LSRFUR’s Fitness Newsletter

Fitness For Rugby Sevens

3/1/2015

By Ross.Hanbury
Welcome to the LSRFUR’s winter edition of the fitness newsletter; in this newsletter the area of rugby union refereeing fitness reviewed will be:

**fitness training for refereeing rugby sevens**

With the national schools sevens competition at Roslyn Park RFC fast approaching, kicking off on Monday March 23rd. Any referee involved in sevens should be thinking about getting his or hers fitness up to level suitable to referee rugby sevens. As you read through this newsletter you should start to understand and realise that rugby sevens is a game that requires referees to be much fitter and able to tolerate periods of high intensity running, more so than in the fifteen aside version of the sport. Due to the higher tempo that rugby sevens is played at, referees are required to make more decisions under a higher level of fatigue per unit of time. It is therefore imperative that the Referee is physically fit so that they can make the right decisions under a high level of fatigue.

**IF YOU ARE NOT PHYSICALLY FIT, YOU WILL NOT BE MENTALLY FIT!**

Referees need to get to the breakdown quickly (GET IN), see the ball and referee what is in front of them. After the ball is then won or secured, move away from the breakdown (GET OUT) to open up your range of vision and your perspective, so it is easier to pick up any illegal gate entry or off sides at the ruck, this is unlikely to be achievable if you are behind the speed of play!

*DOBSON IMAGES courtesy RUGBYMAG*
Referees need more power-based speed in Sevens than in Fifteens. Sevens players are likely to be faster than any Sevens match Referee. That means you need every bit of your speed—backed up by stamina to keep up with the game. The type of fitness and stamina required in Sevens is different from what is required in Fifteens because of the gaps in the day’s play. The Sevens Referee warms up, sweats it out for about fifteen furious minutes, warms down and then waits for the next short burst of activity. In addition, as the day or weekend progresses, the intensity of each game increases because there is more at stake.

If we look at the data (obtained from the available scientific research) below we can see some of the striking differences between the physical demands placed on referees managing the fifteen aside and seven aside games.

Fig 1 Data comparing the physical demands placed on rugby union referees between fifteen and seven aside rugby

<table>
<thead>
<tr>
<th></th>
<th>Fifteen aside (1)</th>
<th>Seven aside (2), If 4 games are refereed</th>
<th>% Difference between Sevens and Fifteens demands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Distance Covered (Km)</td>
<td>6.3</td>
<td>1.7 to 6.8</td>
<td>+ 7.35%</td>
</tr>
<tr>
<td>Hi Intensity Distance Covered(1)</td>
<td>674</td>
<td>272 to 1088</td>
<td>+ 6.57%</td>
</tr>
<tr>
<td>Hi Intensity Metres Per Minute</td>
<td>8.42</td>
<td>18.13</td>
<td>+ 115%</td>
</tr>
<tr>
<td>Metres Per Minute (Per day)</td>
<td>78.75</td>
<td>113.33</td>
<td>+ 44.3%</td>
</tr>
<tr>
<td>AV % of total time running at maximum speed</td>
<td>25%</td>
<td>75%</td>
<td>+ 50%</td>
</tr>
<tr>
<td>AV Heart Rate</td>
<td>155 bpm</td>
<td>160 bpm</td>
<td>+ 3.22%</td>
</tr>
<tr>
<td>Work to Rest Ratio</td>
<td>1 to 1.6</td>
<td>3.5 to 1</td>
<td>+ 132%</td>
</tr>
</tbody>
</table>

1. Distance covered speed above 14km/hr References

2. Running Demands and Heart Rate Response in Rugby Sevens Referees Suarez-Arrones, Luis et al 2013 (Journal Strength and Conditioning research)

From looking at the research data on the physical demands placed on referees during a sevens game; we can see a number of key areas that a referee will need to work on in order to prepare them physically to referee rugby sevens.

- It is likely that if you referee 4 or more sevens games in a day then you will cover (6.8km +) a greater distance than you would during one fifteens game (6.3 km).

**Therefore you will need to make sure you have/complete some endurance/aerobic fitness work!**

- If you also referee 4 games or more in a day then you will be required to cover around 25% more distance at high intensity (over 14km/hr) than you would do refereeing a fifteen aside game.

**This means you need to do some high intensity running work!**

- The figure below is a map of the GPS-tracked movements of an iRB Referee during a recent New Zealand v France Sevens match. During the match, the Referee ran a total of 1825 meters or 5987 feet (over 1.3 miles). The tracking is broken down by the Referee’s speed

  - Stand still and walk (yellow)
  - Walk and jog (blue)
  - Running (red)
  - Hard Running (purple)
  - High Speed Running (aqua)

*Courtesy of Matt Blair and the iRB*
During a fifteen aside game you have sufficient time to recover between high intensity efforts. For every 1 min of high intensity work you would have 1 min and 36 seconds rest. During a sevens game however you don’t get that luxury and have a situation where by you work longer then you actually get to rest for, this means that you are always playing catch up with your recovery (known as incomplete recovery). This can be seen on the GPS map on the previous page with a large amount of red (running), purple (hard running), aqua (high speed running), with very few blue (jogging) or yellow lines (walking etc) during which the referee recovers!

To summarise: the data/research shows us that sevens requires a referee to perform more high intensity running with shorter rest periods between efforts.

Application to referee (your fitness) fitness training:

The problem with high intensity running is that it means that the body has to work anaerobically (without oxygen) and rely on carbohydrates as a fuel for muscle actions. Although a very powerful energy system, the anaerobic energy system creates lactate and H+ ions as a by-product of the chemical processes involved. Lactate and H+ will eventually (should they continue to rise) begin to interfere with your muscle energy making processes.

So much so, that at a point (dependant on your muscles ability to handle lactate and H+ ions) will significantly reduce your ability to sprint and recover. The bottom line here is that it will mean you will struggle to potentially keep up with the game and make well informed decisions. The only way we can teach our muscles and body’s’ to handle a high build-up of Lactate and H+ Ions is by exposing it to high levels of these substances in a controlled training environment* (create the ‘chemical chaos’). *Examples of sessions that can be used in order to condition the body to handle the chemical chaos can be found later on in this newsletter.
Whilst performing high intensity running the body does not only have to handle the ‘chemical chaos’ caused by lactate and H+ ions but also the structural damage caused to the muscle as it works at a faster rate of contraction. If a muscle is asked to work beyond its functional ability, such as at a speed, or for a duration at a level of forceful muscle contraction that it is not accustomed to then it will sustain structural damage (usually light in nature, and only to the contractile elements). This structural damage will bring about a reduction in performance (albeit temporary) which will make it harder to keep up with the speed of play as the day wears on. Similar to handling the chemical chaos the muscle need to be trained to work at a high speed with large forces being created; so that it becomes use to the physical demands of sevens. Similar to teaching the body how to handle large amounts of lactate and H+ ions; training* for sevens also needs to teach the body how to move and contract muscles quickly.

*sessions geared towards developing a robust muscle, capable of handling high levels of force at speed can also be found towards the back of this newsletter.

DOBSON IMAGES courtesy RUGBYMAG

In order to help each and every ref in the society adapt their training programme to cater for the sevens season; so that they can maximise on field fitness, reduce probability of injury and most importantly of all, enjoy the sevens refereeing experience. I have put together a number of sevens specific fitness sessions.
Like with the fifteens fitness programme that has been circulated this season around the society, the sevens fitness programme has 3 levels to it:

Beginner
Intermediate
Advanced

**Beginner:**

Aimed at those who have never followed a structured fitness programme and or have not done any high intensity running before.

**Intermediate:**

For those society members who are currently following a structured exercise programme or who train regularly and have done some of the red sessions from the fifteens programme

**Advanced:**

Society members that train regularly and are completing at least two running sessions a week from the fifteens programme on a regular basis.

In addition to this you need to consider yourself to have a above average level of fitness to carry out these sessions.

Referees are advised to choose a training programme that is appropriate for them (based on the conditions above). Referees choose to perform any of these programmes at their own risk, Ross Hanbury and The London Society of Rugby Football Union Referee accept no responsibility for any injuries sustained whilst performing any of the programmes to follow.
Beginner Programme

• The aim of this programme is to perform 1-2 ‘Hi Intensity’ Cardio sessions a week.

• The sessions can be performed in the gym on a bike, x-trainer or a rower.

• These sessions must be completed after a thorough warm up.

• The work bout (e.g. 15 secs in week 1) should be completed at an intensity that you feel is 7 out of 10 (10 being your max effort level).

Week 1
15 secs work 30 rest x 5 times, rest 6 mins repeat 2 times

Week 2
20 secs work 20 secs rest x 6 times, rest 6 mins repeat 2 times

Week 3
30 secs work 15 secs rest x 8 times, rest 6 mins repeat 2 times

Week 4
45 secs work 10 secs rest x 6 times, rest 6 mins repeat 3 times
Intermediate Programme

- The aim of this programme is to perform 2 ‘Hi Intensity’ Cardio sessions a week; one in the gym and one on a rugby/football field.
- The gym based session can be performed on a bike, x-trainer or rower
  - These sessions must be completed after a thorough warm up.

Gym based programme

Week 1
20 secs work 30 rest x 8 times, rest 6 mins repeat 3 times

Week 2
30 secs work 20 secs rest x 8 times, rest 6 mins repeat 3 times

Week 3
45 secs work 15 secs rest x 10 times, rest 6 mins repeat 3 times

Week 4
60 secs work 10 secs rest 8 times, rest 6 mins repeat 3 times
Intermediate Programme – Field based
(Performed once a week)

1. Warm-up: following protocol laid out in DVD
2. Perform sequence of runs (as shown above by direction arrows above). You are to run fast through course (no jogging)

Complete 6 reps (one rep is one complete circuit) with 30 secs rest between reps, followed by 3 mins rest, repeat 2 sets.
Advanced Programme – Field based
Performed once a week

1. Place 6 cones out in a straight line 5 metres apart
2. Set I Phone or stopwatch to 30 secs countdown and 10 secs rest
3. Run to 5 m cone and back
4. Run to 10 m cone and back
5. Run to 15 m cone and back
6. Run to as many cones as you can and back in 30 secs
7. Rest 10 secs, repeat 5 more reps (6 reps in total)
8. Rest 5 mins and repeat 2 more sets (18 reps in session)

*Referees following the advanced programme can also complete the intermediate gym and field based programme if they wish.*
Besides making sure that you have trained appropriately for the sevens competition; it is also important to keep in the back of your mind some nutritional strategies for the day before and of the competition. The day before the competition it is important that the referee focuses on a number of key areas:

1. Hydration: The referee needs to ensure that they drink 2 litres of fluids the day before the game (the 2 litres includes cups of tea etc). Ensuring that the body is hydrated the day before a game will mean that the referee can better handle the stress caused by running at hi intensity better, through an enhanced cooling/sweating mechanism.

2. Carbohydrate intake: Due to the amount of high intensity running that the referee is required to do in a game. The muscles carbohydrate stores will be in used up in large amounts, as carbohydrates are the primary form of muscle fuel when exercising above 85% of HR max. In order to ensure that muscle and liver stores are fully topped up, referees should consume small amounts of carbohydrates the day before a game every 2-3 hours. The carbohydrate should come from low glycemic index foods (brown rice, bread and pasta etc)

Day of the game

The referee should try and ensure that they have a high carbohydrate based breakfast (porridge etc), so that your carbohydrate stores are fully topped up for morning of the tournament. Make sure that you do not eat too many protein based foods for breakfast, due to the fact you will probably not fully digest them before the first game, as the hi intensity running will take blood away from your digestive system.

1-2 hrs before the first game you want to ensure that you drink another 500ml of fluids (sipping the fluids, not all in one go). At this time it would be a good idea to consume a small amount of carbohydrates (30 grams), like a banana. Finally due to time constraints you probably wont have enough time to eat another meal/proper food between refereeing sevens games. You will therefore have to rely on sports drinks and high sugar foodstuff, such as sweets. These should be consumed in moderation between games. Above all though the referee should ensure that they don’t over eat or consume high protein foods the day of the game.

References

**Impact of Several Matches in a Dayon Physical Performance in Rugby Sevens Referees**
Luis Suarez-Arrones, Javier Núñez, Diego Munguía-Izquierdo, Javier Portillo, and Alberto Mendez-Villanueva

*International Journal of Sports Physiology and Performance, 2013, 8, 496-501*

Hopefully this newsletter has been helpful in identifying the key differences that there are between the demands placed on the referee in fifteen and seven aside rugby union. If you would like to discuss some of the training sessions more of look at developing some training session specific to your goals and the training environment you work in then please do not hesitate to get in touch.

Regards

Ross Hanbury

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