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Performance Products provides the fitness marketplace the opportunity to link you to their products' "unique selling points" that sets them apart from others and how these unique selling points benefit the athlete to improve performance and/or injury prevention based on their product claims. We hope you enjoy this series and would appreciate your comments and ideas.- Ken Kontor <u>condpress@aol.com</u>

Introduction



he high-intensity, intermittent nature of soccer demands that players have a high level of sport-specific fitness. Testing the physical and physiological abilities of soccer players is important for a variety of reasons including: identifying the strengths and limitations of players, monitoring athletes during critical windows of development (e.g., youth and adolescence), and assessing the effectiveness of training programs. Performance profiles for individual players can detect weaknesses that might limit the ability to perform at a high level. Additionally, assessment

of a team and developing a profile for the squad could help a coach identify a larger issue that needs to be addressed by the entire group. For example, if aerobic fitness is low for the majority of players then it is imperative that this receive priority during training. Regardless of working with an individual or a group, targeted training programs can be designed to improve the limitations identified with appropriate performance testing prior to the season.

Childhood and adolescence is a time for rapid changes in anatomical, biomechanical and metabolic factors that have an impact on performance in these young athletes. It is no secret that all children of the same age do not possess the same physical attributes – young individuals develop at different rates beginning at different ages – so tracking key performance attributes is important because someone's strength today might become their limitation tomorrow. Additionally, physical performance will only improve up to a certain point in a child's development; speed increases with age until 14-15 years in girls and 16-17 years in boys. Therefore, testing players over several months or years during childhood and adolescence is vital for tracking player development during this critical window of time.

The collection, storage and management of performance data sounds cumbersome – especially for a large group of athletes – oftentimes with test scores written down and stored in some filing cabinet never to be seen again. This could be made easier if players, teams and clubs had the ability to centrally store, access, and get reports on performance scores. What's more, is for individual players to track their own scores and watch how performance changes throughout the season, over an entire year or during a career. This is now available through a unique service provided by T4 Soccer (<u>www.t4soccer.com</u>), which allows test scores to be entered for an individual player, an entire team or even a whole club with the ability to subsequently generate customized reports and immediately identify strengths, weaknesses, or monitor changes in performance. In addition to storing and reporting, T4 Soccer provides a description of recommended tests for soccer players in order to highlight the specific attributes important for playing in a match.

Matching Game Demands with Performance Tests

Performance in soccer is multi-faceted and so in order to assess each aspect the testing protocol should include a variety of methods for evaluating a player's ability. Soccer is a sport predominated by the aerobic energy system highlighted by players covering 10-12 km during a 90 minute match. However short bursts of high intensity work including multiple sprints, rapid changes in direction and headers are interspersed throughout the game. Therefore, aerobic fitness as well as speed and power are key components

for any comprehensive soccer testing protocol. Below is a brief description of field-based tests that can be used to help identify strengths and limitations of soccer players as well as track athlete development (video demonstrations and detailed downloadable explanations of each test can be found at <u>www.t4soccer.com</u> and <u>www.youtube.com/user/T4Soccer</u>).

Aerobic Fitness

Aerobic fitness can be assessed in the laboratory or in the field. Laboratory testing is used for an accurate determination of VO_2max , but it is time consuming, expensive, requires a high level of technical expertise and is challenging to evaluate an entire team in a single session. Therefore, field-based tests are commonly used throughout the year to evaluate aerobic fitness of soccer players. A wide variety of field-based fitness tests exist however the Yo-Yo Intermittent Recovery Test (IRT) (Figure 1) has been validated and is directly related to on-the-field performance (i.e., distance covered).

The objective of the Yo-Yo IRT is to run the 20 meter course for as long as possible while keeping pace with audible beeps that get progressively closer together. In other



Figure 1 - Yo-Yo IRT Set-Up

words, the athlete has to run faster and faster to keep up with the beeps as the test progresses until they are no longer able to keep the pace. Unique to the Yo-Yo IRT is a 10 second recovery in between each 20 meter lap, which was included in order to test the ability to perform high intensity work with short bouts of recovery. The test is over when a player falls short of the start line (0 m) twice – then the total distance he/she covered is recorded as their score. One of the primary advantages of the Yo-Yo IRT is the ability to evaluate a group of up to 20 players simultaneously in less than 30 minutes.

Speed and Power

Sprinting in soccer is typically assessed over 10-30 meters because those are the most common distances covered during a match. Shorter distances (e.g., 10 meters) give an indication of acceleration whereas evaluating longer distances (e.g., 30 meters) provides insight about maximum speed. For an accurate assessment of speed the use of infrared timing gates is essential. Using a hand-held stopwatch can result in inconsistent and sometimes erroneous times compared to timing gates. Net Link: to purchase the Yo Yo Intermittent Recovery Test Click HERE.

To test maximum speed the timing gates are placed at the start line and finish line, in this case 30 meters (Figure 2). Flying sprint times can also be determined by including timing gates at 10 and 20 meter – also known as splits. Flying sprints (sprinting from a moving start rather than standing still) are more common in soccer since players are often already moving when a sprint is performed.

Jumping ability, an indirect indicator of lower body power, is another important component of soccer and as a simple alternative to high-tech force plates commonly found in exercise physiology labs, an electronic timing mat can be used in the field. This portable device allows for the assessment of many athletes in a short period of time. The timing mat must be placed on a hard, flat surface and the players should wear running shoes (not cleats) during testing. The athlete stands on the mat, per-



Figure 2 - Sprint Lane With Splits

forms a crouching action followed immediately by a jump for maximal height (this is called a countermovement jump). An accurate assessment of countermovement jump height on a timing mat requires the athlete to maintain straight legs while in the air. Bending, raising, or tucking the hips or knees while in the air results in inaccurate scores, so athletes must be instructed appropriately and carefully observed on this test.

Agility

Unlike aerobic fitness, speed and power, the evaluation of agility can be complicated simply due to the wide variety of tests that exist for this component of performance. There are a handful of tests that have been used more regularly within the soccer community and include the Illinois test, the 505 test (sometimes called the pro-agility test) and the Balsom test. To minimize the need to teach players how to perform a complex protocol – and therefore avoid a learning effect – it is best to use a test with a simple course design. The 505 agility test (Figure 3) is performed by having the athlete sprinting 15 meters, turn around and sprint back another 5 meters. The timing gates are placed 10 meters from the start line, so the test evaluates how quickly the athlete can sprint the final 5 meters (of the 15m), changes direction and re-accelerate another 5 meters.



Figure 3 - 505 Agility Test

T4 Soccer has created a complete field-based testing protocol that can evaluate an entire team in less than 90 minutes. The selected tests take into consideration practical constraints, such as time, equipment and personnel. Athletes are given two trials in each of the tests with the exception of the Yo-Yo IRT. Once the tests have been completed, each athlete's best scores are entered into the T4 Soccer website.

Performance Data Management and Reporting

One of the benefits of T4 Soccer is the ability to turn the testing scores into a source of knowledge for the athlete, coach or club. The T4 Soccer website allows individuals, teams or clubs to upload, store, maintain and access their performance data all from a single site (<u>www.T4Soccer.com</u>). The website provides a variety of options for club officials, directors of coaching, coaches, athletes and parents to view and track their test scores. For example, athletes can see their latest test scores, monitor their performance from one testing session to the next and see how their scores rank compared with their teammates (players are not able to see other players scores). Coaches have the ability to view and analyze all of the players in a group and generate a team report (Figure 4) – and by using the sorting functionality comparisons are made quick and simple. On a larger scale, directors of coaching can use T4 Soccer to monitor every athlete in their entire club, sorting by team, testing event, age group, or gender. This type of knowledge could be useful when selecting elite teams for a particular age group. For a small annual fee soccer clubs have the ability to create a profile for all of their teams in the T4 Soccer website and gain access to test instructions, score sheets, and the performance reports. Additionally, T4 Soccer offers an educational course designed to teach coaches and club personnel how to implement the entire battery of tests using electronic timing equipment – ensuring that accurate and reliable scores can be obtained for any athlete. Ultimately T4 Soccer provides a turnkey operation and is one way to enhance developmental initiatives of any club.

Officia														
Select Event: All Even	xts 💌													
TEAM REPORTI	TEAM REPORTING													
	SPRINT (s)						AGILITY (s) POWER (in) ENDURANCE (m)							
Team	Player	Date	10m	20m	30m	10-20m	20-30m	505 Agility	Vertical Jump	Yo-Yo	Height	Weight	Event Code	
Sharks	Zico Swartz	03/13/2011	1.92	3.40	5.32	1.48	1.92	3.27	11.30	1,200	163	55	T400052	
Sharks	Mark Chapman	03/13/2011	1.96	3.49	5.39	1.53	1.90	2.80	13.20	1,600	165	56	T400052	
Sharks	Jonas Silva	03/13/2011	1.98	3.47	5.37	1.49	1.90	3.26	11.80	800	159	52	T400052	
Sharks	Robert Faiad	03/13/2011	1.99	3.54	5.44	1.55	1.90	2.92	16.30	1,200	166	54	T400052	
Sharks	Carlos Freeman	03/13/2011	2.03	3.56	5.46	1.53	1.90	3.18	13.60	1,200	164	54	T400052	
Sharks	Charles Wait	03/13/2011	2.06	3.58	5.48	1.52	1.90	0.00	0.00	0.00	164	55	T400052	
Sharks	Mike Jordee	03/13/2011	2.08	3.60	5.50	1.52	1.90	0.00	0.00	0.00	165	56	T400052	
Sharles	Romain Shuhaibar	03/13/2011	2.12	3.58	5.50	1.46	1.92	3.05	14.70	1,200	162	54	T400052	
Sharks	Karrem Masi	03/13/2011	2.12	3.58	5.52	1.46	1.94	3.05	16.80	1,200	160	51	T400052	
Sharks	Osvaldo Cruz	03/13/2011	2.16	3.61	5.56	1.45	1.95	3,10	16.10	1,600	166	53	T400052	
Sharks	Edward Morazza	03/13/2011	2.17	3.62	5.56	1.45	1.94	2.90	14.80	2,400	158	55	T400052	
Sharks	Kiel Berry	03/13/2011	2.20	3.70	5.67	1.50	1.97	0.00	0.00	1,200	157	56	T400052	
Sharks	Cid Kutchey	03/13/2011	2.22	3.74	5.67	1.52	1.93	3.00	14.60	1,600	159	50	T400052	
Sharks	Ahamed Groto	03/05/2011	2.24	3.73	5.69	1.49	1.96	2.72	18.00	1,800	162	50	T400048	
Sharles	Daniel Pearson	03/05/2011	2.24	3.79	5.69	1.55	1.90	3.10	15.20	1,800	166	54	T400048	
Sharks	David Prado	03/05/2011	2.26	3.81	5.69	155	1.89	2.65	19.60	1,600	163	55	T400048	
10 I	Adverte Adlance	02/05/2011	2.20	3.03	8.70	183	1.00	2 57	12 50	1 800	167	80	T400048	

Figure 4 - View of a Team Report from T4 Soccer