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# INSIDESOCCER

Magazine

Informing and Entertaining the  
Canadian Soccer Community Since 1992

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# PRE-SEASON FITNESS TESTING WITH THE TORONTO FC ACADEMY

BY RICHARD BUCCIARELLI

At Manchester United, coming into training camp five pounds overweight can cost you \$5,000. In fact, in most professional first and even second division teams, players are fined between \$100 - \$1,000 per pound of extra weight gained in the off-season.

Elite players also stand to lose something even more valuable than money – playing time – if they show decreased performance on endurance testing when training camp begins. Taken together, these facts serve to highlight the importance of physical and physiological testing for elite level soccer players.

At the Toronto FC Academy, I am in charge of physical development of over 150 players from U-12 to U-20 age categories. With the start of the 2013 outdoor season just around the corner in late March/early April, evaluations of players' fitness levels become increasingly more valuable to me and the Coaching Staff. Overall, there is less importance placed on body weight/body composition with these players (especially the youngest ones) however, testing and establishing standards for physical ability is a prime area of importance for me.

Tests of physical ability in soccer need to be selected because they are – and have proven to be – valid to the sport. For a particular test of a particular physical ability to be seen as “valid” two main questions or criteria need to be met:

## DO THE TESTS DIFFERENTIATE BETWEEN HIGHER AND LOWER LEVELS OF PLAY IN THE SPORT?

*Do players at higher levels of play - Provincial, junior National, senior National, and Professional – score higher on these types of tests than players at lower levels of play?*

## IS THE TEST A PREDICTOR OF PERFORMANCE IN THE SPORT?

*Do players who score higher on these tests perform more physical work during competition?*

At Soccer Fitness, we reviewed a decade's worth of literature on performance analysis in soccer, including time-motion-analysis of soccer games at various different levels of play, when selecting and developing our testing protocols. The two main physical abilities we found to be both differentiators of performance levels, and predictors of physical performance in games, are speed, and high intensity running ability. Below is a brief summary of these two physical abilities, how they relate to soccer, and the rationale for the tests chosen to measure these physical abilities.

### SPEED:

*What is Speed?*

Speed is defined as the ability to move the body – or parts of the body – quickly. Speed is used in soccer to dribble around opponents, make runs into open space, and close down attacking players.

*How can we measure Speed?*

At Soccer Fitness, we use photo-cell timing gates (Brower Timing Systems) to

measure speed at 3 different distances:

**10 metres:** the shortest distance, and a good measure of starting speed or explosive speed

**20 metres:** the average distance of a sprint in soccer

**35 metres:** the maximum distance of a sprint in soccer

### HIGH INTENSITY RUNNING ABILITY:

*What is High Intensity Running Ability?*

High intensity running ability is the ability to perform high intensity running (that is, running which is done at a speed between 80-100% of an individual's maximal running speed).

How can we measure High Intensity Running Ability?

In soccer, high intensity running ability is the number-one factor that differentiates different levels of performance. At Soccer Fitness, we have selected the test which has the highest correlation to the amount of high intensity running players do in games: the Yo-Yo Intermittent Recovery Test. Comprising a 2 x 20 metre shuttle (signaled by audio signals on a pre-recorded tape), followed by 10 seconds of rest, the test gradually decreases the time interval of the 20 metre shuttle run audio signals but keep the 10-second rest period the same. Eventually, the test becomes 2 fast runs, followed by 10 seconds of rest, and then 2 fast runs, over and over again until the athlete is not able to keep up with the pace of the audio signals.

FIGURE 1 explains some of the

standards and norms for male soccer players at different levels of play. As you can see, the higher the level of play, the better the scores (faster speed, and higher yo-yo scores) seen on the tests. Thus, the tests do differentiate between different levels of play in soccer.

FIGURE 2 comprises a score-sheet for the Yo-Yo Intermittent Recovery Test Level 1. Each stage in the test is shown

directly above a number – representing the distance (in metres) covered during the test. Match analysis studies have shown that players who cover a certain distance in the Yo-Yo test will tend to cover similar distances at high intensity (running speeds at or above 80 percent of maximal running speed) during games. Thus, the Yo-Yo tests are not only able to differentiate levels of play in soccer; they

are also reliable and valid predictors of performance in the sport.



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TEST	REGIONAL TEAMS (U16)	JUNIOR INTERNATIONAL TEAMS (U18)	SENIOR INTERNATIONAL TEAMS
10 METRE SPRINT	2.09 s	1.85 s	1.79 s
20 METRE SPRINT	3.20 s	3.12 s	2.96 s
35 METRE SPRINT	5.06 s	4.89 s	4.69 s
YO-YO INTERMITTENT RECOVERY TEST, LEVEL 1	19.1	19.1	20.1
YO-YO INTERMITTENT RECOVERY TEST, LEVEL 2	21.4	21.8	22.4

Figure 1: Standards and Norms for Provincial, National and Professional Male Soccer Players.

Level	5.2	5.4	5.6	5.8	6.0	6.2	6.4	6.6	6.8	7.0	7.2	7.4	7.6	7.8	8.0	8.2	8.4	8.6	8.8	9.0	9.2	9.4	9.6	9.8	10.0	10.2	10.4	10.6	10.8	11.0	11.2	11.4	11.6	11.8	12.0	12.2	12.4	12.6	12.8	13.0	13.2	13.4	13.6	13.8	14.0	14.2	14.4	14.6	14.8	15.0	15.2	15.4	15.6	15.8	16.0	16.2	16.4	16.6	16.8	17.0	17.2	17.4	17.6	17.8	18.0	18.2	18.4	18.6	18.8	19.0	19.2	19.4	19.6	19.8	20.0	20.2	20.4	20.6	20.8	21.0	21.2	21.4	21.6	21.8	22.0	22.2	22.4	22.6	22.8	23.0	23.2	23.4	23.6	23.8	24.0	24.2	24.4	24.6	24.8	25.0	25.2	25.4	25.6	25.8	26.0	26.2	26.4	26.6	26.8	27.0	27.2	27.4	27.6	27.8	28.0	28.2	28.4	28.6	28.8	29.0	29.2	29.4	29.6	29.8	30.0	30.2	30.4	30.6	30.8	31.0	31.2	31.4	31.6	31.8	32.0	32.2	32.4	32.6	32.8	33.0	33.2	33.4	33.6	33.8	34.0	34.2	34.4	34.6	34.8	35.0	35.2	35.4	35.6	35.8	36.0	36.2	36.4	36.6	36.8	37.0	37.2	37.4	37.6	37.8	38.0	38.2	38.4	38.6	38.8	39.0	39.2	39.4	39.6	39.8	40.0	40.2	40.4	40.6	40.8	41.0	41.2	41.4	41.6	41.8	42.0	42.2	42.4	42.6	42.8	43.0	43.2	43.4	43.6	43.8	44.0	44.2	44.4	44.6	44.8	45.0	45.2	45.4	45.6	45.8	46.0	46.2	46.4	46.6	46.8	47.0	47.2	47.4	47.6	47.8	48.0	48.2	48.4	48.6	48.8	49.0	49.2	49.4	49.6	49.8	50.0	50.2	50.4	50.6	50.8	51.0	51.2	51.4	51.6	51.8	52.0	52.2	52.4	52.6	52.8	53.0	53.2	53.4	53.6	53.8	54.0	54.2	54.4	54.6	54.8	55.0	55.2	55.4	55.6	55.8	56.0	56.2	56.4	56.6	56.8	57.0	57.2	57.4	57.6	57.8	58.0	58.2	58.4	58.6	58.8	59.0	59.2	59.4	59.6	59.8	60.0	60.2	60.4	60.6	60.8	61.0	61.2	61.4	61.6	61.8	62.0	62.2	62.4	62.6	62.8	63.0	63.2	63.4	63.6	63.8	64.0	64.2	64.4	64.6	64.8	65.0	65.2	65.4	65.6	65.8	66.0	66.2	66.4	66.6	66.8	67.0	67.2	67.4	67.6	67.8	68.0	68.2	68.4	68.6	68.8	69.0	69.2	69.4	69.6	69.8	70.0	70.2	70.4	70.6	70.8	71.0	71.2	71.4	71.6	71.8	72.0	72.2	72.4	72.6	72.8	73.0	73.2	73.4	73.6	73.8	74.0	74.2	74.4	74.6	74.8	75.0	75.2	75.4	75.6	75.8	76.0	76.2	76.4	76.6	76.8	77.0	77.2	77.4	77.6	77.8	78.0	78.2	78.4	78.6	78.8	79.0	79.2	79.4	79.6	79.8	80.0	80.2	80.4	80.6	80.8	81.0	81.2	81.4	81.6	81.8	82.0	82.2	82.4	82.6	82.8	83.0	83.2	83.4	83.6	83.8	84.0	84.2	84.4	84.6	84.8	85.0	85.2	85.4	85.6	85.8	86.0	86.2	86.4	86.6	86.8	87.0	87.2	87.4	87.6	87.8	88.0	88.2	88.4	88.6	88.8	89.0	89.2	89.4	89.6	89.8	90.0	90.2	90.4	90.6	90.8	91.0	91.2	91.4	91.6	91.8	92.0	92.2	92.4	92.6	92.8	93.0	93.2	93.4	93.6	93.8	94.0	94.2	94.4	94.6	94.8	95.0	95.2	95.4	95.6	95.8	96.0	96.2	96.4	96.6	96.8	97.0	97.2	97.4	97.6	97.8	98.0	98.2	98.4	98.6	98.8	99.0	99.2	99.4	99.6	99.8	100.0
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Figure 2: Score Card (with distances covered) for Yo-Yo Intermittent Recovery Test Level 1



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