

**WELSH NETBALL ASSOCIATION**  
**SPORTS SCIENCE SUPPORT**

**FITNESS TEST PROTOCOLS: INFORMATION FOR COACHES & UMPIRES**

**Why fitness Test?**

Physiological fitness testing plays an important part in a netball teams preparation for competition and for designing training programmes throughout the season. Assessment of each players' physical fitness allows for either a generic or a specific, position related training programme to be devised. Periodic fitness testing also allows for a profile of the teams and individuals fitness to be established. It also assesses responses to training and therefore fitness can be monitored throughout the season.

The type of fitness testing offered to the Welsh Netball Association is primarily field based fitness testing. This allows for efficient data collection for squads, which would otherwise be time consuming using laboratory based fitness testing procedures. Most of the tests implemented are sport specific, whilst a few remain quite general and provide a good indication of various aspects of players' fitness.

Ideally, netball squads are tested tri-annually; pre, mid and post season, typically in September, January and May. This allows for a profile of each player to be established throughout the season and acts as an indicator for potential competition success. Training programmes can also be designed to suit the requirements of the particular stage in the season. For example off season testing can identify areas to be improved upon over the summer when players should spend time on areas of weakness.

**Fitness Components for Netball**

Before any kind of fitness test can be implemented, the various fitness components related to netball should be recognised.

- Speed & Agility
- Aerobic base
- Strength & Conditioning
- Anaerobic Endurance
- Power
- Flexibility & Core Strength

*(adapted from NCF, 1995)*

Once the various fitness components have been identified the specific fitness tests can be established. This involves a process through which the validity, reliability and reproducibility of the tests and the test data are assessed. Assessing these factors ensures the data obtained is valid in terms of:

- Measurements obtained
- The component of fitness identified is actually tested
- Is an objective measure against previous results

### **Validity**

This refers to the appropriateness, meaningfulness and usefulness of each test. Before implementing tests you have to be sure that you have a certain level of confidence in using the test scores collected, for making specific inferences. Therefore validity does not refer to the test itself, but to the inferences you make with respect to the test scores (NCF, 1995).

### **Reliability & Reproducibility**

This refers to the consistency of results over repeated testing. This is important particularly when comparing results during the season and between seasons. Reliability is important if testing is being completed over several days (reproducibility) or on the same day (repeatability).

To ensure the above, the state of the performer and the test administration must be thought through carefully

### **Objectivity**

This is important for ensuring tests can be repeated between squads and testers. Objectivity can be increased in situations by using:

- Accurate timing devices
- Clearly defined and strictly enforced test finishing criteria

### **Performers**

Biological variance has an influence when repeated testing on players occurs. That is, the body is never in exactly the same state of readiness as previous tests. Various factors can influence the body and they are as follows.

- Age
- Time
- Health
- Temperature
- Time of day (you should ideally test in the morning before any other form of training)
- Motivation
- Mood
- Knowledge
- Skill
- Co-ordination
- Diet
- Previous training

The following are protocols for the selected fitness tests for the Future Players Centers. If you have any queries regarding any of the tests then please don't hesitate to contact me.

## **FITNESS TESTING PROTOCOLS**

### **BODY COMPOSITION (STATURE & BODY MASS)**

#### **Equipment**

- Stadiometer or Tape Measure
- Accurate Scales

#### **Test Description**

##### **Stature (cm)**

- Players stand bare foot, facing tester beneath a stadiometer
- Stature is measured as players breathe in.
- Tester should be the same at all testing sessions
- If using a tape measure following instructions for standing vertical jump for placing tape against wall

##### **Body Mass (kg)**

- Players stand bare foot, arms by sides, head up on scales
- Measurement recorded by an independent tester.
- Same scales to be used at each testing session

## FITNESS TESTING PROTOCOLS

### AEROBIC ENDURANCE (Multistage Fitness Test)

#### Equipment

- Tape Measure
- Cones
- Multistage Fitness Test CD/Cassette
- Multistage Fitness Test Recording sheets (1 sheet per 4 players)
- 1 tester per 4 players

#### Test Description

- Standard multistage fitness test. Warm up beforehand.
- Ensure cones clearly mark each end of the 20 m shuttle
- Players must place a foot on or over the line on each shuttle. If the player narrowly misses the line due to foot placement error there is no penalty, but encourage the player not to do it again.
- If a player reaches the line before the bleep they should wait until the bleep sounds before starting the next shuttle
- If a player has not reached the line when the bleep is emitted this is counted as a miss and the player should be informed. Three successive misses result in exclusion from the test.
- The level and shuttle at which the player drops out or is excluded is recorded on the data sheet.

#### ***NB.***

*If being tested by SCW Sport Science, players must be wearing heart rate monitors prior to the start of the test (as the Academy squad do).*

#### Things to watch for

- Jumping into the turn & slowing up before turn
- Taking an extra step before turning
- The same CD/cassette should be used for every testing session

#### Coaching Points

- As the speed of the bleeps increases, the turning technique of the player can be observed and assessed. An efficient and smooth turn is recommended as this can be applied to any multidirectional movement on court.
- Players need to be encouraged to push through the discomfort when initial feelings of fatigue begin to set in.

## FITNESS TESTING PROTOCOLS

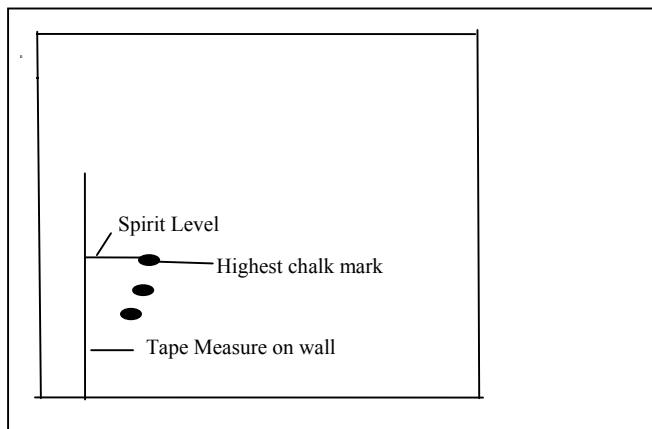
### POWER (STANDING VERTICAL JUMP)

#### Equipment

- Tape Measure
- Spirit Level
- Chalk
- 1 Tester

#### Test Description

- To set up the test use a spirit level to mark a straight line down the wall. Using this straight line, stick a tape measure on the wall.
- Before jumping, players put chalk on the fingertips of their dominant hand.
- This test can be used to assess single leg power as well as both legs. However in this case, just 3 jumps with both legs will be measured.
- Players are tested 3 times on each side; right shoulder to wall and left shoulder to wall.
- For each jump, a player has three attempts of which the best is recorded. Players start in an upright position shoulders level, sideways to the wall. Players jump as they would in a game, (arm swings are allowed), and have to touch the wall with their hand.
- Following all three jumps, the highest chalk mark is recorded; using a spirit level to ensure the measurement is in line with the tape measure.



#### Things to watch for

- Players begin from a static position feet shoulder width apart
- Complete another trial if a jump is incorrect.

#### Coaching Points

- Ensure players maintain vertical elevation and don't jump into the wall
- Players should land with their knees bent

## **FITNESS TESTING PROTOCOLS**

### **UPPER BODY ENDURANCE (NETBALL CHEST PASS)**

#### **Equipment**

- Netball
- Tape/chalk
- Tape Measure
- Scissors
- Stop watch
- 1 Tester

#### **Test Description**

- From a distance of 3 m from the wall, each player aims to perform as many chest passes against a wall as possible in 60 seconds. This requires accuracy in that the player must retrieve the ball after each pass - no outside assistance is allowed.
- To save time players can complete this test in pairs. One counts the number of passes whilst the other performs the test. The players then swap and the test is repeated. The coach should time 1 minute test period for all players.
- Players may have a practice period before beginning the test
- The tester (coach) counts down to begin the test
- Results are collected from all players following completion of the test.

#### **Things to watch for**

- Players don't move from starting position
- No external assistance is allowed
- Players begin after a countdown from the tester and not before
- The test stops when the tester calls time after 1 minute
- Players have adequate recovery (>1 min) following a practice period before beginning the test.

#### **Coaching Points:**

- Speed of release of the ball
- Hand position on ball 'W' shape
- Feet position – one foot in front of other

- Accuracy
- Strength of pass is maintained throughout

## FITNESS TESTING PROTOCOLS

### AGILITY (555 TEST)

#### Equipment

- Tape/Chalk
- Scissors
- Tape Measure
- 1 stop watch
- 2 testers

#### Test Description

- Three 5 m sprints with two 90° turns. Players should have 2-3 practice runs (50-80 % intensity).
- This test is usually measured using timing lights, however in this case stop watches will suffice.
- When setting up this test, ensure there is enough room after the finish line for players to decelerate.
- Players start behind a line 2 m from the first timing gate (△). The players sprint through the first set of cones, turn and sprint to the first target turn and sprint to the second target and then sprint through the final set of cones. Each player must attempt 3 sprints with 1 minute recovery in-between.
- The tester recording time should stand at the finish mark (△)
- A second tester should stand away from the test, where they can clearly assess whether players place a foot inside each target box (□)
- As the players pass through the 2 m mark (▲) the stop watch is started. Timing stops as the player passed through the finish mark.

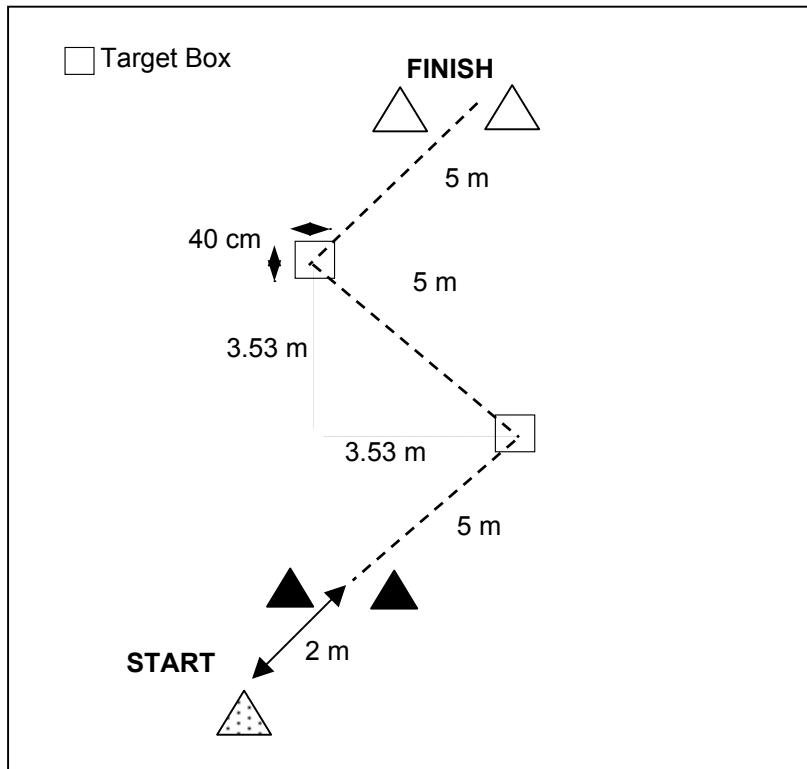
#### Things to watch for

- Players must start from a static position with one foot on the start line. Don't allow players to run up
- Players must touch the targets with one foot, if they miss, this trial isn't recorded
- The fastest result, from 3, is recorded

#### Coaching Points

- Players keep an upright stance

- Quick change of direction
- Weight on pivoting foot
- Drive with arms
- Accelerate through until past finish line



## FITNESS TESTING PROTOCOLS

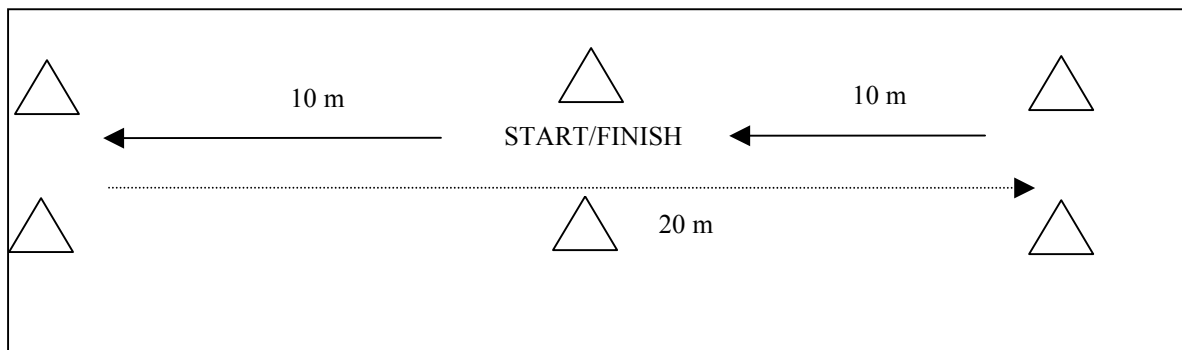
### SPEED ENDURANCE

#### Equipment

- Tape measure
- Scissors
- Cones
- Tape
- 2 stop watches
- 2 testers

#### Test Description

- Players sprint maximally over 40 m. This is repeated 6 times with 30 s rest in-between
- Two testers are needed, one to time the 40 m sprint and one to time the recovery period (30 s).
- The start of the next sprint should begin with a countdown from the tester recording the recovery period.
- Fatigue index is calculated from the six recorded times.



#### **NB.**

*Future Players' Centers should use 6 sets of 40 m sprints with 30 s rest compared to the Emerging and Academy Squads who use 8 sets of 40 m with 20 s rest.*

## **Fatigue Index Calculation**

$$(T5 + T6/2) - (T1 + T2/2) = D$$

$$D / (T1 + T2/2) \times 100 = X\%$$

$$X = \text{Fatigue Index Score (\%)}$$

*T1 & T2 = the two fastest sprints*

*T5 & T6 = the two slowest sprints*

*D = Difference*

*X% = % drop in pace (fatigue index)*

## **Things to watch for**

- Player begin to sprint on 'go' not before
- Turn at each end, not before

## **Coaching Points**

- Turning technique of the player can be observed and assessed. An efficient and smooth turn is recommended as this can be applied to any multidirectional movement on court.
- Players need to be encouraged to push through the discomfort when initial feelings of fatigue begin to set in.

## **Reference**

Wilkinson, D. & Moore, P. *Measuring Performance: A Guide to Field Based Fitness Testing*. National Coaching Foundation, Leeds, UK. 1995.

## **Protocol Presentation**

### **Tests**

MSFT

Netball Pass

Agility

8 by 40 m

### **Equipment:**

Cones (4 flat)

Tape Measure (2)

Bleep Test CD

Bleep Test Scoring sheets (2)

Marker Tape

CD Player

Stop watches (2)

Netball