

## NUTRITION FOR RUGBY LEAGUE

Rugby league is a game of strength, skill and speed, dominated by short bursts of high intensity exercise, interspersed with longer periods of low intensity activity.

### Training

The rugby league season is divided into three phases - pre-season, competition and off-season. At the professional level, the off-season is usually a short break of 1-2 months where no formal training is scheduled, though some players may continue to do their own conditioning work during this period. In Australia, the pre-season generally begins late November - early December and is seen as an opportunity to develop the physical traits and fitness characteristics needed to meet the demands of match play. Though it will vary depending on the players' position and role in the team, pre-season programs typically involve resistance training to develop strength and power, as well as interval, speed and aerobic conditioning training, which may be incorporated into game-based drills. As the season approaches, there is an increased focus on developing and refining game-based skills, with teams also engaged in a series of pre-season matches. During competition season, teams will continue to train 4-5 times per week, with the focus on maintenance of skill, conditioning and strength, as well as specific sessions dedicated to recovery and injury rehabilitation.

### Competition

The competitive season in Australia runs from March to October. The National Rugby League (NRL) competition is played as a weekly competition, with games played as either day or night fixtures. In addition, selected players compete in the State of Origin series as well as International matches. Matches involve short bursts of play rather than continuous activity. Studies have shown that the majority of match time is spent in low intensity activity (e.g. walking, jogging), interspersed high intensity bursts (e.g. sprinting, tackling), with sprints rarely longer than 40 metres. Players can cover up to 8-10 km in a single game, with backs usually covering more ground than the forwards. A limited number of studies of semi-professional and junior elite rugby players have shown average heart rates to be ~80% of maximum for the duration of the match. A match is also characterised by heavy body contact and tackling, with bruising and musculoskeletal injuries common. This combined with the frequent high intensity efforts during matches would suggest that optimising muscle fuel (glycogen) stores before and after a match is important for performance.

### Physical Characteristics

Muscle bulk and strength are important traits for rugby league players. Mean body mass of elite players have been reported to range from 80-110kg kg, with the majority of studies showing forwards to be heavier and to have higher skinfold measurements than backs. These differences reflect the different roles within the team, with forwards being involved in a

higher number of physical collisions and tackles, with backs spending more time running and carrying the ball.

## **Common Nutrition Issues**

### **Meeting carbohydrate requirements during training**

Little research has been done into the specific carbohydrate requirements of rugby league players. That said, though not as aerobically demanding as other football codes, players still need to ensure adequate intake of carbohydrate for the aerobic and anaerobic production of fuel to optimize training performance and to promote recovery. An intake target of 4-7g of carbohydrate per kg of body mass should meet the requirements of most players, and be adjusted according to match specific training load. It is important that players learn to adjust their intake of carbohydrate based on their daily training schedule i.e. eating more on heavy loading days and less on easy/days. A useful strategy to achieve this is to establish a basic meal plan based on nutrient dense carbohydrate rich choices, that meets requirements on easy/rest days, then orientate additional carbohydrate rich choices around training sessions e.g. sports drink during, recovery snack immediately post.

### **Gaining Muscle Mass**

Increasing lean muscle mass (hypertrophy) is a priority for many of rugby league players. To ensure an adequate energy intake to support hypertrophy goals, players are encouraged to consume six meals a day, with a focus on foods that combine nutrient dense carbohydrates and quality protein and are low in fat. In addition, players should support resistance training sessions by consuming carbohydrate before the session (either in the previous meal or an additional snack depending on the timing of the session) as well as have a carbohydrate and protein rich snack soon after finishing e.g. yoghurt, low fat flavoured milk. Players can also promote better maintenance of lean muscle tissue through intake of carbohydrate during prolonged team training sessions.

### **Meeting fuel requirements during competition**

There is no need for targeted “carbohydrate loading” strategies before a match – reduced training in the days leading up to a match combined with the player’s normal training diet should ensure adequate fuel stores for the match. On match day, players should ensure that carbohydrate based foods are the focus of each meal or snack. To avoid gastrointestinal upset, it can be helpful to finish all solid food options 2-3 hours before the start of the match. Though there have been few studies into carbohydrate supplementation during league matches, research from other sports suggest that those players involved for all or at least the majority of the game may benefit from source of carbohydrate during the game e.g. sports drink, gels to assist in maintain fuel stores as well as providing “brain fuel” for decision making and skill execution. Players are encouraged to trial any options during hard training sessions to assess tolerance.

## Hydration

Players should aim to start their matches well hydrated but should not leave it until they arrive at the ground to start thinking about fluids. The day before and on match day, having fluids with all main meals, and having access to fluids in between meals, are useful strategies to help ensure this goal is met. In addition, if conditions for the match are likely to be warm, the addition of electrolytes (sodium) to the ingested fluids (e.g. sports drink) may be warranted to optimise hydration. During matches, players should look for opportunities to consume fluids at regular intervals (e.g. try conversions, half time) to minimise the fluid deficit incurred. While water is a suitable option, sports drinks can be helpful for providing fuel (carbohydrate), fluid and electrolytes (sodium) simultaneously.

## Promoting recovery

Depletion of carbohydrate stores and significant muscle damage from contact, as well as the physical load of turning and stopping quickly, mean that players who have a high workload over the match (e.g. those that played the majority or all of the match) need to be proactive in their nutrition recovery. To promote rapid recovery of fuel stores, as well as muscle growth and repair, players are encouraged to consume a carbohydrate and protein rich snack soon after the match. Dairy based options (e.g. low fat flavoured milk, liquid meal supplements), provide a good combination of these macronutrients and tend to be popular with players. They carry the additional benefit of contributing to the players re-hydration needs simultaneously.

*This fact sheet is based on National team athletes and is therefore specific to these athletes. Written by AIS Sports Nutrition, last updated December 2013. © Australian Sports Commission.*