

Crosscountry **FUN**damentals



A guide for clubs and schools

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Getting out and running freely in the open air over natural terrain is one of the joys of being a runner.

Crosscountry Fundamentals



Excellent running form –
National 800m champion (and good crosscountry runner) Glen Ballam showing good technique
- head looking straight ahead, not up or down;
 jaw relaxed; shoulders low and loose;
 hips, shoulders and head in a straight line

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What is a Coach

If you say “well done” to your son or daughter or a young athlete you are a coach

If you ask how she or he went at an event, you are a coach.

When you yell encouragement to a competitor, you are a coach.

If you have driven someone to training or competition, you are a coach.

I define a coach as anyone who “maximises the potential of an athlete” – at whatever level.

Driving an athlete to training contributes to this.

So let’s not be afraid of the word “coach”.

You are a coach, whether you see yourself as one or not.

Encouragement is perhaps coaching at its most basic level.

There are many levels, and none are any more important than any other.

The next level is being able to help an athlete avoid mistakes and errors – making sure the athlete is not doing something wrong.

Then there is the adding of skills, teaching the right way to do something.

Then there are the many, many layers of adding more skills.

Then you have the layers involving planning, strategies, tactics, psychology –

For example, defining the mesocycles and microcycles then determining the objectives of each then planning training units within each cycle that will meet the chosen objectives to have an athlete at their peak on the right day.

Coaching is many layers ... and the last mentioned is no more or no less important than teaching basic skills or trying to eliminate technique errors in a 10 year old.

Some people will coach at the first one, two or three levels ... others will coach at different levels but the most elite coach still must be able to operate at any level.

Fundamentals is about the second and third levels – eliminating errors and adding basic skills.

Finally, words from Franz Stampfl, one of the great athletics coaches of all time, describing what it is to be a coach...

“...when the shouting is over, when the senior partner in the firm has broken the record and joined the immortals, the junior partner’s reward comes from the satisfaction of a job well done. Who could ask for more?”

Indeed, but note, the coach is the junior partner, the athlete the senior partner. We must always bear in mind that it is the athlete’s sport, we as coaches at whatever level, are there to support.

What is a Winner?

The emphasis here is on the FUN of FUNDAMENTALS. Sport is fun. Children do athletics for just one reason – they want to have fun. Doing something well, succeeding, learning a skill all adds to the fun.

Competition is the purpose of our sport.

Winning is the purpose of competing. However, winning is not necessarily coming first. It can be finishing higher in the field than last time, learning about and applying tactics, it can be an athlete learning something new about themselves or the sport, it could be accepting and meeting a challenge.



Most of all, it's having fun. If you're enjoying yourself how can you be a loser?

Your Role

As a teacher, club helper or as a coach you will have a great many demands placed upon you way beyond the guidance of athletes. You can expect to be:

- **An instructor.** Obviously instruction is part of helping young athletes become more skilled and needs an understanding of the subject. Also, athletes need to know not just what to do, but why they are doing it.
 - **Motivator.** The athletes must be kept interested, focussed, wanting to train and compete and most of all, kept loving the sport.
 - **Manager.** Management involves control (guidance), leadership, planning, decision-making, strategies, organisation, delegation and time management. A manager assumes responsibility for others and must consider his/her actions impact on others.
 - **Advisor.** You are usually the first person an athlete turns to.
 - **Mentor.** You are a one-person support system – help on all subjects, including resolving emotional problems is part of your involvement.
 - **Taxi Driver.** You have spent time helping the athlete get to the starting line in the best possible condition to compete. Sometimes this often means getting them there literally.
 - **Counsellor.** Be prepared to talk about athletes' relationships, illnesses, parents, boy/girl friends, school, exams, careers, futures, pasts, anxieties, triumphs, in fact anything and everything. (See mentor)
 - **Friend.** If you do not relate to the athlete you will have difficulties as a coach or helper, particularly as athletic coaching is so much one-to-one.
 - **Supporter.** The loudest cheers should come from you.
 - **Family Member.** When involved with young athletes it is essential that you have the support and confidence of the parents.
 - **Psychologist.** See counsellor and motivator.
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The Athlete First

A teacher or coach should never lose sight of the fact that the focus of their activities is the athlete. It is not the school or squad and certainly not their own ego or personal satisfaction that is important

Put the athlete first and your school, not to mention your satisfaction, will all benefit in the long run.

Communication

There is only one person who is at every single training session and every competition, and it is not the coach. The athlete is the only one who knows everything he or she does and how he or she felt and what went right or wrong. So it is important that the athlete develops a communication habit and it is equally important that you encourage one.

Communication of course, goes two ways. The more you talk to the athletes the more they will understand what you are trying to achieve.

Age and Athletics

Young athletes develop at different rates and growth patterns vary considerably. Also, individuals can have limbs or parts of the body growing at different times and rates, so a youngster is unfamiliar with his or her own body. Skills that were previously easy may prove difficult, coordination can be lost. You need to recognise that bodies change through growth. The good 10 year old may be an average senior competitor; the average 11 year old may develop into a brilliant senior.

- To 10 – play. Make training based around games – avoid suggestion of “training”. Children this age consider sport as social activity, so make it so. At this stage youngsters have developed neural system so can absorb learning. This is when they can start to learn basic technique and skills. But children do not have a developed anaerobic system. So trying to train what is not there is pointless – hard anaerobic training should be avoided.
- 10 – 14 – learning. Now is the time for skill development as the neural system is well developed – bad habits learnt now are difficult to undo, good habits learnt now are there forever. Children this age have little anaerobic capacity so avoid heavy anaerobic work and there is limited response to aerobic training so there is little potential to develop VO₂max. Athletics should still be fun based – fartlek, games – circuits. This is the time to encourage young athletes to look ahead, to do some goal setting.
- Adolescence – 12 +. “Age of confusion” handle with care. Emotional instability, physical instability. With the different growth rates in the body performances can be inconsistent and there is danger of injury. The athlete should now start to specialise, although attention should be paid to other skills and athletic events as well. Focus on fewer activities – skill development – make challenges, but tailor activity to the athlete, not athlete to the activity.
- 16 up are the **investment years**. Athletes want to be the best they can be – now is practise rather than play – key is performance.

Consider it takes 10 years to master any skill – 10 years to develop a sprinter and 15 years for the neural patterns to fully develop the skill (i.e. to learn to sense an action before it is sent to the muscles!)

Another way of looking at it is 4 years of train to play – 4 years of train to train – 4 years of train to compete (event specific now) – then train to win. This is 12 years of development which is 3 Olympic cycles. **And the most important is the first part – the fun of FUNdamentals**

Warming Up – Warming Down

Warming up and stretching should be a part of every athletic activity, practise as well as competition. A proper warm up will take 10 to 40 minutes and the time needs to be structured into the event or session planning. (Senior athletes can take an hour or more in their warm up and event preparation.)

First, have the children jog easily for 3 to 10 minutes (depending on age and time available). Make sure it is an easy jog – youngsters tend to turn this into a race that defeats the purpose of pre-race preparation. Walking is better than running too fast – you don't want the athletes to be puffing at any stage. Purpose is to raise the body temperature slightly and warm up the muscles (including the heart, which of course, is a muscle.)

The normal static stretching routines have been proven to be ineffective; indeed, static stretches actually slow you down. When do athletes hold a muscle in a stretched position for any period of time in their event? Never. So it makes sense to stretch with activities and movements that are similar to what is done in competition. Also, standing around doing static stretches loses all the benefits of the warm up – you cool down while stretching.

It is important when doing drills as part of a warm up (and at all other times too) that they are done correctly. **You must practise the way you compete.**

If athletes are not technically sound during the warm-up they won't be technically sound in competition when it matters. The warm up is not a time for fooling around, but is the foundation for the races or competition to follow.

Active Stretches for Warm Up.

Examples of activities that can be incorporated into a pre-competition or training active stretch routine. Start with easier activities and increase the intensity as you go.

Toe and heel walks

Lunges

Backward runs

Skips – gentle, fast and for height.

Sideways runs, both to left and right.

Bouncing up on down on the spot using the ankles.

Leg swings, both side to side and forward-back.

Fast but relaxed 20 to 30m stride out sprints.

Sprint technique drills (high knee walk, high knee run, butt kicks).

Running over mini hurdles.

Arm drives. (Arm running action while the athlete is standing still making sure effort drives arm back, not forward, and arm kept close to 90 degree angle at elbow with pivot at shoulder, not elbow. Can be done standing and sitting

Arm windmills.

Games such as soccer, frisbee chasing or touch football to add variety. (bring required equipment with you or encourage children to bring a ball or Frisbee).

You can even devise a warm up routine and do to music.

Whatever you do, try to make it fun, make it varied and make as much of the activities specific to the event to be done (i.e. emphasise running activities prior to running races, skips and bounds before jumping etc.) A fun way to warm up is play “snake” or follow the leader – the group lines up single file behind the leader who does series of warm up type activities on the run with everyone else copying as they run behind like a “big snake”. Activities are limited only by the imagination of the leader and the teacher. Children take turns in being leader. Any activity that prepares the muscles for what is ahead, warms the children up and is fun is good.

Warm Down

Make time for a warm down – a gentle jog or walk after training or racing will help recovery. It’s important that the warm down is gentle – don’t let the kids race their warm down.

While static stretches have been proven counter-productive prior to activity they still have a place post activity. This is the time to improve flexibility by incorporating static stretches into the warm down. And as stretches need to be done when the muscles are warm, straight after the warm down jog is ideal. Stretches should be held for at least 15 seconds (ideally longer) and each stretch performed 3 times.

The following stretches are from George Blough Dintiman from his book “Speed Improvement for Young Athletes” (National Association of Speed and Explosion, 2002).

Neck: bend forward at waist with hands on knees and gently roll head. (Important – gently!)

Hamstring: stand with knees slightly bent and bend over to touch ground or as far as possible. Hold to 30 seconds.

Quads: stand on right leg, holding left ankle with right hand. Try to straighten right leg (as opposed to pulling leg up with hand.)

Calf: stand about 50cm from a wall or fence and lean forward with the front leg bent. Move hips forward keeping heel on ground until stretch is felt in calf.

Achilles: Stand as for calf, but have both legs bent. Keep both heels on the ground and lean forward to stretch lower part of leg.

The following stretches are from Brian McDonald, a noted British coach.

Biceps: Stand tall, feet slightly wider than shoulder-width apart, knees slightly bent. Hold arms out to the side parallel with the ground and the palms of the hand facing forward. Rotate the hands so the palms face to the rear. Stretch the arms back as far as possible. You should feel the stretch across your chest and in the biceps

Upper Back: Stand tall, feet slightly wider than shoulder-width apart, knees slightly bent. Interlock fingers and push hands as far away from chest as possible, allowing upper back to relax. Stretch should be felt between shoulder blades.

Shoulder: Stand tall, feet slightly wider than shoulder-width apart, knees slightly bent. Place right arm, parallel with the ground across the front of your chest. Bend the left arm up and use the left forearm to ease the right arm closer to you chest. Stretch should be felt in the shoulder

Shoulder and Triceps: Stand tall, feet slightly wider than shoulder-width apart, knees slightly bent. Place both hands above head and then slide both hands down the middle of spine. Stretch is felt in shoulders and the triceps

Adductor: Stand tall with you feet approximately two shoulder widths apart. Bend the right leg and lower the body. Keep you back straight and use the arms to balance. The stretch is felt in the left leg adductor.

Running Skills

The key to distance running is efficiency – using as little energy as possible to run as fast as possible for the distance. Wasted energy slows the runner, and as in sprinting, tension wastes energy. Efficient running and good running technique go together.

“Good technique won’t guarantee you’ll be a good runner but bad technique guarantees you won’t be”.

This is a quote from Peter Coe, father and coach of Seb.

Whereas teachers/grade managers will not have much influence on young runner’s training, they are in the best position to help on running technique every training session.

Things to look for.

1. Head looking straight ahead, not up or down.
2. Jaw relaxed, not clenched.
3. Shoulders low and loose, not hunched.
4. Elbows greater than 45°, i.e. not tight or the arms at an acute angle – hands should swing through at around hip height. Arms swing from the shoulders, not the elbows.
5. Hands and wrists totally relaxed, no clenching of fists.
6. No bouncing – if an athlete bobs get them to think about gliding along.
7. Hips forward – no bottom sticking out or bending at the waist. Hips, shoulders and head should be in a straight line – runners in the picture are showing good form. Note straight line of head, shoulders, hips and relaxed angle of arms. See also picture page 3.
8. No over-striding – foot must land under hips and not ahead of centre of mass, which provides a braking action

Starting.

Make sure front arm is opposite side to forward leg, i.e. if left foot is the front one, right arm is forward.

Tactics

During warm ups athletes should be focussing on the event ahead. They should think about tactics, the opposition, their and the opposition’s strengths and weaknesses. Focus must also include the course. If possible, the warm up should include a jog over the course or as much of it that can be covered. Most events have a map of the course. Encourage your athletes to familiarise themselves with it.



Get them to take note of the best places to run as they go around on the warm up. For example, it may be better to take a corner wide where the distance may be further but they can run faster or not be caught up in heavy traffic. Note the best ways to approach an obstacle such as a jump or bank. Check where the ground is firm and where the soft muddy patches are. Sometimes going through a puddle gives firmer underfoot conditions than going around it – so get them to check it out before the race. And have them imagine the course with other runners on it. The shortest way could also be the most congested. You don't want them held up by a bottle neck at a jump or narrow track where passing is impossible.

Course knowledge helps set tactics. Knowing there's a downhill coming might allow a runner to surge then get their breath back on the slope. Or a strong uphill runner could put a surge in prior to a hill, confident of ability to maintain the pace while other runners who also surged are wiped out by the climb.



A runner must need to know where they are in relation to the finish. Putting in a big effort at the end is of little use if too early and they run out of everything before the line. Or conversely, go too late and finish feeling too fresh, knowing that with a bit more effort they could have improved a number of places.

Work out these aspects with your athletes while they are getting ready to race. Have them do their thinking and planning before the gun goes off, including possible options should things change. Once the race has started the mind should be on the race – on tactics, the opposition, holding form – not on wondering where they are, which is the best way to go or what's around the corner.

Starting.

It often pays to start fast to avoid the risk of being boxed in, getting tripped or to get a good position. As covered in *The Running Machine* chapter we have enough ATP for 10 – 15 seconds of activity so a fast start can be sustained for a few seconds without going into oxygen debt.

Drafting.

Two runners side by side create more than twice the air resistance than a lone runner. Running just behind someone else saves energy, particularly into a head wind.

Concentrate.

A loss of concentration, even for a brief period, can be critical. We have all seen races where someone loses concentration for a moment and finds themselves 100m or so behind the people they were running with. And at the end of the race are still 100m behind, so they ran the bulk of the race at the same pace as the others but were beaten by 100m. Concentration also includes focussing on running technique and running relaxed. When the mind wanders off the body often does likewise.

Hills.

Have your athletes learn to push over a hill – many runners ease up at the top, but a runner who keeps the effort up over the top can often get a jump on opponents and still regain their breath on the downhill. A slight surge on the flat approaching a hill will often give a two or three metre advantage that opponents

will have to get back on the uphill. The increase in speed means a slight increase in effort on the flat, but for the others trying to close the gap on the uphill it means a big increase in effort.

Passing.

When passing, always make it aggressive and determined. Passing slowly only allows an opponent to tuck in behind and get dragged along. Passing should be done with a quick acceleration that opens a gap opponents won't be able to make up.

Finishing.

Over the last 500 metres or so, many runners are thinking of the future rather than the here and now – they have their mind on the finish line, not on the race around them. This is when they can be taken by surprise. All too often they are trying to save some strength for the finish and don't want to put in extra effort at this stage. A surge now could have them not reacting, opening up a gap that they may never make up. Runners need to be aware and react should someone increases effort or better still, put the surge in themselves. It can tell the rest who is calling the shots, which may give a psychological edge. Make sure your athletes do not slow down as they approach the finish. Have them always run through the finish line, imagining the line is 5 metres further back than it really is and keep driving for it. And as they go for the line, they should not look around or to the side. Concentration must be on that finish line.

Training for Crosscountry

Children are generally naturally fit. They are aerobic creatures with light body weight and a higher maximal heart rate than adults. This means their capacity to utilise oxygen in relation to bodyweight is higher than an adult's which makes aerobic training worthwhile. But they do not have a high anaerobic capacity (see page 15) so it is pointless developing the anaerobic system.

On the other hand the nervous system is highly sensitive. Coordination is not developed, limbs are often disproportionate and muscle strength is relatively speaking considerable less than an adults. This adds up to reduced biomechanical efficiency – most kids are inefficient runners.

The outcome of all this is aerobic training will make gains in fitness but not the same as it would in an adult, anaerobic training will be of minimal benefit but skill training will be worthwhile. (See page 9)

What's aerobic? Page 15 explains the terms and how they work but for teacher or coach it's simply a matter of applying the "conversation test" – if a runner can't carry out an ongoing conversation he or she is running too fast. Once talking stops the pace becomes anaerobic.

Training therefore should be slower than race pace (but can be longer than race distance) and faster than race pace but only for minimal distances. So if the children are simply going for a run, whether 5 minutes or 45 minutes, keep the pace at conversational level. This means making sure they do not turn a training run into a race (which is what some will definitely try and do). You may need to ensure they all go at the pace of the slowest for at least some of the time.



However, to develop running skills a certain amount of faster running is required. But keep this to very short distances – 30 to 60m – which is as far as most people (children and adults) can sprint before starting to puff (run anaerobically).

With a little imagination training sessions can meet these objectives and still be fun. Some thoughts -

- ✓ **Group run** - the entire class runs around a field or open spaces but slower children cut the corners, keeping everyone mostly together. You may have an area or if lapping a field some of the laps where everyone runs together at the pace of the slowest – and to ensure it is aerobic, get them to sing as a group.
- ✓ **Fish** – write out a series of activities – from the serious to the frivolous - onto a small scrap of paper and put them in a box or hat. Each child picks out (fishes out) a piece of paper and the entire group or the child must follow the instructions. Examples of group activities:
 - Everyone runs fast to the fence
 - Everyone does 4 push ups
 - Everyone does 6 star jumps
 - Everyone runs easily around the field together
 - All jog to the nearest tree (or building or whatever) and sprint back here.
 - Everyone skips to when I blow the whistle then jogs back
 - Everyone does 2 laps of the football field
 - Everyone does 6 hops on the left foot, 6 on the right, turns around and comes back here by doing 2-footed hops.

Some of the instructions can be for the drawer only – e.g.

- Whoever fishes this has to sing a song
- Whoever fishes this races me (the teacher) to the fence
- Who fishes this can rest for the next activity
- Whoever fishes this wins a chocolate fish

... etc etc etc. Activities are limited only by imagination and need not be all running or crosscountry orientated – but by mixing in running with other activities a training effect is achieved while the kids have fun.

- ✓ **Whistle fartlek** – fartlek is Swedish for “speed play” where training is unstructured. For this, children run slowly as a group and on a whistle change the activity. You may have them sprint when they hear one short blast and go back to easy jogging on two short blasts (making sure the sprint period is just a few seconds or up to 60 metres). Or you may have them turn left on one whistle, right on two whistles and about turn on three.
- ✓ **Flag to flag fartlek** - place flags on the four corners of a large square – say around half a football field or similar area. Runners run right around the field outside the flags a total of seven times. First time around they sprint the first side then jog slowly the other three sides to arrive back at the start. Next lap they sprint 2 sides and jog 2 sides, next it's 3 sides



hard and 1 side slow jog then they push hard right around. Next lap they start with 1 side slow jog and go hard for 3 sides, then it's 2 sides hard 2 easy then the final lap is 3 sides easy and the last side a fast sprint. There is no stopping between laps. You can of course, make the square as large or as small as is suitable to the age of the children. This allows a fartlek session in a confined space where you can see and be close to all the children and allows them to do the effort sections at their own pace. Some may want to walk the recovery sections rather than jog. Make sure the recoveries are a recovery, as some kids will want to push all seven laps which is not what the session is about.



✓ **Go where the coin tells us** - everyone runs together until the group reaches a natural obstacle (fence, building, row of trees) when a designated leader or teacher tosses a coin. Heads everyone goes right, tails all go left until another barrier is met and the coin is tossed again. Make a game by asking everyone to guess where we will finish up after 10, 20 or whatever number of minutes allocated. Nearest gets a prize. Stops for coin toss allows slower runners to catch up or get a little rest thereby keeping the group together.

✓ **Guess the pace** – determine a course (lap or laps or to a landmark and back) then give a time. Everyone starts together and the person who runs the course closest to the announced time gets a prize. No one to wear a watch. Make

sure the time you select is well within everyone's capability.

- ✓ **Lucky spot** – choose a spot in the training area without revealing it to anyone then have the children run around the area totally at random for a pre-determined time. When time is up the whistle goes and the child nearest the lucky spot receives a reward.
- ✓ **Relay sprints** – divide class into two even teams and run them against each other as a relay. Runner can sprint to a cone and back then tag next member or you can split the teams in two and have them go back and forth. Run as many times through as appropriate. A relay ensures adequate recovery from fast sprint while children wait their turn.
- ✓ **Jumps** – most crosscountry events have jumps so include obstacles in your activities. Can be a hay bale, bamboo stick suspended between two chairs, log or low fence.
- ✓ **Line fartlek** - entire group jogs in a long line. Person at the back sprints to the front – as soon as he or she reaches the front the next one at the back goes to the front, etc etc.

- ✓ **Hills or stairs** - strength is best developed on hills or if no hill is around, on stairs. So if you have access to a bank, grandstand or small hill, introduce short (10 – 30 metre or 10 – 20 stair flights) reps into your activities. Ensure the children walk back down and do not start the next rep until they have their breath back.

Thinking Running

Training is 80 percent physical and 20 percent mental. Racing is the other way around, 80 percent mental and 20 percent physical. Everyone on the start line has presumably done the training and is fit. With two runners of equal ability it's the one who focuses, concentrates and thinks best that will come out on top. The key is concentration.

On a training run the mind can wander, thoughts thought, scenery enjoyed and conversations carried on. Not so when racing. One must be constantly monitoring the situation, thinking about the job at hand.

Monitoring Oneself.

As discussed earlier there must be focus on running form. Is the runner relaxed? Are they running with good technique? Are they wasting energy? If one thinks about how they are running they will run better – if the mind wanders they will start running inefficiently, particularly when fatigue sets in.

Get runners into the habit of thinking about how they are feeling. Are they pacing themselves well? Can they go faster? Should they go slower? Have them monitor their breathing; it's the best indication of effort. Have them focus on possible developments. Are they prepared should a rival speed up? If someone did, should your athlete go with them, let them go or catch up gradually? Should they surge to isolate someone else? How can they stay with a group or get onto another group? (Running in a group is a lot easier than running by yourself). Do they risk leaving one group and trying to get onto one further ahead and be pulled through to a faster time? We have all seen races where someone loses concentration for a moment and finds themselves 100m or so behind the people they were running with. And at the end of the race are still 100m behind, so they ran the bulk of the race at the same pace as the others but were beaten by 100m. By being aware and staying focussed that gap wouldn't occur.



Monitoring the Course.

How far to go? How far gone? In a crosscountry event, what landmarks are there to indicate distance to the finish? (For instance, the athlete wants to increase pace over the last 400m then start an all out sprint with 100m to go. But it's no good if they do not know where the 400m mark is or the finish line is unsighted around a corner or obscured by the crowd.) What hills are there? What to do on the hills? Speed up? Slow down? Stay

the same? Surge at the bottom? Surge at the top? What is the shortest route to take? Is the shortest way the fastest? So many things to think about, so many reasons why one can't afford to let the mind wander.

Monitoring the Opposition.

Thinking must also include opponents in a race. How do opponents react to pace increases? How is their breathing? Have you or your athlete seen any of them before so know their likely tactics? The difference between winning and not winning could come down to knowing how opponents feel, thereby knowing what move they are likely to make and when they'll make it. It all comes down to focus, to being switched on.

Running can be likened to a piece of music. You don't listen to a song with the express purpose of getting to the end. You enjoy it, appreciating it as you go. Likewise with running. Sure, the purpose of racing is to reach the finish line in the shortest time, but as with music, make the period from the start to the finish something to enjoy. And by keeping your mind on what you're there for you'll get more out of it. So don't treat races as background music. Think of them as seeing your favourite band live – something to experience and enjoy.

Thought should go into the race before the gun goes. Coach (teacher) and athlete should work out strengths and weaknesses and the strengths or weaknesses of main rivals then plan a strategy around it. Should the start be fast or slow, do you use surges or is it better to run at a steady pace, do you plan a short sharp kick or a long kick to finish, attack the hills or cruise them? Have answers ready before the start. And have the athlete be prepared to modify plans should circumstances change after the gun goes off.

All the above applies only to older primary school ages – the children who are old enough to think and plan their races. For younger ones the emphasis is simply doing it and having fun. Too much planning, too much thinking can add pressures that take away the fun. So consider carefully which children you talk to about tactics and mental skills. For some it will be appropriate and it will help maintain focus during training and racing. For others it is a distraction or complication that detracts from what is a very simple and healthy activity – running!

Resting is Training

Training does not improve fitness. An outlandish statement? No way. Give thought to the logical extension of the statement, that the more you train the less fit you become.

So why do all this training if the athlete does not get fitter? Well, it's not the training that gives improvement; it's the recovery that allows you to progress. Training is a stress. Keep stressing the body and the athlete goes backwards. Stress the body then let it recover and ability improves. When you apply stress then recover the body bounces back a little higher than it was before. Stress then rest. It's so simple and straightforward yet ignore it. They omit the rest part of the equation. Quite simply, without rest there is no improvement. Of course, if you keep stressing the body with no recoveries



you'll just keep going down and down. This is called over training.

Important consideration here is that you should not set a training session for the children when they are tired – so if there was a hard session yesterday they rest or do an easy session today. If some of them had a netball or rugby game or hard training yesterday, ease up on their running today.

The Running Machine

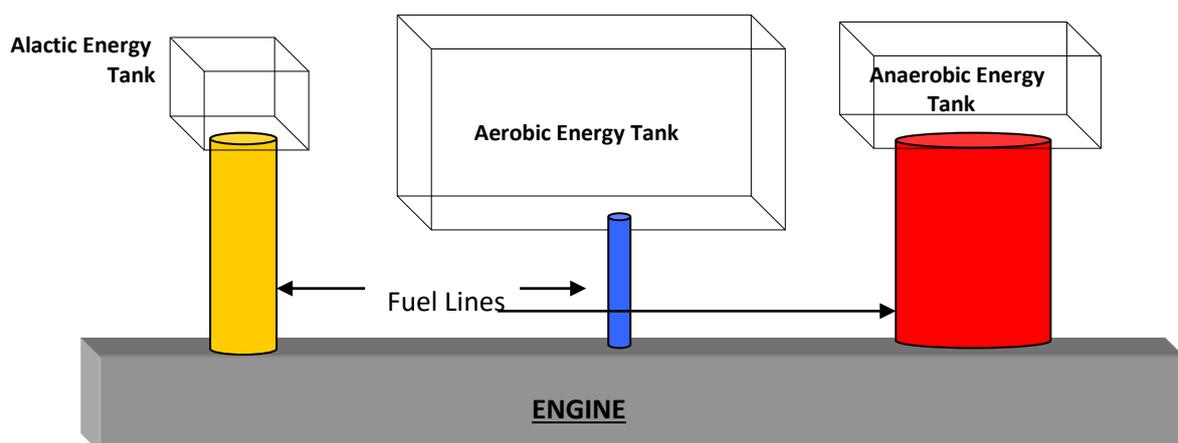
A bit of background and brief look at how we get our energy and how energy becomes movement. Consider the body is a machine with a motor connected to three fuel supplies. The first tank is the **alactic** system and while it supplies a large amount of fuel, it runs out quickly. The **aerobic** tank holds a lot but the fuel line is small, so it doesn't provide a great amount of energy but it lasts a long time. Then you have the **anaerobic** tank that has a large fuel line to provide a lot of energy but the tank will quickly run out. You use the alactic tank when starting up and getting going. The aerobic is for cruising. The anaerobic for when you need to put the pedal to the floor. The aerobic system uses oxygen, the other two are without oxygen.

However, it is important to understand that the energy systems work together, with the degree of intensity determining the proportion of energy supplied by each.

Here's how it works. Muscle movement requires a molecule called adenosine triphosphate, or ATP. Muscles have enough ATP for around 4 seconds of intense activity. After that we need to produce further supplies of ATP. First source is another phosphate found in muscles called CP and we have enough of this for another 12 seconds of hard exercise. This is the **alactic** energy system – *small tank, big fuel pipe*. To continue running after this supply is exhausted we must make ATP from the carbohydrates and/or fats supplied by the food we eat.

Doing this for any length of time requires oxygen. If you are able to take in more oxygen than you use you can keep going for as long as the glycogen (fuel provided by the carbohydrates and fats) lasts and the muscles have the strength to keep going. This is known as **aerobic** running, or running with oxygen – *big fuel tank, narrow fuel line*. The procedure is glycogen supplied from carbohydrates and fats changes to pyruvic acid with the pyruvic acid converting to carbon dioxide and water. In both processes ATP is given off. On the other hand, if we are using oxygen faster than we can take it in, the chemical process changes and we produce ATP **anaerobically** – *medium size tank, big, wide fuel line*. This tank is undeveloped in children so there's no point in training it.

The basis of training after puberty is to get more oxygen into the muscles by improving the efficiency of the aerobic system (heart, lungs, capillaries) and to teach the body to tolerate oxygen debt by making a bigger anaerobic tank and better fuel line. **But for children the emphasis needs to be on the aerobic tank and on running skills.**



Another way of looking at it is imagining a race is a bucket of energy with the bucket being fed by a tap. Running empties energy from the bucket. If you use up energy at the same rate or slower than the tap replenishes the bucket you can carry on running until the muscles tire out (aerobic running). But if you run at a pace that uses energy faster than the tap can fill the bucket you end up having to stop (anaerobic running). The faster you go the faster the bucket drains. The purpose of training is to develop a bigger tap and a bigger bucket, while the best tactic has a runner hit the finish line just as the bucket empties. Simple really.



NOTES

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