

Endurance for Rugby

By Frederick Claro

Rugby is an intermittent high power sport, where bouts of extreme physical intensity such as sprinting, tackling, mauling/rucking alternate with periods of rest or low intensity periods such as cruise running, jogging, walking or simply standing. At elite international level, the ball was in play for an average of 42% of the time at the last RWC in 2003 (IRB source, 2003). In elite domestic rugby ball in play time vary between 33% and 40% depending of the countries involved (Claro, 2005). At amateur level, ball in play time will be less in most instances, due to higher levels of fatigue inducing at time more technical and tactical errors. Endurance will refer to the capacity for the players to repeat actions over and over again in minimizing their state of fatigue.

A rugby game unfolds during 80 minutes of which roughly 28 to 32 minutes will be played at high intensity for the players immediately surrounding the ball in the contact zone at any given moment. Moreover, the Tri-Nation tournament 2006 games had an average of 83 stoppages per game, reinforcing if needed the fact that rugby is a “stop and go” sport where all players’ bio-motor abilities will be used and tested.

During the bouts of action, the path of energy production for the players directly involved in the action will mainly be anaerobic (alactic and lactic), and depending of the duration of the action and its intensity it will first trigger the Phospho-creatine pathway, relayed after a few seconds by the glycolytic pathway. These actions will be repeated dozens of time during a game, and players must certainly develop an endurance to perform powerfully under a tremendous amount of physiological stress. An usual action time frame at elite level will be of 12 to 18 seconds, with few per game over 30 / 40 seconds after reaching 7 or 8 frames of play. In comparison, a typical action bout in an elite American Football game will be of 6 to 7 seconds. The nature of the game of rugby is movement and continuity, and these values have increased in the past fifteen years.

Recovery time will be when the players will repay part of the oxygen debt occurred during the bouts of action by activating the aerobic system and increase O₂ intake. Again in elite rugby, the average stoppage time is around 35 seconds, more during injury treatment. During that time, players will need to get a maximum O₂ intake to repay part of the debt which occurred during playing time. Hence a very good maximum O₂ intake is highly advisable to recover faster and help the body to oxidate part of the accumulated lactic acid and metabolize it in the most valued ATP in need for the muscular contraction. Hence we can say that a high maximum O₂ intake (also called VO₂max) is highly desirable in rugby players. The aerobic system will also play a great role in the less intense runs and moves occurring during or between action times, such as sub-maximal support or cruise runs for replacement/cover of the pitch.

Endurance in rugby is therefore needed at 2 different levels:

- Anaerobic (speed, power, agility, all functions of strength)
- Aerobic (support and cruising run at high aerobic steady pace, high VO₂max for faster recovery during rest times)

In a periodized plan, all endurance factors will be dealt with at different time in the preparatory and pre-competition phases. General endurance development will use runs, drills and interval training to develop the different aerobic and anaerobic abilities of the players. Technical and tactical trainings will be geared and designed specifically to respond to the level of endurance and to develop it according to where the team is in its development.

Once again, you should not exercise randomly...Plan your year and endurance training according to the agreed objectives and a sound periodized plan.