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Rugby Nutrition:

Nutrition for Developing Young Rugby Players

The nutritional requirements and challenges of **children and adolescents differ from those of adults** – children are not miniature adults and **one size does not fit all!** Every child is unique, with individual requirements that vary throughout their development. Growth, development and maturity occur at different rates in children so it **can be problematic**. using **chronological age-group**, for dietary and physical development recommendations and guidelines, such as the Dietary Recommended Intakes (DRIs) and Long-term athlete Development (LTAD)^[1] models,

The meal plans below have considered this and have combined recommendations from various theoretical models including the more recent Youth Physical Development Model (YPD)^[2] and the Long Term Nutrition Development model (LTND)^[3]. Therefore, the age groups used may not correspond exactly to any one of these models. When following any of the plans below, remember that **ongoing monitoring** is essential to:

1. detect any growth spurts
2. guide when diets may need to be modified to maintain optimal nutrition
3. help with the early detection of any problems.



EAT TO DEVELOP (females 6-8 years; males 6-9 years)

This coincides with the time when physical literacy is being developed, exercise is fun and there are no specific nutritional demands. The same principles apply for males and females in this age group, but portions will vary, so use the menu below as a guide. This is a time where parents set the example, family meals are important, and lifelong healthy habits are established.

TABLE 1: EAT TO DEVELOP - Menu guide for males and females

MEAL SCHEDULE	EXAMPLES OF MEALS	
<p>Nutritious snacks are important to contribute to the day's energy and nutrient needs for competition.</p>	<p>BREAKFAST</p> <p>Fresh fruit Cereals/porridge/brown bread Milk/yoghurt/maas/egg/cheese/peanut butter</p>	<p>If in a rush, breakfast can be eaten on the run: Smoothies (fruit, yoghurt, milk, nuts/peanut butter) or breakfast cereal/shake or a sandwich</p>
	<p>MID-MORNING (FIRST BREAK)</p> <p>Brown bread/muffin/crackers/cereal bar Egg/cheese/peanut butter/hummus/bean spread/biltong/yoghurt Bottle of water/milk drink/water</p>	
<p>You can freeze drinks the night before</p>	<p>LUNCH (PACK FOR SCHOOL)</p> <p>Sandwich/roll/pita/pizza/wrap or pasta/rice/samp Filled /topped/mixed into a salad with beef/chicken/tuna/pilchards/soy patty/dried beans/lentils/cheese Salad/ vegetables (tomato/cucumber/gherkin/carrot/corn/cabbage, etcetera) Fresh/dried fruit/diluted juice Fat – butter, mayonnaise, dressing, avocado Fluid (water)</p>	<p>Pack a lunch box the night before; keep it cool, make it fun and vary the food options</p>
<p>Don't eat in front of TV Enjoy family meals together</p>	<p>MID-AFTERNOON (repeat of morning)</p> <p>Fruit / dried fruit/vegetable sticks Plain biscuits/ crackers / bread/ popcorn/ pretzels/banana or date loaf/bran muffin/crumpets Cheese or hummus or peanut butter or nuts or trail mix Bottle of water/milk drink/water</p>	<p>Afternoon snacks should be supervised to ensure appropriate choices are provided.</p>
	<p>SUPPER</p> <p>Lean meat/chicken or fish or chickpeas/soy/eggs plus cheese Pasta/ unrefined grains (brown rice/barley/quinoa)/ sweet potato, baked potato, mashed potato, oven chips Starchy vegetables/ soup (carrots/butternut/beetroot/peas/pumpkin/corn) Other vegetables and salad Olive, seed or nut oils Fruit/fruit-based dessert Water</p>	<p>Keep to caffeine-free beverages. Sports and energy drinks are not required</p>
<p>EXTRA</p> <p>Milk / maas / yoghurt / rooibos tea Note: if low fat milk is preferred, extra oil, peanut butter, avocado can be used Sugar does not provide vitamins and minerals. Added sugar should not be encouraged.</p>		

Also refer to general guidelines Pg. 9 at the end of the document

LEARN TO EAT (females 8-11 years; males 9-12 years)

This coincides with the stage when physical literacy is still being developed, and exercise and sport is more structured, with children participating in after-school matches. Habits formed are important to support changes associated with the next phase of puberty, and ownership and responsibility of food decisions should be established. Daily nutritional requirements increase compared to the previous age group and differ slightly between males and females with males needing extra carbohydrate, fruit, protein, and fat. This can be achieved with bigger portions of these foods. Bear this in mind when using the menu guide below.

(TABLE 2: LEARN TO EAT - Menu guide for males and females on the next page)

TABLE 2: LEARN TO EAT - Menu guide for males and females

MEAL SCHEDULE	EXAMPLES OF MEALS	
BREAKFAST	Fresh fruit Cereals/porridge/brown bread Milk/yoghurt/maas/egg/cheese/peanut butter	If in a rush, breakfast can be eaten on the run: Smoothies (fruit, yoghurt, milk, nuts/peanut butter) or breakfast/cereal shake or a sandwich
MID-MORNING (FIRST BREAK)	Brown bread/muffin/crackers/cereal bar Egg/cheese/peanut butter/hummus/bean spread/biltong/yoghurt Bottle of water/milk drink/water	
LUNCH (PACK FOR SCHOOL)	Sandwich/roll/pita/pizza/wrap or pasta/rice/samp Filled /topped/mixed into a salad with beef/chicken/tuna/pilchards/soy patty/dried beans/lentils/cheese Salad/ vegetables (tomato/cucumber/gherkin/carrot/corn/cabbage, etcetera) Fresh/dried fruit/diluted juice Fat – butter, mayonnaise, dressing, avocado Fluid (water)	Pack a lunch box the night before; keep it cool and make it fun and vary the food options
MID-AFTERNOON (repeat of morning)	Fruit / dried fruit/vegetable sticks Plain biscuits/ crackers / bread/ popcorn/ pretzels/banana or date loaf/bran muffin/crumpets Cheese or hummus or peanut butter or nuts or trail mix Bottle of water/milk drink/diluted juice/water	Pack extra snacks and drinks for sport after school.
SUPPER	Lean meat/chicken or fish or chickpeas/soy/eggs plus cheese Pasta/ unrefined grains (brown rice/barley/quinoa)/ sweet potato, baked potato, mashed potato, oven chips Starchy vegetables/ soup (carrots/butternut/beetroot/peas/pumpkin/corn) Other vegetables and salad Olive, seed or nut oils Fruit/fruit-based dessert (e.g. applesauce)/frozen yoghurt Water	
EXTRA	Milk / maas / yoghurt /rooibos tea Note: if low fat milk is preferred, extra oil, peanut butter, avocado can be used Sugar does not provide vitamins and minerals. Added sugar should not be encouraged.	
SUPPLEMENTS	Sports specific or performance-enhancing supplements are not advised for under -18 year olds. There is a greater potential for performance enhancement through maturation, experience and a good training programme combined with a well-planned diet. ^[4] . Supplements can be harmful and the risks (e.g. health, doping) outweigh any potential benefit. Sport supplements should only be prescribed by a registered dietitian with sports nutrition experience or sports physician.	Keep to caffeine-free beverages Sports and energy drinks are not required

Nutritious snacks are important. Have a tuck shop strategy to deal with temptations

Establish the habit of taking personalized water bottles to school

Don't eat in front of TV Enjoy family meals together

Also refer to general guidelines Pg. 9 at the end of the document

EAT TO GROW (females 11-15 years; males 12-16 years)

This coincides with the phase where there is a bigger focus on sports-specific training and skills, and where children may be playing two sports. Training for competition and the basics of competition are introduced in training sessions. Aerobic base training increases and also the frequency and intensity of training and competition. All of this plus accelerated growth increases energy demands compared to the previous stage with males requiring an additional 2100 kJ/500 kcal (extra carbohydrate and protein) compared to females of the same age. Iron requirements for females increase significantly to cover menstrual losses.

(TABLE 3: EAT TO GROW - Menu guide for males and females on the next page)

TABLE 3: EAT TO GROW - Menu guide for males and females

MEAL SCHEDULE	EXAMPLES OF MEALS	
BREAKFAST	Fresh fruit Cereals/porridge/Brown bread/toast Milk/yoghurt/maas/egg/cheese/peanut butter	Increased intakes at breakfast can help meet increased energy demands. Have bigger portions and/or more options e.g. cereal with milk plus toast and cheese
MID-MORNING (FIRST BREAK)	Brown bread/muffin/crackers/cereal bar/raisins Egg/cheese/peanut butter/hummus/bean spread/biltong/yoghurt Bottle of water/milk drink/water	Biltong and raisins are good source of iron.
LUNCH (PACK FOR SCHOOL)	Sandwich/roll/pita/pizza/wrap or pasta/rice/samp Filled /topped/mixed into a salad with beef/chicken/tuna/pilchards/soy patty/dried beans/lentils/cheese Salad/ vegetables (tomato/cucumber/gherkin/carrot/corn/cabbage, etcetera) Fresh/dried fruit/diluted juice Fat – butter, mayonnaise, dressing, avocado Fluid (water)	Protein portions should be increased
MID-AFTERNOON	Fruit / dried fruit/vegetable sticks Plain biscuits/ crackers / bread/ popcorn/ pretzels/banana or date loaf/bran muffin/crumpets/oat biscuits Cheese or hummus or peanut butter or nuts or trail mix Bottle of water/milk drink/diluted juice/water	Pack extra snacks and drinks for sport after school. Double up if training to include a recovery snack. Cover all your bases (protein, carbohydrate and calcium) with milk-based drinks
SUPPER	Lean meat/chicken or fish or chickpeas/soy/eggs plus cheese Pasta/ unrefined grains (brown rice/barley/quinoa)/ sweet potato, baked potato, mashed potato, oven chips Starchy vegetables/ soup (carrots/butternut/beetroot/peas/pumpkin/corn) Other vegetables and salad Olive, seed or nut oils Fruit/fruit-based dessert Water	Limit caffeine-containing beverages. Sports drinks may only be needed when training is vigorous, of long duration and/or high volume and carefully planned as part of a balanced diet
EXTRA	Milk / maas / yoghurt /tea/coffee Note: if low fat milk is preferred, extra oil, peanut butter, avocado can be used Sugar does not provide vitamins and minerals. Added sugar should not be encouraged.	
SUPPLEMENTS	Sports specific or performance-enhancing supplements are not advised for under -18 year olds. There is a greater potential for performance enhancement through maturation, experience and a good training programme combined with a well-planned diet. [4] Supplements can be harmful and the risks (e.g. health, doping) outweigh any potential benefit. Sport supplements should only be prescribed by a registered dietitian with sports nutrition experience or sports physician.	

Snacks should be good sources of nutrients and contain very little added sugar

Establish the habit of taking personalised water bottles to school

When eating out with friends, make Smart choices

Also refer to general guidelines Pg. 9 at the end of the document

EAT TO TRAIN, COMPETE AND WIN (females 15-23+ years; males 16-23+ years)

This coincides with the time when competition and winning become more important. This stage is about high performance, position-specific training, more competition and establishing a foundation for a happy and successful career. Competition strategies need to be rehearsed in training and diets need to be adjusted for the increased energy requirements, higher body mass, muscular development, hormonal changes, and specific body composition goals. Other considerations include nutrient timing, periodisation and addressing the appropriateness of supplements.

(TABLE 4: EAT TO TRAIN , COMPETE & WIN - Menu guide for males and females on the next page)

TABLE 4: EAT TO TRAIN, COMPETE & WIN - Menu guide for males and females

MEAL SCHEDULE	EXAMPLES OF MEALS	
BREAKFAST	Fresh fruit Cereals/porridge/Brown bread/toast Milk/yoghurt/maas/egg/cheese/peanut butter	Increased intakes at breakfast can help meet increased energy demands. Have bigger portions and/or more options e.g. cereal with milk plus toast and cheese
MID-MORNING (FIRST BREAK)	Brown bread/muffin/crackers/cereal /raisins Egg/cheese/peanut butter/hummus/bean spread/biltong/yoghurt Bottle of water/milk drink/water	Biltong and raisins are good source of iron
LUNCH (PACK FOR SCHOOL)	Sandwich/roll/pita/pizza/wrap or pasta/rice/samp Filled /topped/mixed into a salad with beef/chicken/tuna/pilchards/soy patty/dried beans/lentils/cheese Salad/ vegetables (tomato/cucumber/gherkin/carrot/corn/cabbage, etcetera) Fresh/dried fruit/diluted juice Fat – butter, mayonnaise, dressing, avocado Fluid (water)	Protein portions should be increased at main meals and also included at snacks
MID-AFTERNOON & RECOVERY	Fruit / dried fruit/vegetable sticks Plain biscuits/ crackers / bread/ popcorn/ pretzels/banana or date loaf/bran muffin/crumpets Cheese or hummus or peanut butter or nuts or trail mix Bottle of water/milk drink/diluted juice/water	Practice competition strategies when training, considering both the type of food and timing of intake.
SUPPER	Lean meat/chicken or fish or chickpeas/soy/eggs plus cheese Pasta/ unrefined grains (brown rice/barley/quinoa)/ sweet potato, baked potato, mashed potato, oven chips Starchy vegetables/ soup (carrots/butternut/beetroot/peas/pumpkin/corn) Other vegetables and salad Olive, seed or nut oils Fruit/fruit-based dessert Water	Sports drinks may be needed when training is vigorous, of long duration and/or high volume but should be carefully planned as part of a balanced diet as they are calorific and may contribute to weight gain
EXTRA	Milk / maas / yoghurt /tea/coffee /sports drink Note: if low fat milk is preferred, extra oil, peanut butter, avocado can be used Sugar does not provide vitamins and minerals. Added sugar should not be encouraged.	
SUPPLEMENTS	Sports-specific supplements to support nutritional intake and enhance training stimuli may only be considered under the guidance of a registered dietitian working in sport/sport physician and following a food first approach	

Snacks should be good sources of nutrients and contain very little added sugar

See that you have portable options of snacks and drinks on hand for training and recovery

Keep to the principles of this plan when travelling and competing

Also refer to general guidelines Pg. 9 at the end of the document

GENERAL PRINCIPLES AND GUIDELINES TO OPTIMIZE PERFORMANCE AND MASTER NUTRITION FOR LIFE

A **consistent message** is very important when working with young rugby players. The coach, parent, sports physician, and dietitian all need to 'speak the same language' and ensure that there is **buy-in** from the player. The approach needs to be **holistic and dynamic**, considering a young players' changing needs over time.

Energy:

Children need more **energy** (kilojoules/calories) per kg body weight to support normal growth and maturation and to cover the energy demands of training. This can be achieved with a balanced diet of regular meals and snacks. See meal plans above, which give several options for fussy eaters, budget choices and appetite.

Inadequate energy intakes over time can lead to **delayed growth and maturation**, nutrient deficiencies and low bone mineral densities (these may become irreversible over time) and may lead to an increased injury incidence (e.g. stress fractures).

Children may be exposed to many different messages about ideal body shapes, weights and size and it is important to encourage a good body image through positive discussions and also by actively involving them in food decisions and food preparation.

Inappropriate diets for children include:

- Low energy
- High animal protein, low carbohydrate
- Very high fibre
- Very low fat or fat-free

Inappropriate foods/drinks/supplements include:

- Diet drinks and foods
- Drinks containing stimulants such as caffeine
- Protein powders or muscle building supplements (e.g. creatine)

Should you pick up any of the following **signs of under-eating, consult with a registered dietitian working in sport or with a sports physician:** a lack of energy/fatigue, feeling faint/dizzy during training (hypoglycaemia), irregular menstruation (for females), constipation, loss of concentration, compromised immune system, delayed recovery, increase in injuries, poor performance, psychological pressures and an obvious mismatch between appetite and energy requirements.

Protein

There are no definite recommendations for **protein**, but the Recommended Daily Allowance (RDA) is higher per kg/body weight than adults, to support growth and muscle development. Training volumes and intensity may increase requirements, but only slightly as the effect of training enhances the efficiency of protein utilization. As with adults, the **quality** of protein and the **timing** is important. Vegetarians and children who have limited food choices either because of fad diets or limited access to food or who follow very high carbohydrate / bulky diets are more likely to be at risk for an inadequate protein intake.

Note that it is always important to ensure adequate carbohydrate intakes as they have a protein-sparing role.

Fat

Fat is an important source of energy and good choices provide essential nutrients. For weight management, a lower fat intake could be helpful, but avoid severely restricting fat intake.

Certain Vitamins and Minerals:

The Dietary Reference Intakes (DRI's) can be used as a benchmark but provided that children meet their higher energy requirements with a varied and nutrient-dense diet, they will most likely meet their vitamin and mineral requirements as well, except for Vitamin D.

Vitamin D is a fat soluble vitamin important for the absorption of calcium and muscle function, bone health and general immunity. Few foods are rich sources and these include oily fish (salmon, sardines, herring and mackerel), butter and fortified margarine, and dairy products and eggs. Adequate exposure to sunlight, taking into account seasonal variation, is also important.

Calcium requirements are highest in children to meet the demands of bone growth and to achieve a good bone mass. Eighty – 90 % of peak bone mass is achieved in puberty. Children not achieving adequate intakes of calcium are more vulnerable for fractures and may not achieve peak height velocity.

Iron is essential to maximize energy levels. Dietary intakes need to be adequate especially during periods of rapid growth. Check for increased losses (e.g. worms) and early detection of depletion is important.

Zinc is also essential for growth. Deficiencies reduce growth velocity, impair immune function and delay sexual development in young female and vegetarian athletes.

Supplements

A reminder that 'due to the substantial risks (known and yet unknown) related to supplement use, sport supplements should be avoided in children under 18' ^[4]. Moreover, supplements can be counter-productive and excessive intakes of some may delay normal growth and development.

Fluid

Optimal intake depends on age, individual sweat rates, exercise intensity, environmental conditions, clothing and the degree of acclimatization. All children should start training sessions/matches adequately hydrated.

Water is the fluid of choice for most training sessions and games, but there are some situations where carbohydrate and electrolytes are needed. For example, when physical demands are very high or in very hot and humid conditions, or when several games are played in close succession over a day. Sports drinks are not needed in a normal school day.

For more information on *Rugby Nutrition*, go to the BokSmart website www.BokSmart.com or go to the following link: <http://boksmart.sarugby.co.za/content/eating-and-drinking-right>

REFERENCES

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