focus on executing your plan for you current leg / location. ([Simplification](#)) ([Tactical](#))
17. Bailing to a major feature: ([Relocation](#))
 - a. Stop (Admit you are lost right away!)
 - b. Figure out where you were last (the earlier you stop the easier this is)
 - c. Figure out roughly on the map where you might be (using your last known location and major features around you).
 - d. Pick a major feature in the terrain or on the map (big lake, road, etc.) and go to it.
 - e. Once you are at a major feature figure out where on that feature you are (using smaller features around you or the shape of the big feature)
 - f. Decide whether to regroup and continue the leg from this location or whether you should quit the course. (Consider difficulty executing previous legs, time spent on course already, and time spent relocating).

Coaching Tip: (Teach when logical at your own discretion)

- Tuck extra map (when holding a large map) away between two finger of hand (Map Holding, Folding, and Orienting)

⁴ Keep control descriptions simple: single point features or junctions (no sides of features, etc.)

⁵ The concept that a poorer route well executed and completed right away may be faster than dithering over which route to take and not executing it well. Also when you change your route part way through you are less likely to be thorough in your planning and are more likely to make mistakes.

V Train to Train 2 (15-16)

In Train to Train 2 athletes continue to build aerobic base, speed, strength, and orienteering skills. The development in this stage is a gradual continuation from the Train to Train 1 stage with athletes learning more and more training techniques and building more structure into their training program.

Technically, athletes should be training regularly in complex terrain and the focus should be on executing processes, techniques, and skills with focus and precision. Athletes at this stage are still learning to better read and interpret complex orienteering maps and terrain and while athletes are learning to simplify emphasis should still be on full map reading and interpreting and visualizing the map.

This is the stage where athletes are consolidating the skills that form the basis for more advanced orienteering technique. If these skills aren't consistently mastered athletes may have trouble simplifying and visualizing effectively when competing at higher levels later on.

Technical Skills

1. Identify the high points, low points, and large slopes, on the map using contours. (Map Reading and Interpretation) (Simplification)
2. Begin to distinguish up-slopes from down in mapped landforms (Map Reading and Interpretation) (Simplification)
3. Identify the high points, low points, (tops of hills and bottom of depressions) and large slopes in the terrain. (Terrain and Feature Understanding) (Simplification)
4. Spot simple individual contour features in the terrain and identify them on the map while orienteering. (Map Reading and Interpretation)
5. Understand that form lines represent features that exist between two contour lines and are not necessarily smaller than features represented by a contour line. (Map Reading and Interpretation)
6. Understand how individual contour features fit into the broader topography of the area mapped. See the landscape as a whole before zooming in. (Map Reading and Interpretation) (Simplification) (Terrain and Feature Understanding)
7. Know what the contour interval is and how that will affect your orienteering (Route choice, visibility of features, steepness of terrain) (Map Reading and Interpretation) (Fundamental Orienteering Knowledge / Race Prep & Execution)
8. Understand the effect (will it slow me down or be more direct) that individual contour features (one or more contour or form lines) and up or down slopes will have on your run or route choice, e.g. running over a hill or around. (Map Reading and Interpretation) (**advanced**)
9. Use rough compass technique to maintain direction through the forest towards obvious catching features / handrails less than 300 meters distance (Compass) (Simplification)
10. Understand the concept of aiming off (Compass) (Simplification)

11. Aim off about 20 degrees to one side of your next attackpoint when taking a compass bearing to a catching feature (i.e. don't aim straight for a trail junction).⁶ (Compass) (Simplification)
12. Learn symbols that affect terrain runnability (colour code and special markings) (being pushed around by vegetation). (Map Reading and Interpretation) (Route Choice)
 - a. Green slash
 - b. Stony ground
 - c. Boulder fields
 - d. Broken ground?
 - e. Sand?
 - f. Rough open
13. Learn less common international control descriptions as demanded by terrain. (Finding Controls/Control Flow)
14. Use precision compass to travel accurately from attackpoints to controls (Compass) (Precision Orienteering?)
15. **Choose your own Adventure** - Teach either first depending on your terrain and athletes

Relocation	Control Flow
<ol style="list-style-type: none"> 1. Relocate in the terrain: (Relocation) <ol style="list-style-type: none"> a. Stop (Admit you are lost right away!) b. Figure out where you were last (the earlier you stop the easier this is) c. Figure out roughly on the map where you might be. d. Find 2-4 distinct features in the terrain (a hill with a boulder on the side, 2 distinct boulders below a cliff, etc.). e. Find these features on the map looking in the area you determined you might be. Expand this area if you can't find it right away. f. If this still doesn't work move 	<ol style="list-style-type: none"> 1. Learn symbols in other columns of control descriptions such as 'which of multiple' and 'side of feature' symbols (Finding Controls/Control Flow) 2. Use the information from the control descriptions to decide which is the best direction to approach the control (e.g. control on top or at foot of cliff) (Finding Controls/Control Flow) (Route Choice) 3. Steps into and out of the control: (Finding Controls/Control Flow) <ol style="list-style-type: none"> a. Know what the control feature(s) is and where relative to the feature the flag will be. b. Orienteer to your

⁶ Athletes should aim off to the side (L or R) that will allow them to reach the feature they are aiming off towards sooner and minimize total distance. (E.g. a trail wherein one side of it is closer to your starting location than the other).

<p>to 2-4 other distinct features and repeat step 6 with these new features.</p> <p>g. Try steps 5-7 2 or 3 times. If this doesn't work bail to a major feature you can 100% relocate from.</p> <p>h. Once you relocate, if you are off course from your plan, stop and make a completely new plan to the next control. Otherwise re-iterate your plan to yourself and continue.</p>	<p>attackpoint.</p> <p>c. Precise compass bearing from attackpoint to control.</p> <p>d. Punch the control.</p> <p>e. Stop and plan your next leg (or remind yourself of plan if you've already come up with one) and figure out what direction you are leaving the control.</p> <p>f. Pick a feature or spot in the terrain and run towards it.</p> <p>g. Continue with plan for next leg.</p> <p>4. Think about the Exit from the control and how that will affect your route choice: Introduce "E" (Exit) moving C.A.R. to C.A.R.E. (control, attackpoint, route, exit from control) to accurately execute the transition from finding a control to the start of a new leg to the next control (Route Choice) (Finding Controls/Control Flow)</p>
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16. Look for reliable attackpoints between steps in your plan (whenever a change in techniques / skills / direction is required). ([Simplification](#)) ([Continuous Map Reading and Route Planning](#))
17. Understand when to look at the map more frequently (in more intricate terrain or thicker / slower terrain, and when getting close to Attackpoints, Controls, or Collecting features). ([Map Reading and Interpretation](#)) ([Tactical](#))
18. Understand when to plan ahead: Use long runs on handrails to look ahead at the legs coming up and start route planning. ([Map Reading and Interpretation](#)) ([Tactical](#)) ([Continuous Map Reading and Route Planning](#))
19. Move at a speed that allows you to stay in contact with the map. ([Simplification](#)) ([Tactical](#))