**Recovery Post -Workout / Post-Race.**

The word “recovery” in this context means what an athlete should do in the immediate aftermath of an intense workout. The first phase of the recovery starts with a proper cool-down. A 15-20 minute slow jog will usually suffice.( If you can do more than this , you probably haven’t ran hard enough in the workout or race ! ) This jog works like a massage as it pumps the blood ,containing lactic acid and minute tissue particles which have been secreted into the blood as a result of micro-tears in the musculature , back through the chambers of the heart where capillary filtration results in it being filtered and purged.

At this stage everybody ,no doubt , has heard of the “ 90 minute window” (as outlined by Mackinnon in 1996 ), that is the period immediately after training whent he athlete is particularly susceptible to picking up colds , bugs and infections of varying kinds . This is due to the fact that the athlete’s immune system has been temporarily weakened due to the stress of hard training . ( Hans Selye , possibly the greatest authority on the subject, has outlined the effects of stress on the human immune system in a number of works e.g. Hormones and Resistance , General Adaption Syndrome, The Stress of Life , etc. ). During this 90 minute period ( approximately ) ,the athlete’s “defences” remain lowered and , consequently, he must be particularly careful in taking proper care of himself. It can be argued that “recovery” should start even before the session is completed -although that might sound paradoxical. What is meant by this is that the athlete must hydrate before , during and after the workout.

It is also imperative that the athlete does not hang around afterwards ,especially if the weather is cold or damp. Yet, it is amazing to see the number of runners who stand around after a workout just “ shooting the breeze” with their friends . After doing their cool-down jog , they should , of course , have a shower ( or at least towel off the perspiration and have a shower when they get home ) and change into dry clothes . They should then ensure to consume some form of carbohydrate ( bananas are ideal ) and a small amount of protein which is essential in the process of re-building the muscle tissue which has been broken down . Eating some form of carbohydrate within 30 minutes of completing the workout will ensure that that your glycogen levels will return to normal much more quickly than if you postpone the ingestion of carbohydrate. A number of medical studies have shown that carbo .replacement almost immediately after exercise will permit as much as 300% more glycogen assimilation into blood and muscle sugar than if it is delayed until a few hours afterwards.

*( Jerry Kiernan was noted for coming into the Clonliffe Bar back in the 1980s ,after doing frightening* *sessions such as 8 X 1 mile in 4:28, and consuming a vast mound of banana sandwiches washed* *down by a pint of Guinness ) .*

Various studies have shown that carbohydrate , consumed within 30-45 minutes of finishing training, will speed up the recovery process and enhance the positive training effect by as much as 35-40%. With the advent of the muscle biopsy needle in the 1960s, it was determined that the major source of carbohydrate during exercise was the muscle glycogen stores . It was demonstrated that the **capacity to exercise at intensities of between 65 to 75 % of VO2 max. was related to pre-exercise** **levels of muscle glycogen i.e. the greater the muscle glycogen stores , the longer the exercise time to exhaustion.**

A study conducted among college students in the USA in the 1990s had some very interesting findings in this regard. On the first day of the study the athletes ( who had rested beforehand ) were found to have glycogen levels close to 100% capacity. They trained hard that day and it was found that their glycogen levels had dropped to 37% . The next day , after re-fuelling, sleep and rest , their glycogen levels had risen to just over 70%. They did an easy run that day and were tested again the next morning. Their levels were now up to 77%. They trained hard that afternoon, were tested again and it was found that their glycogen levels ad dropped to 29%. The next day was an easy day : their levels recovered to 68%. The next morning their average glycogen levels had risen to 73%. They trained hard again on the fifth day . The tough workout that day brought their levels down to 22%.

Two things are quite clear from this study : 1. Immediate carbo. replacement is essential

2. One day of active rest ( easy running ) between hard sessions is not sufficient to completely replenish glycogen stores and, if the athlete persists with this regime , he will eventually end up completely drained.

Athletes should also ensure that they cover their heads after training , especially in cold, damp weather . I often see young athletes going home on Winter nights with their hair still wet from training or from the shower . They shouldn’t be surprised if they wake up the next morning with a cold . While medical experts attest that the common cold is a virus and that getting wet has no bearing on whether we contract a cold or not , the empirical evidence is clear : if you don’t wrap up well after a hard workout in adverse weather conditions or if you hang around afterwards in a damp and cold environment ,you can certainly expect to go down with a cold or chest infection shortly afterwards.

When the athlete gets home ,he should also be aware of further recovery strategies . As he or she may have had only a slight snack some hours before training ,it may now be necessary to have dinner or the equivalent of a full balanced meal. Light stretching after training helps to loosen out any perceived stiffness. ( Indeed gentle stretching may be more important after training than before).The athlete should also take care in the manner in which he sits afterwards . “ Slouching” on a chair or couch while watching TV or simply relaxing is not recommended. The athlete should sit erect in a straight backed chair as “slouching” can lead to pooling of blood plasma or lymph fluid containing waste products and “debris” from broken down cells . It is this waste detritus – not lactic acid – that leads to stiffness and soreness the next day. ( the lactic will have been flushed out or recycled and metabolised relatively quickly ). DOMS ( Delayed Onset of Muscle Soreness ) can be experienced two to three days after a tough session largely due to the athlete not implementing best practice in the whole area of recovery. Some runners find that salt water baths ( preferably sea salt ) very efficacious in eliminating stiffness or soreness. ( Horse trainers have always known the benefits of walking their horses in sea-water ).

Obviously regular massage is another excellent method of relieving stiffness and in preventing injury. ( more about this later). Ice water baths and anti-inflammatory medications are also helpful in the recovery process. Be very careful, however, if ingesting anti-inflammatories : be sure to consult your doctor or pharmacist before doing so as many of them can be very hard on the stomach and can even lead to ulcers.

Drink plenty of water ( up to eight glasses a day ) .Remember that muscles are made up of 75% water and that water content must be replenished after it has been depleted by hard training. Modern work and living conditions ( e.g.sealed windows ,central heating and air-conditioning ) can all result in people becoming dehydrated without being aware of it. Air-travel also leads to dehydration and athletes travelling by ‘plane should ensure to keep themselves thoroughly hydrated.

Athletes must also remember that they cannot “burn the candle at both ends”. I distinctly remember the late Laro Byrne saying this time and time again to a young man back in the 70s who had prodigious talent and potential but who was a little too fond of the bright lights ! An athlete who is serious about his sport cannot indulge in a hectic social life . While nobody expects a young athlete to live like a hermit or monk , nevertheless he or she must realise that being a party animal or “a frequent flyer” to pubs and clubs will radically undermine the full development of his or her budding talent. The same applies to alcoholic drink . “ Moderation in everything” was the Golden Mean of the ancient Greeks and their wisdom is still apposite . We already dealt with the benefits of rest and sleep in the last article . But it might be worthwhile to repeat that sleep is Nature’s way of restoring and renewing our bodies after any form of stress , including hard training. Sleep releases HGH ( human growth hormone ) into the system and remember that this occurs primarily in the first few hours of sleep. We should also remember ( cf. last article ) that the sleep we obtain before midnight is more efficacious than sleep after that time.

On the two , or possibly three ,days after a hard workout the athlete should run easily or even very easily.The former National Director of Coaching , Jim Kilty , called these runs “therapy” runs. I think it is now generally recognised that a common mistake made by many athletes is that they do not run slowly enough on their recovery days .Jerry Kiernan has said that if he were to change one thing in the way that he trained , it would be that he would do his recovery runs at a much slower pace .Jerry also always claimed, back in the early 1980s, that if he had the same opportunity to rest and recover as much as the full time athletes had ,he would be able to match strides with the best of them . We didn’t believe him back then ( or at least pretended not to – just to wind him up ! ) but when he got the opportunity to get lots of rest , between some scary sessions it must be said, for six weeks before the L.A. Olympic marathon, Jerry showed that he had been correct , leaving legends such as Salazar , Seko and De Castella in his wake .

Seán Wade ( U.S. marathon runner with a PB of 2:10 ) has said “ Too many runners don’t run fast enough or slow enough” . He was referring to the recovery days when he said they don’t run “slow enough”. If that philosophy is good enough for those three great athletes it should be good enough for most runners. I recall an Irish athlete travelling to Florida some years ago to train with Mark Carroll. After a few days he complained that Mark was running too slowly in training. I asked him if he had done a session yet with Mark . He said that he had not . I told to wait until he had done so before he came to any conclusions. A couple of days later , we talked again. “How did the session go? ” I asked . “Oh God , he nearly killed me” was the reply . I think that anecdote illustrates what Seán Wade had meant and what Mark himself had meant in the quotation which appeared in the last article. It is noteworthy that the great Kenyan runners , when they are in training camp and run three times a day , always finish the day with a slow jog .I have known Irish athletes, who trained with the Kenyans , who did the morning run and the mid-morning workout but refused to do the evening jog because ,as they said, “it was so slow that there was no point in doing it”. Those athletes, ,I’m afraid, were completely missing the point! The slow jog which those elite Kenyan athletes did, was every bit as important as the other two workouts-possibly even more so -as it was a vital part of the recovery process. As stated earlier , the slow jog acts like a massage in the restorative process. The Kenyan runners are also noted for their ability to simply rest between workouts. In the Western world we seem to think that we must always be “busy”; unless we fill every waking moment with some activity we are almost in danger of being branded malingerers !

A final word of warning ( yes, I’m repeating myself ) : young athletes should be very wary of attempting to copy the training habits of elite runners as published in various magazines. For instance, Jack Daniels Ph.D. , is a fan of back-to-back workouts. He likes to get his athletes to do long “cruise intervals” on a Tuesday followed by a threshold run ,such as a tempo, on Wednesday .He advocates this for two reasons :

 1. It trains his athletes to cope with having to race on consecutive days ( obviously this applies only to elite runners who compete in major championships).

2 As muscle soreness ( DOMS ) is often greater on the second day after a hard session than on the very next day , another quality session is possible before the negative effects of the first day begin to take effect.

N.B. While being very reluctant to question the methods of one of the greatest coaches of all time , I would urge caution in attempting to follow this model .Only highly trained ,elite, full-time athletes would be able to cope with this template and , even then , only under the supervision of a very experienced coach .This type of training comes very close to “Over-reaching” ( more about this in a later article ) and over-reaching can easily become overtraining if not careful. And we all know the consequences of that : poor race results , a general feeling of lethargy and tiredness and ,eventually , total breakdown and injury .

Finally , a recent study conducted jointly by Tenovus Cancer Care and the Royal College of Music would suggest that music may have a role in the recovery process . The study found that listening to music ( of a soothing type – not heavy metal ! ) resulted in a decrease in the “stress hormone” cortisol, ( also known as hydrocortisone ) and an increase in the anti-inflammatory cytokines\* IL17 and IL4 .While cortisol has both good and bad effects ( it can help us run faster ) we certainly do not want it floating around in our blood streams long after the training session as it makes us susceptible to illness as well as preventing bone growth and muscle growth . It also raises blood pressure and decreases testosterone . it can cause an increase in gastric acid production leading to reflux and other problems in the intestine . (\* Cytokines are molecules that help the process of immune response and stimulates the movement of cells towards sites of inflammation ,infection and trauma)

So , listening to music may be one of the “one percenters “ ( all the little things which add up to making you a better runner ) that help in the recovery process. Although I have a feeling that members of the Old School may greet that one with considerable scepticism !

**Recovery Post -Race :** Everything which applied to recovering post workout also applies to recovery post race . But I’d like to enumerate a few anecdotes which illustrate the mistakes which athletes sometimes make after a race . Many runners do not allow themselves sufficient time to recover after a race . In their anxiety and desire to improve, they try to squeeze in one more workout when simply easy jogging might be the best training they could do in the circumstances.

An anecdote which clearly illustrates the need for adequate rest after racing deals with an experience I had back in 1998.That November the Inter-Counties Championship, which was also the trial for the European Cross-Country Championships , was held in Ballyhaise ,Co.Cavan. To say that the course was hilly and very,very muddy would be a gross understatement .The Euros were held just two weeks later in Ferrara in Italy. I happened to be the coach to the Irish team that year . On meeting the team just two days before the race , I was surprised to learn that all of them ,except one, had done three pretty hard workouts since the Trial. They had done this on the advice of their personal coaches. They had done a session on the Wednesday and Saturday after the race and an easier session on the following Tuesday. One runner , however, Martin McCarthy of Leevale had jogged easily for five days after the Trial ,did a workout on the Saturday and then jogged again until the Europeans . Most of the team finished in the high thirties or low forties . But one guy finished 15th. Guess who ? Yes indeed, Martin McCarthy ,the man who had played it smart and had given himself sufficient time to recover . A salutary lesson for all.

Sometimes ,if an athlete has had a good race he or she may be on an emotional high and ,as a result, may run too fast on the day after a race ,carried along on the joy and adrenaline rush from the previous day’s victory or good performance. But the opposite experience can also give rise to running too hard the day after a race. Athletes who have had a bad race ,or who feel they didn’t do themselves justice ,may get out the next day and really “give it a lash” in training. Witness Sonia O’Sullivan running a hard 10 miles back to her rented accommodation within an hour of her disappointing performance in the Olympic 5000m.in Atlanta Or Seb. Coe ,also belting out a fast 10 miles on the day after he had “only” finished second to Steve Ovett in the Moscow 800m.final. His father and coach ,Peter, had told him that he had ran “like a donkey” and with that shameful assessment ringing in his ears ,Seb. flew around that 10 miles in an effort to purge himself of the feeling that he hadn’t done himself justice. I once knew an athlete who had a poor run in a cross-country race and , in order to rid himself of the feeling that he had not run up to par, he came back to the same course early the next morning and “belted”out the race distance in a faster time than he had done in the race less than 24 hours earlier.

While these are all understandable reactions to disappointment, they are also ill-advised and ultimately counter-productive.

Once again I will say that athletes , young athletes in particular, should be very wary of what they read in glossy ,running magazines. One such magazine recently did an **article** on Nick Willis and **described how he did 10 X 400 in 64 seconds , with a 100m.jog recovery ,as part of his cool-down** after running a 3:51 indoor mile ! While a double Olympic medallist may be capable of such extraordinary feats ( and who am I to question him ! ) , a young athlete should not even think of copying him. If he does , he will soon learn that he is not ready for such a regime and will break down with injury. Of course one learns from one’s mistakes - and it may be the case that young people only learn from their own mistakes .

And so to sum up : runners should remember that recovery is vital . It is every bit as important as the actual training - indeed it is an intrinsic part of the training process. Resting or easy ,recovery running can be the hardest part of a training programme for an athlete ,especially a young athlete , to accept. Not again the words of Seb. Coe ( quoted in the last article ) in which he said that one of the most important things his father did as his coach was to prevent him from training too hard. So enjoy your rest and recovery days , secure in the knowledge that it is during those times that the actual training effect is taking place .