Canadian National Para-Swimming Physical Testing Protocol

Last adapted April 2019

SNC Physical Testing Protocol

Equipment

Body Mass Scale
Track or floor space (~8meters+)
Measuring Tape
Vertec (if available)
Squat Rack & Barbell, Hexbar, Leg Press
Pull-up Bar, Lat-Pull Down Machine
Grip Dynamometer

Testing Protocol S6-S14

1. 30-sec Balance Test (*Neurological Athletes)
2. Bilateral Grip Strength
3. Vertical Jump, Double leg Broad Jump, Single Leg Broad Jump
4. 3-5RM Pull Up / Lat Pulldown
5. 3-5RM Squat / Leg Press and 3-min Modified Sorensen Test

Testing Protocol S1-5

1. 30-sec Balance Test / Seated Forward Reach Test
2. Bilateral Grip Strength
3. Vertical Jump Height / Upper body Strength – Push or Pull
4. 3-min Modified Sorensen Test / 3-min Front Plank

Warm-Up

Basic Warm-up

5-10minutes on Bike or Jogging

Specific Warm-up

Dynamic (Strength/Mobility) exercises as needed (10-15min)
Light exercise specific repetitions for repetition maximum tests.

***Coach Assessment*:**

Evaluate *what tests are administrable for each athlete.*
Review ***Proper Technique*** *of each Exercise prior to executing*
If the athlete is new to movement requiring load- ***Technical Session only.***
If the athlete is unable to complete an exercise proficiently - ***No Test***

Body Mass

1. Recorded with shoes on (note otherwise, i.e. Brace, etc.).
2. Record the athletes mass to the nearest 0.1kg

30-second Single Leg Balance Test

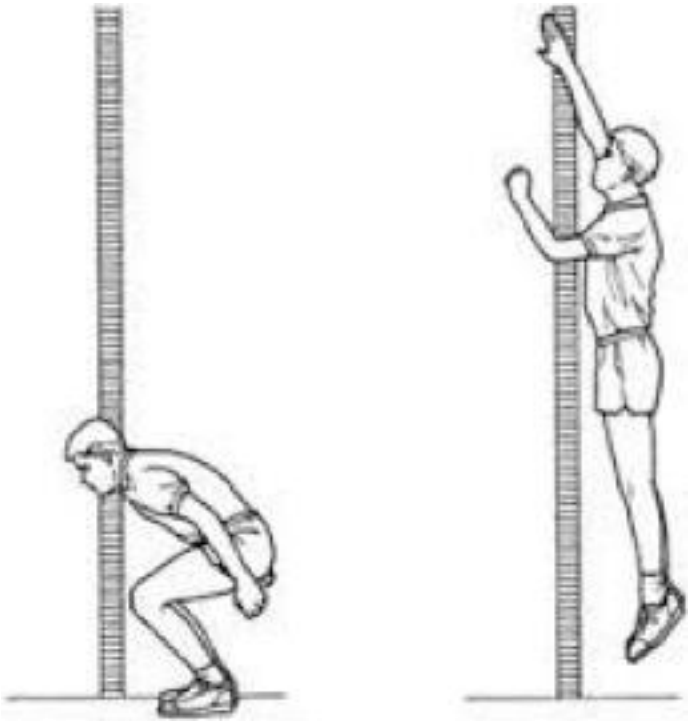
This test is used for individuals with an impairment that may affect their ability to balance or where suitable (neurological disorders).

1. Instruct the athlete to remove their shoes
2. Direct the athletes gaze to something not moving directly ahead on a far wall.
3. Arms are to be touching opposite shoulders or pinned to the body.
4. The test ends if the athlete's feet or arms change from their starting position, or the opposite leg moves outwards from the standing leg.
5. Athletes are allowed to practice on each foot once.
6. The tests will be performed in this order to a maximum of 30seconds.
    - Eyes Open - Left leg
    - Eyes Open - Right leg

Muscular Power Test #1

Vertical Jump (Countermovement with Arm Swing)

1. Measure Reaching Height. Have the athlete stand a safe distance (~6inches) with one side facing the wall (toes touching, heels planted) and instruct them to reach up with the near hand as high as possible. The athlete should be close enough to the wall that with a hand on the hip and elbow bent outwards, the elbow is touching the wall.
2. Record an Athletes "Reaching Height" to the nearest 0.5cm
3. Mark the tip of the athlete's middle finger with paint or washable marker.
4. Instruct the athlete to bend at the knees and swing the arms back to propel the body upwards, stretching to reach as high as possible and mark the wall with the marked finger. No steps may be taken before the jump
5. Record the Athletes "Jumping Height" to the nearest 0.5cm.
6. Each Athlete gets 3 attempts with minimum 15 seconds between repetitions.
7. Jump height is measured as the distance between the reaching height and the top of the maximal jump height mark.



Muscular Power Test #2

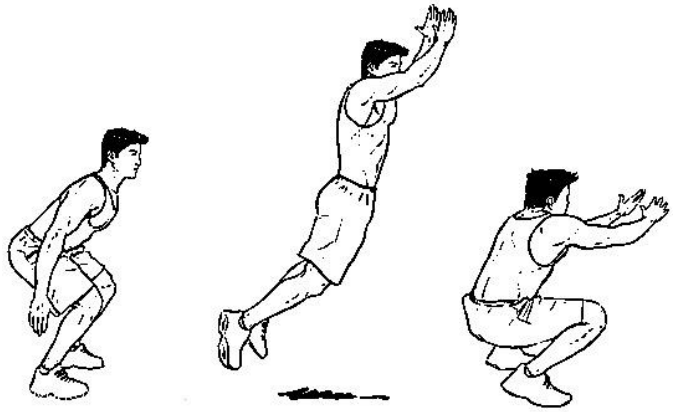
Double Leg Broad Jump

1. Affix a 10m measuring tape along a straight line, with the zero point marked as the start line
2. Have the athlete start from a standing position with feet shoulder width apart, and toes behind the marked line.
3. Instruct the athlete to bend at the knees and swing the arms back to propel the body forwards from a two-footed take-off position. No steps may be taken before the jump
4. Distance is marked by placing a ruler behind the rear of the foot perpendicular to the measuring tape.
5. Record the Athletes maximum "Jump Distance" to the nearest 0.5cm. Record the mark at the back of the heel closest to the take-off line.
6. Each Athlete gets 3 attempts with minimum 15 seconds between repetitions.

Single Leg Broad Jump

**Primarily to assess bilateral asymmetries*

1. Have athlete line their toes up to the marked line, and remove one foot from the ground.
2. Instruct the athlete to bend at the knee and swing the arms back to propel the body forwards. No steps may be taken before the jump.
3. Have the athlete land on two feet to stabilize the landing (if possible)
4. Record the Athletes "Jump Distance" to the nearest 0.5cm. Record the mark at the back of the heel of the testing foot.
5. Each Athlete gets 3 attempts with minimum 15 seconds between repetitions.



LOWER Muscular Strength Test

Hexbar DeadSquat or Alternative Grip Bottoms Up Squat, 3-5RM

1. Instructions for proper squat technique will be provided to the athlete.
2. Athlete will stand in the centre of the HexBar, feet shoulder width apart and asked to flex at the hips, knees ankles and grasp the handles (use of wrist hooks or straps allowed)
3. The thighs should be parallel with the ground, chest up and out and heels in contact with the floor at the start of the push. Extend the hips and knees to lift the bar back to starting position
4. Each athlete will perform a warm up with a light weight that easily allows for 5-10 repetitions. After a short rest period (approximately 1 minute) two – four more sets can be completed with slightly heavier load. Once all warm up sets have been completed, weight will be increased based on an estimate of near maximal load.
5. If the athlete is able to successfully complete 5 reps, a rest period of 2-4 minutes will be provided. After rest, load will be increased and the athlete will attempt the test again.

The goal will be to achieve 3-5 RM within 3 trials.

When Safety is a concern, or grip / shoulder/ Hip instability exists:

Utilize Leg Press + Sorensen Back Endurance test (Sorensen)

Option#2 Leg Press - Dead Start

1. Instructions for proper Leg Press technique will be provided to the athlete:
   a) Rest head and hips against the seat rest, and ensure the flexed knee starting position is less than 90***°.***
   b) Instruct athlete to press the weight until the knee is at near extension (not hyperextended), and return the weight to just before the starting position (must reach 90*) without unloading the weight.

   ****Repetitions do not count if a 90° depth or full extension is not achieved. If this range of motion is unavailable, record on testing sheet.***

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Muscular Endurance Biering-Sorenson Back Endurance Test

1. Screen athlete for back pain in prone extended position
2. Have athlete lie prone with legs on a table with the trunk hanging at a right angle.
3. Iliac crest is positioned at the edge of the table, and thighs are secured to table.
4. The athlete raises their trunk to a horizontal position, crosses arms on the chest and maintains position to a maximum of 180seconds.

UPPER Muscular Strength Test #1

Grip Strength

**Primarily to assess bilateral asymmetries*
***Strongly correlated with overall body strength in healthy young adults -a change of more than 6kg is necessary to detect a genuine change.*
****In Stroke: Excellent test-retest reliability and adequate construct validity / correlation with upper limb function/performance.*
(R=0.84, Boissy et al. 1999) (ICC 0.80 to 0.89, Bertland et al. 2007) (Wind et al.2010)

1. Ensure the grip is aligned to the second metacarpal of the hand
2. Ask the athlete to hold the dynamometer towards the ground and slightly away from the body.
3. The athlete will then complete 3 maximal grip trials of 3 second or less grip contraction with 1minute rest between trials.
4. Record the average of the 3 Left and Right grip trials separately.

UPPER Muscular Strength Test #2

Pull-Up, 3-5RM

1. Instruct athlete to grasp the pull-up bar with a pronated grip at shoulder or just wider than shoulder width.
2. Must complete each rep from bottom position with arms nearly locked out to full extension and complete flexion with chin over the bar (or thumb).
3. Toes should point straight towards the floor (straight legs), where no momentum to get to the top is allowed (kicking)
4. If the athlete can complete 5 repetitions or more, they can utilize a weight belt to provide additional resistance.
5. The test finishes when the athlete can no longer complete a proper rep or lets go of the bar.
6. Record the body weight with additional load in KG, and repetitions completed.

When Safety is a concern, or grip / shoulder instability exists:

Option#2: Weighted 3-5RM Lat Pull down (single or double)

1. Instruct athlete to grasp the handle of the lat pull down with a pronated grip at shoulder or just wider than shoulder width.
2. Starting position is extended arms in a seated position
3. Instruct the athlete to retract the shoulder blades and pull the handle towards the collar bone. Supination of the hand is allowed.
4. The repetition counts with full flexion of the exercise, with the handle pulled past the chin.

SNC Physical Testing Protocol

Name: _____ Date: _____
Age: ____ Body Weight (Kg) _____

Muscular Endurance Tests

Single leg Balance (eyes closed/open, max time 30sec)
L-Open Time (sec) _____
R-Open Time (sec) _____

Strength Tests

Grip Strength (KG) Left #1 _____ Left #2_____ Left #3 _____
Right #1 _____ Right #2_____ Right #3 _____

Lower Muscular Power Tests

Vertical Jump (cm)
Standing Reach Height: _____ cm
Jump Height (cm) T#1_____ T#2_____ T#3 _____

Calculated VJ Height (Jump Height - Standing Reach)
T#1 _____ T#2_____ T#3 _____

Double Broad Jump (cm) T#1_____ T#2_____ T#3 _____
Left Broad Jump (cm) T#1_____ T#2_____ T#3 _____
Right Broad Jump (cm) T#1_____ T#2_____ T#3 _____

Strength Tests

3-5RM Pull-Up (BW+KG) Weight added Kg(reps) _____
OR Lat Pull Down Predicted 1RM _____
Relative Score _____

3-5RM Hexbar DeadSquat (KG) Weight Kg(rep) _____
OR Leg Press Predicted 1RM _____
Relative Score _____

Muscular Endurance Tests

180s Sorensen Back Extension hold time (/180seconds) _____

NOTES (include any adaptations made):

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