



DEVELOPMENT FIELD TESTING MANUAL

INTRODUCTION



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Cross country skiing has a high demand for strength endurance and quality movement

- athletes need to ski technically well, maintaining strong stable positions.

The need to assess the areas outlined in these field tests are to can gain better insights into movement quality gaps and opportunities. With a movement quality focus, athletes will gain more 'structural tolerance' (physical training capacity) so they can stay healthy as the training demands increase in their skiing careers.

Nordiq Canada's Development Field testing protocols are a simple series of tests that can be quickly performed almost anywhere. Because the tests don't fatigue the athlete, they can be built into a training plan and performed at regular intervals throughout the training season.



PURPOSE

1. Provides simple targets for improvement. Simple exercises and measures make it easy for athletes to set goals for improvement. All athletes want to get better. Having targets and seeing improvement offers huge motivation.
2. Provides a national database for comparison. Canada is big, so it's hard for athletes to know how they measure up against athletes who may be 5,000 km away. This simple program is a powerful tool to build the ski community.
3. The provided tracking sheet and online Power BI platform allows coaches and athletes the opportunity to track development and for Nordiq Canada to see system gaps that can drive coach development, camp programming and skills development programs.

DEFINITIONS

Testing Protocols: Quick overview of why we chose these tests and how they relate to skiing.

Seated MB Toss: The purpose of this test is to measure upper body strength and power. In cross country skiing, a significant proportion of skiing speed/power is generated from the upper body.

Broad Jump: The purpose of this test is to measure lower body explosive power. The farther an athlete can jump, the more likely they are able to generate lower body power during skiing.

Pull-Up (Prone Grip): The purpose of this test is to measure upper body strength and endurance. This exercise tests the strength capacities of the muscles used in the poling motions during skiing.

Side Plank w/ Leg ABD: This test measures the endurance of the core muscles and gluteus medius. Core and glute strength works to keep the athlete stable and allows for the transfer of power from the upper body to ski technique.

Copenhagens: This test measures the endurance of the core muscles, hip adductors and gluteus medius. Adductor strength is important in cross country skiing for both hip/core stability and injury prevention during skiing and running.

30m Sprint: The purpose of this test is to measure acceleration and speed. High speed abilities are important for cross country skiing in both speed of movement and ability to generate high forces rapidly.

Nordiq Canada Functional Testing Instructions

- Exercises are to be performed in the following order with 2 minutes rest between each exercise (except 30m running sprint may be performed separately).
- In addition to exercise-specific equipment, please ensure you have a means of recording the results in the provided tracking sheet.
- Athletes should be adequately warmed up prior to completing the tests.

Videos for each exercise can be found here.

[videos](#)

Provided tracking sheet can be found here

[Tracking sheet](#)

PULLUPS

Video: Neutral Grip

Video: Neutral Grip Poor Rep Example

Video: Prone Grip

Video: Prone Grip Poor Rep Example

Equipment

- Pullup bar with adequate grip
- Box or chair to reach the bar
- Stopwatch

Protocol

- Pullups are performed at a self-chosen pace with hands placed approximately shoulder width apart in a prone grip (palms facing forward).
- Athlete can use a chair or box to get into the starting position, but the test must begin from a freely hanging position with arms extended.
- Arms must be fully extended in the bottom phase (ears below the elbows)
- The athlete must be able to pull themselves up until the chin is just above the level of the pullup bar without using any hip motion (body must remain vertical). The chin must appear over the top of the bar in the top phase.
- The arms must return to full extension without hyperextension
- 1 pullup consists of the arms fully extended in the bottom phase and when the chin clears the bar in the top phase. 1 chin up is completed when the subject returns to the start position.
- The pullups are performed continuously (maintain hanging position) and until failure (inability to keep proper technique).
- Reps only count from a dead hang to when the chin goes over the bar.
- Athlete is not allowed to swing or flex through the hips, keep the body straight.
- Record the maximum number of pullups performed.
- Rest for 2 minutes and repeat.

SIDE PLANK W/ TOP LEG ABDUCTION

Video

Equipment

- Flat surface with sufficient padding for elbow
- Stopwatch

Protocol

- Athlete is positioned on elbow and forearm-elbow directly under the shoulder, plank from bottom leg with top leg abducted away from body, free arm can be in any position, straight line from shoulder to heel.
- Hold the position for maximum time.
- Athlete is allowed warnings/readjustments. Once they can no longer maintain appropriate form after warnings or volitional fatigue occurs, the test is ended.
- Rest for 2 minutes and repeat on the other side.

MEDICINE BALL THROW

Video

Equipment

- 4kg (~8lbs) medicine ball
- Tape measure
- Tape (to secure measuring tape)
- Dowel or metre stick (to assist with measurement)

Protocol

- The athlete sits on the floor with legs fully extended, back against the wall and feet ~60cm apart.
- The hands are placed on the side the medicine ball slightly behind the center with the forearms are positioned parallel to the ground.
- Using both hands, the athlete throws the medicine ball vigorously as far straight forward as possible.
- The athlete must keep their back and head against the wall at all times (even on the release and follow-through).

- The distance from the wall to where the ball lands is recorded.
- Use a dowel or metre stick to provide a straight edge to the tape measure for accuracy.
- The best result of 3 throws is used as the final score.

COPENHAGEN

Video

Video Knee pain Accomodation

Equipment

- 40cm bench
- Flat surface with sufficient padding for elbow
- Stopwatch

Protocol

- Athlete is positioned on elbow and forearm-elbow directly under shoulder, support top leg on bench with the foot/ankle at the edge of the bench, free arm can be in any position, straight line from shoulder to heel, bottom leg must remain straight and not touch the ground (bench should have ample space underneath to allow bottom leg positioning).
- Hold position for maximum time.
- Athlete is allowed warnings/readjustments. Once they can no longer maintain appropriate form after warnings, or volitional fatigue occurs, the test is ended.
- Rest 2 minutes and repeat on the other side.

BROAD JUMP

Video

Equipment

- Asphalt or track surface
- Tape measure
- Tape
- Dowel or metre stick

Protocol

- The athlete stands with toes behind the 0m line marked on the ground with feet apart. Using the arms to assist, a two-foot take-off is used, bending of the knees to provide forward drive. The athlete attempts to jump as far as possible, landing on both feet. The distance is measured from the starting line (front of toes) to the heel of the rear foot in cm (e.g. 212cm).
- The athlete must start with toes behind the line and can add 1 counter movement to the jump.
- The athlete must stick the landing and hold the position until the tester indicates they can move – do not step forward or place a hand down.
- The jump does not count if:
 - Athletes step forward/backward with any foot once they have landed the jump
 - Athletes skid their feet
 - Athletes put their hands on the ground
- Anything other than a two foot take off and 'stuck' two-foot landing occur.
- 3 attempts are allowed with all jump distances recorded. Note the furthest trial.
- Use a dowel or metre stick to provide a straight edge to the tape measure for accuracy.

30M RUNNING SPRINT

Equipment

- Asphalt or track surfaced straightaway
- 30m tape measure
- Tape or cones
- Additional timing equipment (if available)

Protocol

- The test is a time maximal running sprint over 30m beginning from a standstill.
- Commands and specific instructions will vary depending on the timing method utilized.
- Each athlete is allowed two attempts with ~2min rest in between.
- The best result of the 2 attempts will be recorded.