CKC off water testing protocols

Ver 3.0

As with any exercise testing attention to safety and good organization is paramount. Ensure the equipment is in good order and the ratio of athletes to coaches/supervisors is appropriate. As the athletes are being asked to perform maximally careful observation during and following each test is required. In some gym based testing spotters will be required. Also ensure all subjects/athletes fill in the necessary waivers and informed consents.

The explanation of the results from these tests appears in a separate document entitled “CKC Explanation of testing results”. An excel sheet with record sheet and calculation sheet is also available entitled “CKC Str and Power record sheet”.

This document explains how to perform the: 1500m Run; Bench pull power profile; Bench pull repeated power test; Maximum strength bench press/pull; 40” pull ups.

**Warm Up**

Any testing should be preceded by an appropriate dynamic warm up. This should be a minimum of 15-20 minutes and include an 8-10 minute cardiovascular component and 7-10 minute period of dynamic movements and stretching culminating in some more challenging and explosive types of movements. Some examples are provided in Appendix A.

**Recommended order**

Junior

AM – 3RM pull, 3RM press, Bench pull power, 40” pull ups

PM (or different day) – 1500m run

Senior and U23

AM – 3RM Bench Pull, 5 min break, 3RM Bench press, Bench pull power, 5 min break, pull repeated power

PM (or different day) – 1500m run, +3km run (for 1000m athletes, may be a different day also)

**1500m run (and 3km run for 1000m athletes)**

The run would be ideally performed on a track or in good weather conditions if performed outside. Care should be taken to ensure that the distance run is as close to 1500m as possible and recorded if not. Small groups should be selected in accordance with ability to encourage competitive efforts. Total time is recorded.

**Maximum Strength (low speed-strength)**

Predicted 1RM (1RM to 6RM)

The aim is to measure the maximum weight that can be lifted for 1-3 repetitions (1-3RM) or if the athlete is under 16 or unfamiliar (1 year or less) with resistance training a six repetition maximum. Following an appropriate dynamic warm up three sets of the exercise should be performed. The weight including bar weight is recorded along with the completed number of repetitions provided a repetition maximum was obtained. An incomplete repetition is judged to occur when the athlete is unable to perform through the full range of motion or is unable to use proper form.

Proper form:

An attempt should be made to perform these exercises with the best form possible. Individual flexibility difference may limit some range of motion but in the most part the following points should be adhered to.

Bench Press

1. Use a closed pronated grip slightly wider than shoulder width apart
2. Movement of the bar is to be vertical from arm extension (elbows not locked) to within 2cm of the chest at the nipple level. Bar should remain parallel to the floor.
3. Head, back and butt are to remain in contact with the bench, Feet are to remain in contact with the floor. A step may be used for the feet in order to keep the feet flat and keep a knee angle close to 90 deg.

Bench Pull

1. Use a closed pronated grip slightly wider than shoulder width apart
2. Movement is to be initiated from the upper back, once the bar is unracked, and a moment of pause is completed at full arm extension.
3. Motion of the bar is to be vertical from full arm extension with the bar remaining parallel to the floor
4. A completed repetition is when the bar comes in contact with the frame of the bench pull bench. The bench depth of the Samson high prone row bench is 12cm from the chest. This may or may not result in a sound so close attention should be paid in observing. If a Samson bench is not available tester discretion can occur on how close bar can come to frame to qualify as a completed repetition.
5. Legs should remain straight and together, no advantage is to be gained by “worming” or “fish-tailing” with the body prior to the lift.

Table 1 Repetition maximum warm up sets

|  |  |  |
| --- | --- | --- |
|  | 3RM | 6RM |
| 1st warm up set | 1 x 8 @ 12 RM | 1 x 10 with bar |
| 3-5 min break |  |  |
| 2nd warm up set | 1 x 5 @ 8 RM | 1 x 8 @ 12 RM |
| 5 min break |  |  |
| 3rd warm up set | 1 x 3 @ 5 RM | 1 x 6 @ 10 RM |
| 5 min break |  |  |
| 1st attempt |  |  |
| 5 min break |  |  |
| 2nd and final attempt |  |  |

Recommended equipment: Flat bench with rack, 20kg Men’s barbell (outside diameter of 28mm), and selection of weight plates allowing 5kg increments.

Allowable equipment: 15kg Women’s barbell (outside diameter of 25mm), for jr athletes with smaller hands who may struggle to grip a regular bar.

The Samson high prone row bench is recommended for the bench pull

<http://www.samsonequipment.com/Product-Detail.html?item_id=44&sku=100A>

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Figure 1 Bench pull equipment with tendo weightlifting analyser

**Maximal Power (high speed-strength)**

Bench pull power profile

This is an assessment of “raw” power in an easily controlled non-specific setting. The aim is acquire the peak power through a progressive increase in load challenges. Following an appropriate dynamic warm-up females will begin with 30 Kg’s (including the bar) and increase by 5 Kg’s until the peak power drops by 40 watts or greater. Males will begin at 50 Kg’s (including the bar) and increase by 10 Kg’s until the peak powers drops 40 watts or less. For younger athletes and athletes who are not yet strong you may wish to start at 20kg (just the bar). The beginning loads and increments can be adjusted based on your group and guidelines are suggested in table 2. The weight, including bar weight, is recorded as well as the peak power and peak velocity for each load.

Bench Pull Power Profile Technique

1. Use a closed pronated grip slightly wider than shoulder width apart
2. Movement is to be initiated from the upper back, once the bar is unracked and a moment of pause is completed at full arm extension.
3. Motion of the bar is to be vertical from full arm extension with the bar remaining parallel to the floor. The bar must travel upwards from the start. No dropping of the bar quickly to engage the SSC.
4. A completed repetition is when the bar comes within 1cm of contact with the frame of the bench pull bench. The bench depth of the Samson high prone row bench is 12cm from the chest. This may or may not result in a sound so close attention should be paid in observing.
5. Legs should remain straight and together, no advantage is to be gained by “worming” or “fish-tailing” with the body prior to the lift.
6. Neck should remain in a comfortable neutral position (avoid hyperextension). Forehead may stay in contact with the bench pad (if bench design allows).
7. The athlete must stop the movement of the bar in the position noted in point 3 after unracking to discouraging swinging.
8. Two attempts at each load are allowed. A small break and racking is allowed if needed. There is 5 minutes of rest between loads

Recommended equipment: Flat bench with rack, 20kg Men’s barbell, outside diameter of 28mm, and selection of weight plates allowing 5kg increments.

Allowable equipment: 15kg Women’s barbell outside diameter of 25mm, for jr athletes with smaller hands who may struggle to grip a regular bar.

The Samson high prone row bench is recommended for the bench pull

Table typical load progression for bench pull profile

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Jr female, (+SrDev female) | Female Sr | Jr Male | Male Sr |
| Load 1 | 20 kg | 30 kg | 30 kg | 50 kg |
| Load 2 | 25 kg | 35 kg | 40 kg | 60 kg |
| Load 3 | 30 kg | 40 kg | 50 kg | 70 kg |
| Load 4 | 35 kg | 45 kg | 60 kg | 80 kg |
| Load 5 | 40 kg | 50 kg | 70 kg | 90 kg |
| Load 6 | 45 kg | 55 kg | 80 kg | 100 kg |
|  |  |  |  |  |

Bench pull repeated power test

Sometimes referred to as “power endurance” this test is a measure of how well peak power can be maintained over repeated repetitions. Having a good ability to produce power over a few repetitions is indicative of accelerating the boat up to top speed. Being able to sustain a high percentage of peak power over a series of repetitions is indicative of sustaining the top speed of the boat. The load used is indicated below in figures 2 and 3. These loads have come from two years of data collection and are aligned with specific objectives for each group.

At present the MK 200m and MC 200m athletes perform 15 reps at 30reps per minute the objective is to produce the maximum peak power on every repetition (as judged by the sum of the peak power of each repetition, it is best not to pace). WK performs 30 reps at 30reps per minute with the objective of producing maximum power on each repetition. MC 1000m and MK 1000m perform 60 reps at 30reps per minute with the objective of producing the maximum amount of work over the 2 minutes, as judged by the sum of the average power for each rep (this may require some pacing). Appendix B includes an example log sheet; **of note is that for the 1000m groups both Peak and Average power for each rep is recorded**

Bench Pull Repeated Power Test Technique

1. Use a closed pronated grip slightly wider than shoulder width apart
2. Movement is to be initiated from the upper back, once the bar is unracked.
3. Motion of the bar is to be vertical from full arm extension with the bar remaining parallel to the floor. The bar must travel upwards from the start. No “pre-load mini rep” of the bar quickly to engage the SSC.
4. A completed repetition is when the bar comes in contact with the frame of the bench pull bench. The bench depth of the Samson high prone row bench is 12cm from the chest. This may or may not result in a sound so close attention should be paid in observing.
5. Legs should remain straight and together, no advantage is to be gained by “worming” or “fish-tailing” with the body prior to the lift.
6. The bar is to move as fast/explosively as possible. Some recoil of the upper-body may occur but should be judged as normal based on the load and force generated. No preloading is to occur.
7. A timer begins the clock upon the first movement of the bar after unracking the bar and then proceeds to call “go” every 2 seconds until the maximum repetitions have been completed or the athlete is unable to keep with the pace.
8. The 200m and WK athlete is encouraged to explode (move the bar as quickly as possible) from the first repetition and every repetition thereafter. The review includes how many repetitions were completed at 90% peak power and 80% peak power. It may be advantageous to remind the athlete of this to discourage pacing.
   1. The 1000m athlete is reminded that the objective for them is the most amount of work over the 2min, this may require some pacing.
9. The athlete must stop the movement of the bar in the position noted in point 3 after unracking to discouraging swinging.

Recommended equipment: Flat bench with rack, 20kg Men’s barbell , (outside diameter of 28mm), and selection of weight plates allowing 5kg increments.

Allowable equipment: 15kg Women’s barbell (outside diameter of 25mm), for jr athletes with smaller hands who may struggle to grip a regular bar.

The Samson high prone row bench is recommended for the bench pull



Figure Load and duration for the repeat power bench pull test. Note: Jr's are not required to do this test but where possible may do it.



Figure Load for repeated power pull for 1000m athletes. The practical load represents the load that should be used. For example if peak power occurs at 60kg from the profile test then 50kg should be used for the 2min repeat for that athlete.

**Strength endurance**

40” maximum pull ups (Junior only)

The maximum number of pull ups performed in 40 seconds, overhand grip, no swinging is allowed. Once the athlete touches the ground the test is finished.

**Appendix A – Warm up suggestions**



**Appendix B – Example recording sheet**