

## APPENDIX B – TRAINING STANDARDS

### Softball Canada Testing Protocols.docx

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Prepared by: Scott Willgress

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### Movement Assessment

- Cervical Spine
  - Flexion/Extension/Rotation
- Shoulder
  - Fist to fist
  - Supine IR / ER
  - Standing shoulder flexion / abduction
- Multi-segmental
  - Flexion / Extension /Rotational
- Single Leg Stance
- In line lunge
- Overhead Deep Squat
- Supine Straight Leg Raise (Active/Passive)
- Lumbar Lock Thoracic Spine (Active/Passive)
- Thomas Test
- Faber

Descriptions can be found in the Selective Functional Movement Assessment (SFMA) manual.

### Anthropometry

- Height
- Weight
- Armspan
- Lower Limb Length
  - Greater trochanter at standing toe off vs start of jump position
  - Information used in trap bar jump calculation

## Field Based Testing

This section would take place at a training facility (preferably indoor) wearing training shoes.

### 30m sprint (w/ 10m split)

*Description:*

- Athletes will be asked to run as fast as possible in a straight line for 30m
- Timing lights (Brower, or other) will be set up at the 0m (ankle height), 10m (hip height), and 30m (hip height) mark.
- A start line should be set up 30cm behind the 0m line.
- 1-2 75-85% warm up efforts should be given.
- Athletes should be given 2 attempts to achieve their best time

*Rationale:*

Speed and acceleration are important for many aspects of softball, including fielding and baserunning.

### 5-10-5 (Pro Agility) Agility

*Description:*

- A 10m course is set up with a start line in the middle, and two lines which are 5m to either side of the start line.
- A set of timing cells should be set up at mid-shin to ankle height at the start line
- The athlete begins on the start line, straddling the laser from the timing cells
- When they are ready, they move as quickly as they can to their right, touch the outside hand on or over the 5m line, turn and run the 10m back to the far line, use the other hand to touch on or over the line, and then return through the start line
- Only the final time should be recorded
- The next trial should be done to the other direction
- A total of 2 trials should be given in each direction
- Approximately 3-5 min rest should be given between trials.

*Rationale:*

The ability for whole body rapid change of direction is important in fielding and baserunning.

### Broad Jump

*Description:*

- A line should be taped (an existing line could be used) on the ground with a tape measure extending away from it in a perpendicular line
- Athlete should stand behind the line so that no part of their shoe is touching the line
- The instruction should be to try to just as far as possible, while being able to control the landing
- If the athlete cannot control their landing (the stumble, fall back, fall forward) the attempt should not count
- A maximum of 3 attempts should be given

*Rationale:*

Light load, horizontal power should be important for pitching, throwing, running and hitting

## Rotational Medicine Ball Throw

*Description:*

- A 8 lbs med ball should be used
- A line should be taped (an existing line could be used) on the ground with a tape measure extending away from it in a perpendicular line
- Feet should be perpendicular to the 0m line
- The athlete should start with their front foot as close to the line as possible without any part of it touching the line
- The athlete should have the MB in both hands at hip height, load up rotationally on the back leg with the ball moving towards the back side of the body. The athlete should then try to heave the ball as far as possible
- The feet should not touch or go over the line before the ball is released. After the release the person can travel in the direction of the ball
- The next attempt should be the other direction (R vs L batting stance)
- A total of 2 attempts each way should be recorded
- 2-3 minutes rest should be given between attempts

*Rationale:*

Softball is a largely rotational sport with hitting, throwing and pitching requiring the ability to coordinate full body, rotational power.

## AUS 20m Shuttle Run (beep test)

Minimum standard of 8.5 must be achieved on this test to pass.

- Protocols based on those outlined by the Australian Sport Commission

## Strength/Power Lab Testing

(This section would be done at a Sport Institute or other facility with necessary equipment and staff)

### Grip Strength

*Description:*

- Athletes will be given 2 chances to achieve maximal grip strength on each hand.
- Protocols used should be from the Canadian Society for Exercise Physiology (CSEP) manual.

*Rationale:*

Assess and track grip strength of the athletes. Forearm strength is important for throwing, bat speed and bat control, injury prevention (assumptions).

### Force Velocity (FV) Profile – Trap Bar Jump

*Description:*

- The test consists of a series of static (non-counter movement) jumps completed with incremental loads using a trap (hex) bar. **If low setting is available, it should be used.** (i.e., handle parallel to bar)
- The first jump should be completed using only body weight, then each incremental load should be loaded using the trap bar.
  - For the body weight jump, the tether should be looped through the middle two fingers of the athlete's hand. This position will most closely resemble the loaded trap bar jumps.
  - Athletes should be instructed to pause at the bottom of the lift (weight in contact with ground) for 1-2 seconds, then jump as high as they can.
  - Athletes can shrug at the top of the lift, but they cannot bend their elbows.
- Weighted jumps should start at 20kg (empty bar) and then increase by 15kg until the average velocity from the best jump of the set is 1.00-1.05 m/s.
  - Athletes get a maximum of 2 attempts with each load.
- 3-5 minutes rest should be given between each set.
- The force velocity profile should be measured and recorded using a GymAware PowerTool and associated software. Analysis will be done after the testing using the gymaware values, with outcomes including:
  - Slope of force-velocity line
  - F0 – force at velocity of 0, as calculated using the slope of the F/V line
  - V0 – velocity at force of 0, as calculated using the slope of the F/V line
  - Pmax – Theoretical maximal muscular power based on  $P_{max} = (F0 \times V0)/4$
  - FVimb – Difference between optimal FV slope and the FV slope of the athlete
    - See: Samozino, P. et al. Force-Velocity Profile: Imbalance Determination and Effect on Lower Limb Ballistic Performance. Int J Sports Med 2014; 35: 505–510
- Values needed include mean velocity and mean force for the best rep (best mean velocity) at each load, body weight of the individual, and the difference in height of the greater trochanter between start position (bottom of trap bar squat) and take off position.
- ALTERNATIVELY, if gymaware is not available jump height at each load can also be recorded using optojump software.

*Rationale:*

The FV profile will be used to assess whether a force or velocity deficit exists in each individual athlete. This will assist with individualization of programming and monitoring in the future. Lower body FV capabilities should be related to full body aspect of the sport, such as throwing, running, and swinging the bat.

### **Max Strength Trap Bar Deadlift**

\*Minimum standard of 1.7 x body weight must be achieved for a pass.

#### *Description:*

Athletes will be asked to trap bar deadlift the maximal amount of weight with correct technique and posture. **If low setting is available, it should be used.** (ie, handle parallel to bar)

- Technique errors such as rounding of the back or major knee valgus should stop the test.
- Athletes can use the FV profile as a warm up for the maximal strength portion of the test.
- 2-3 more warm up sets (with no jump) can be given prior to attempting the 1RM

#### *Rationale:*

A certain level of lower body strength is necessary as a base for explosive movements.

### **Maximum Chin Ups**

#### *Description:*

- Athletes will be asked to perform the maximal number of strict-form chin ups.
- Athletes will use a supinated grip, start from a dead hang (straight arm) position and must get their chin over the bar for each rep to count.
  - Any reps completed that do not start from straight arm position, or finish with the chin over the bar should not be counted.

#### *Rationale:*

Assess and track relative upper body strength of the athletes.