

Theory and Practice of Building and Using a Balance & Agility Course

Terms

Balance

Controlling how you stand on a ski, whilst it moves (often on an uneven surface) and you move your body to add propulsion.

Remember the vast majority of time in cross-country skiing is spent on one ski (double poling being the main exception).

Agility

Changing your body's direction of travel and speed in a controlled manner, often quickly.

Agility builds on balance but also involves being dynamic, pre-empting changes and adapting to unexpected external factors.

What is Purpose of Agility Session?

Learn to Walk Before You Run

Getting people to move on skis with the ease they do on foot.

When teaching skiing we are effectively teaching people how to walk/run again – they have learnt over years how to move about on foot. Skis slide and grip ground in a different way to feet/shoes and skier's perception and body reaction needs to adapt.

Often, we focus on the technique, effectively trying to teach people who can't walk how to run. People need to understand how to balance and move on skis to be able to adjust to a corrector form.

Pre-Emption

Transitioning skiers from thinking about how they move on skis and exact precise technique movement and timing to focusing on the task of going somewhere, adapting to changing terrain, changing snow conditions, being around other skiers and avoiding or negotiating obstructions.

Tarmac is Smoother Than Snow

Building/ maintaining the body pre-perception required on snow compared to the smoother, more predictable tarmac.

Real World Uses of Agility

- Skiing over uneven snow or tarmac surface.
- Smoother ski technique (it is transitioning from one ski to the other whilst moving after all!)
- Cornering. Learn to corner at different sharpness of corner at different speeds.

- Changing speed, both external imposed e.g gradient change, snow/tarmac speed change and intentional e.g overtaking.
- Avoiding obstacles e.g fir cones (or used drink gel packs!) in track or other skiers.
- Accuracy of positioning, ability to ski to points on track or ski in formation with other skiers.
- Looking ahead to where you are going e.g avoid or prepare for problematic conditions rather than be surprised.

Static Balance

See 'On Balance' on MCCSC website:

(https://www.mccsc.org.uk/newsletter/articles/201508_balance_drills.pdf)

Dynamic Balance

Why

Need to be able to jump on ski to:

- Correct falling outwards (when trying to land on flat ski rather than inside edge)
- Transfer weight between skis rapidly (agility)

Preparation

- Tighten boots

Drills

On rollers/ski, using poles to hold weight (reduce reliance on them as improve):

- Move up and down on one ski.
- Roll forward and backwards on one ski
- Hop front wheel of one ski side to side (keeping back wheel down) [over mark/leaf on track].
- Hop on spot.
- Hop in any direction (using poles). When good, don't pause between hops.
- Switch from one foot to other foot landing ski on same spot (i.e move feet under a 'stationary' upper body).

Follow along with Scott Dixon

6 Balance Drills (4K) Rollerskiing

<https://www.youtube.com/watch?v=qvBIZd73KRw>

Moving On Rollers (Or Skis)

- On downhill glides, balance on alternate rollers/ skis.

Agility Course Setup and Use

Safety - Plan For Failure!

- Provide run-off.
- Consider ability of your skiers.
- Space cones so people can ski through them if required.
- Consider using chalk marks instead of cones.
- Be careful of running people in opposite directions at the same time, particularly on hills. People will be looking at their feet, not around themselves!
- Remind people to tighten boots.

Practical Considerations

- Ski your course and adjust as required.
- Takes time to set-up a full course. If using several times use easy measurements like fence posts spacing, pole length (e.g for circle diameters) and walking stride length.
- Takes time for a large group to go through a full agility course. Consider using one or two elements as part of a technique lesson more frequently than using a full agility course.
- Mark with direction arrows/wording as required, but it also good to have someone walk/run with skier telling them next element.
- Can also put also put on hills (e.g 180 turn). Not too steep, slaloms/ turns downhill need to be well within skier's ability (focus is on skier learning from course, not just skiing back up hill have overshot a turn!).
- Let people have several goes allowing them to learn from their previous attempts.

Use Poles or Not?

Poles are to:

- Provide thrust.
- Allow manoeuvring at *very* slow speeds.

With Poles

Generally, carry poles (when out skiing we have poles, even if we are not using them). Let or advise skiers to learn when to use poles and when not. For example:

- Poles make you go faster, not always good if trying to turn/change direction.
- Poles require you to stand up to use, is it better to stay low and rely just on legs?

Whilst poles are good for balance/manoeuvring at low speed (3 points of contact), encourage skiers not to use them for balance/braking at higher speeds.

Without Poles

- Focuses on strong leg action but needs certain level of ability and confidence not to need poles for balance.
- If doing upper body drills, for example bean bag 'bottle pickup' and bean bag catch or throw-back, lack of poles simplifies action and stops people tripping over their poles when distracted by drill.

Rachet Rollers or Not?

Most agility on snow uses edge of ski e.g lane changing, avoiding obstacles at speed and cornering downhill and at speed.

Skiers who only ski on rachet rollers and have little snow experience should be encouraged to do agility courses on rachetless rollers so they learn how to use edge of ski and do not get into habit of using ratchet to turn. Even with an introduction to the basics of cornering, accept these skiers to double pole rather than skate between elements.

Skiers who can skate on rachet rollers without relying on ratchets can use either ratchet or rachetless rollers but should be aware of the tendency for classic rachet rollers to lie flat rather than be edged.

If there are any backward elements avoid rachet rollers or make skiers aware of need to step rather than glide backwards (perhaps also put these elements on grass).

On snow either skate or classic skis can be used. However, depending on group ability, it is suggested you introduce agility aspects on skate skis then explore differences when on classic skis. This is because agility should involve single skis being fully weighted and classic skis can grip unpredictably in these situations based on factors such as ski tilt angle, ski grip type, snow conditions and ski speed.

Focus Agility Exercise

The agility exercise is to improve skier's agility and understanding of how they achieve that.

Usually, it's not a competition. Remember you need some failure to improve ability. The only competition should be personal. Can a skier ski the course better each time, and if they did not, what will they change for next time?

Suggested changes:

- Can skier ski tighter corners?
- Can skier turn in fewer steps?
- Can skier turn in more steps?
- Does using or not using poles improve things or not?
- See how other skiers tackle elements. What can you learn from them?

Elements

See 'MCCSC: Balance & Agility Summary' MCCSC website

(https://www.mccsc.org.uk/newsletter/articles/2024_mccsc_balance_and_agility_summary.pdf).

Agility Course Setup - Group Exercise

Set-Up

- Three groups, each consisting of instructors of mixed experience (nominally 5 in each group).
- Nominally 20 cones per group, some chalk and relevant support items e.g football
- Put together agility course using elements (in any order) defined for your group (see below).
- Nominally 15 minutes to setup course.
- Don't worry about floor arrows – just have someone talk through course.

Once courses set up:

- Everyone views each course in turn.
- Member of each creation group demo course.
- Groups discuss elements.
- Ideally, groups ski each other's courses not achieved on day of course due to track time).

Group 1 Elements

- Slalom (8-10 cones)
- Backward ski
- 180° arc/turn
- Move ball

Group 2 Elements

- Slalom (8-10 cones)
- Circle (360°)
- Terrain change
- Turn to a point/ through 'gate'

Group 3 Elements

- Slalom (8-10 cones)
- 180° arc/turn
- Sideways step
- One leg ski

Group Exercise Assessment Talking Points

Slalom

- Zig-zag slalom. Focuses on changing direction.
- Straight line of cones. Focuses on keeping upper body facing along line whilst feet move around cones. Can be good on a downhill.
- Zig-zag of two cone gates, can either ski through gates or around gates (i.e more zig-zagged than through gates). Options, ski on one ski through each gate.
- Split slalom into two sections and put one or two other elements between them.

Other Thoughts

- Try changing cone spacing through slalom (to change speed of turning needed).
- Tightly spaced line slalom for classic skiers to 'run' through so get used to fast/accurate weight transfer.
- Curved slalom or just angled across track. Get skiers used to not moving straight down track (getting used to seeing track not move in peripheral vision in way they expect).

180° Arc / Circle (360°)

- 180° and greater turns focus on sustaining turn. Are skiers actively 'generating' the turn or just relying on entry speed to get around a small turn (slalom). If the latter, they will tend to stall in these more sustained turns.
- 180° arc can be used at middle of 'out and back' to turn skiers back to start.
- Single cone allows skier to take any line around turn. Think about use of full track width, when to start turn.
- Arc/circle of cones defines minimum radius of turn. Can focus maintaining that minimum radius e.g maintaining speed whilst keeping skis near cones throughout whole turn. Can also use similarly to single cone to look at cornering lines.

Moving Ball

- Can either carry between two points or 'corral' between skis between points
- Need someone to reset ball between points, unless your set-up allows alternate skiers move it back to start point (e.g if ball was moved sideways rather than down course).

Turn to a Point/ Through 'gate'

- Consider using a cone to force skier to ski a tighter corner to the 'gate' rather than just a straight line/ gentle arc from last element.

Sideways Step

- Consider sidestep in both directions rather than leaving it up to skier to pick direction e.g side step one way to marker/cone then side step back.
- For more advanced skiers consider sideways hopping with poles (see Dynamic Balance above).

Other Thoughts

- Set out course as straight line or 'out and back' to start? Straight line you can have more than one skier on course, if similar speeds. 'Out and back' more compact on cycle track and allows some elements to be used in both directions. If have car park area, cycle track with cut-throughs or stadium on snow consider a loop ('donut') back to start i.e can have multiple skiers on course and they still end back at the start.
- If ground firm enough, consider using grass for more than just terrain transition e.g try the ball move or a short running slalom.
- Consider getting students to create agility course to help engagement/ involvement in the exercise.