

Nutrition and the Young Footballer

Introduction

Maintaining a good diet and concentrating on proper nutrition for training and games is not rocket science. Making out that it is fuels an industry.

Millions of pounds are spent annually on sports drinks, nutritional supplements and energy bars by athletes, parents and coaches of young players; these are, on the whole, unnecessary and a waste of money.

To teach our athletes and children the importance of good nutrition, we must first understand the basics ourselves.

Physiology

The body's basic fuel is glucose. ($C_6H_{12}O_6$)

When we eat our body breaks down the food into its constituent parts. The body will absorb these then use them or store them for a later date.

After we have eaten blood glucose levels will increase. Insulin will then be released from the pancreas which then allows glucose to be absorbed into all the cells of the body. Without insulin very little can be absorbed into cells and thus be utilised.

When we exercise the demand for glucose increases, the blood glucose level will fall promoting the body to release more glucose from cells. The body can produce glucose at this time.

Knowing this simple physiology can lead us to make conclusions about nutrition and sport.

It may seem a paradox that eating glucose rich food, drinks or sweets before exercise is bad. Raising blood glucose may seem a good thing, as we need that fuel for sport. However, raising glucose levels too quickly causes insulin release and thus a dip in blood sugar that would occur in the middle of a game. This also applies to some sports drinks which are high in glucose and most 'fizzy' drinks.

No matter how careful we are in the preparation for sport we cannot prepare nutritionally if the previous year's diet is not adequate.

Although proper nutrition is vital to all children and young adults it is especially important in athletes due to the extra stress and strain that they put on their bodies.

Those of us with children will understand the fridge raiding that goes on after matches, it is important that it is well balanced.

Basic Diet

Balance Is the Key.

Children should eat foods from all the major food groups.

1. The grain group

Bread, rice, pasta, cereals, etc.

This provides carbohydrates. Carbohydrates are the simplest nutrients and are broken down easily to produce energy. The more complex the carbohydrate the slower it is broken down. Whole grains are found in bran, brown bread, brown rice and wild rice are hard to break down and thus release energy more slowly. Whole grains also provide vitamins minerals and fibre.

2. The fruit and vegetables group

These contain the most vitamins and minerals required for proper growth. Fruits are also a good supply of carbohydrates, especially complex sugars. Complex sugars take longer to break down than glucose and can give a good glucose boost without triggering a big insulin release. Root vegetables are full of complex carbohydrates, cooking them starts the process of digestion for us, over cooking them makes it very easy to extract the carbohydrates from them but may destroy other nutrients. Frying a potato turns it from a healthy complex carbohydrate to a fatty lump of starch. Bananas are a good example of energy rich food.

3. The dairy group

Yoghurt, milk, cheese

These provide carbohydrate, protein and some of the most important minerals and vitamins.

Calcium and Vitamin D are found in dairy products. Without calcium we cannot contract our muscles and without vitamin D we cannot absorb calcium into bones. It is quite common for teenagers who do not have enough calcium in their diet to get cramp and chest wall spasm during exercise.

Bone growth in children can be incredibly fast thus they need lots of calcium. Sporty children will often liberate calcium from the bones for muscle use if they do not have enough dietary calcium. The consequences of repeated demineralisation of bone is weak points and therefore possible fractures or osteoporosis later on in life. The importance of good intake of calcium and vitamin D in children cannot be overstated.

4. The protein group

Beans, eggs, fish, poultry and, of course, meat-these provide protein which is the building block of all our cells and especially our muscles. This group also supplies iron which is vital for oxygen transport. Low levels of iron causes fatigue, tiredness and poor performance long before a detectable anaemia.

5. The bad stuff

Fat, sugar and oils. This group of foods is often packed full of flavour but along with this comes few minerals and vitamins and lots of calories.

No doubt a lemon yum-yum looks great but even the lemon cannot hide how useless it is as a food for athletes.

However, an athletic child will not come to harm eating occasional junk food especially as they are more likely to burn those calories off than an inactive child.

(It is not all bad as vitamins AD and E are found in fat.)

For the sporty child

For young people involved in sport it is better to have five or six small meals a day than three big meals.

Breakfast.

It cannot be overstressed how important this meal is.

After a good night's sleep breakfast will be 're-fuelling.'

Cereals and bread, dairy and fruit or fruit juice will give you complex sugars and carbohydrates, as well as vitamins and minerals. Milk.

Adding protein at breakfast will be useful if a long day of sport is ahead or lunch may be a 'packed lunch.' Eggs can provide this. Grilled bacon may sound bad but a bit of protein, grilled to reduce fat and there is a bit of salt which will be lost later in sweat. It's all about balance.

Snack.

For a morning and afternoon snack. cereals, cereal bars, milk, yoghurt or fresh and dried fruit or a mixture is nutritious. For those of us old enough to remember the term from F1 'splash and dash,' a nutritious snack is the human equivalent.

These foods are also easily packed into boot bags.

Lunch and Dinner.

This is where we should focus more on protein and carbohydrates for growth.

Protein rich foods include seafood, eggs, poultry, lean meat, dairy and beans.

Carbohydrate rich foods include bread, cereals, starchy vegetables and fruit and beans.

Sugar appears nowhere in the diet.

So far we have looked at an overall view of diet. If the diet is good only small additional changes need to be made to prepare for sport.

Match Day

Preparing for match day should have started the night before, with a balanced nutritious dinner with a small increase in the carbohydrate group of foods. A good nights sleep, no alcohol (for the older group) and no caffeine.

The first consideration for match day is the weather and the clothing required to be comfortable. Undoing all the hard work in training by not being adequately clothed is a disaster.

Secondly the length and timing of the match is also important. Preparing for a tournament is different from a single match.

A cold winter's day, especially with wind and rain, will sap the energy and thus maintaining carbohydrate intake to compensate for the energy loss that ensues is required. Adding cereal bars, milk or drinks with carbohydrate may be needed. A hot sunny day will dehydrate you, adding more fluids is vital; water is fine for a single match.

Isotonic sports drinks for adults are helpful in tournament play.

A pre-match meal

Take into consideration fluid for hydration, carbohydrate for energy and blood glucose, a small amount of protein. It must be low in fibre and fat which are difficult to digest and will 'sit.'

The meal should be taken 1 1/2 to 2 hours before sport. If it is has to be taken before then, the same rules apply however an additional pre-match snack should be provided. If taken closer to kick-off keep fat and fibre as low as possible.

Match day hydration is vital.

When you feel thirsty you are already dehydrated and you are only playing catch up by hydrating at this point.

A good amount of fluid with the pre-match meal and then continuous topping up with sips is required; pre-and post-warmup fluids are also important.

Water, watered down fruit juice plus or minus a little milk is ideal. Children do not require sports drinks unless they are playing a tournament in very hot weather when adding back electrolytes and a little glucose can help. However, in general it is better for them to drink water and have a snack.

It is difficult to over hydrate, however, too much fluid will obviously lead to a full bladder but also can impair hunger and therefore make refuelling after sport more difficult.

Half-time is a good time for a top-up, again water or watered down fruit juice and fruit is great.

After the final whistle

Immediately after sport, the body's metabolic rate is high. This is a great time to refuel. Eating within 30 minutes is best. The body will break down this food very

quickly to refuel itself, so it is an ideal time to add back in vitamins and minerals as well as carbohydrate. Also, children will be hungry so adding food they may not normally wish to eat, especially those that avoid fruit, might be useful. Post match food for a lot of top sportsmen can often seem strange, such as curry, pizza and burgers. However when we look at the food groups that these foods give and in the knowledge that the metabolic rate is high at this time, it makes sense as they contain protein, fat and carbohydrate. Although we have mainly discussed children and their nutrition in this document the same basic rules apply for adults.

Adult Hydration

For adult hydration they should drink 400 to 600 ml about two hours before sport. Topping up with additional 200ml in sips. If it is at all possible they should take the chance to weigh themselves pre-and post match and add back one and a half times the fluid loss, remembering that one kilogram of water is 1000 ml. Sports drinks for adults are useful but only in very hot weather or prolonged periods of sport.

Supplements

There is little wrong in a general multivitamin being taken. However, with a good diet it is totally unnecessary. A child should *never* take an adult vitamin supplement. Too much iron and other vitamins is bad for health. Some children may be a little iron deficient especially during periods of growth, however again good diet should be enough unless the child is vegetarian.

A youth player deliberately trying to 'bulk up' can do harm to themselves and their liver if taking additional protein shakes and other supplements. If a player is doing extra gym or other training sessions they should listen to their 'hunger.' Keeping a balanced diet will cover all the bases. If doing a lot of weights adding in extra protein might help but this should be as lean meat, chicken, eggs or fish.

It is worth stressing once more how vital dairy products are for children. Children who are lactose intolerant and cannot have the dairy group should speak to their doctor, health visitor or a qualified dietician for help especially if they are very sporty. People often worry that the dairy products group is high in fat. Whole milk is 4% fat. Take a look at foods that claim to be low-fat and they will still have 5 to 10% fat content.

Adults still need calcium in the diet for muscle contraction.

One interesting nutrition fact is that iron can only be utilised in the body when there is adequate vitamin C. However the two should never be taken at the same time as vitamin C will bind iron in the stomach rather than it being absorbed. The disease

scurvy occurred due to the lack of vitamins C however it is the inability to use iron without vitamin C that caused the symptoms. Special formulations of Vitamin C and iron are available but if taking them separately please take Vitamin C at least 2 hours before iron.

Iron supplements are useful for growth spurts and for female athletes with heavy periods.

Overweight or obese players

This is a very difficult area, as the stress on their bodies is high but having a hungry dieting player is also bad.

Dieting by starving is incredibly bad news. You set the body up into a metabolic situation where everything that is eaten is stored. You crave high sugar and fat content food as the body 'thinks' it is not going to eat again for ages.

These players should be encouraged to eat like a toddler. Never be hungry and spread their calorie intake across 8 or 9 snack meals a day. This way they will not be hungry but never fill their stomach. This will then shrink making a full feeling more easily obtainable. Also it is wrong to eat lots of low calorie foods, salads celery etc...

In training they could be made 'magic man' so that their training intensity is higher without singling them out for 'fat club.'

The impact on joints in the overweight player is also important to consider.

Conclusions

As a football coach you would not expect your players to turn up without shin pads, kit or boots, so why expect them to turn up without adequate hydration and nutrition. You will have prepared your game plan, but have a look at the weather forecast, remind players about clothing, food and fluids.

Just as in training keep the message simple, memorable and light-hearted and your players will follow it.

Why not take along a selection of dried fruits for them to try?

Keep an eye on the drinks bottles that your players bring, and maybe set an example.

I have a player in my team who has 2 drinks bottles, one milk and one water; he didn't want the rest of the team to know that he was drinking milk as it seemed sissy! How have we let a simple good nutritional drink become sissy?

It will be interesting to see the others reaction to this when they find out; as he is a player that runs box to box and is substituted less as never seems tired-co-incidence?

I have not made specific plans for players as everyone is different and likes different things, however the key message is keeping a balance.

Enjoy the occasional bacon butty and lemon yum-yum!