



Toronto's New Balance Specialty Store

INTRODUCTION TO RUNNING TRAINING MANUAL



CONTENTS

INTRODUCTION: WHY RUNNING?	1
SAFETY POINTS	2
Chapter 1: GOAL SETTING	3
Chapter 2: BIOCHEMISTRY: THE ABBREVIATED VERSION	5
Chapter 3: THE ESSENCE OF TRAINING	7
Chapter 4: THE SCHEDULE	11
Chapter 5: THE PROPER EQUIPMENT	13
Chapter 6: CLOTHING FOR RUNNERS	16
Chapter 7: STRETCHING	19
Chapter 8: NUTRITION	22
Chapter 9: RUNNING FORM	28
Chapter 10: HILLS	31
Chapter 11: SPEED WORK	33
Chapter 12: INJURY PREVENTION	36
Chapter 13: CROSS TRAINING	38
Chapter 14: HEART RATE AND TRAINING	41
Chapter 15: OVERTRAINING	44
Chapter 16: MENTAL PREPARATION	47
Chapter 17: TAPERING	50
Chapter 18: RACE DAY I: THE LOGISTICS	53
Chapter 19: RACE DAY II: RACE TACTICS	55
Chapter 20: WHAT NEXT: RECOVERY AND BEYOND	58
TRAINING LOG	60

INTRODUCTION: WHY RUNNING?

Welcome to the New Balance Toronto Start Running Clinic! If you are embarking on a running program for the first time, you are setting out on a journey with limitless possibilities if you train sensibly and take things one step at a time. Having registered for this clinic, you have already made yourself a commitment to pursue a new activity, and presumably have some idea of why you have decided to become a runner. There are as many reasons to run, as there are runners; some we hear articulated with precision and promoted with messianic zeal, while others are private and intuitive, defying the power of words. Some of us run without knowing or caring why: it simply would never occur to us not to run. We run to be different, embracing with pride the slogan “It’s a running thing...you wouldn’t understand.”

If this seems like the beginnings of a cult, the sport has drawn that comparison. Yet in reality, it is an anti-cult – affirming individuality rather than destroying it. Running can certainly be addictive, but it is a healthy addiction. Despite the misgivings expressed in some quarters, a properly conducted running program is an excellent strategy to combat a host of lifestyle-induced ailments from heart disease to osteoporosis. It is a great help in achieving or maintaining a healthy weight, and moreover in accepting the contrast between a truly healthy weight and the illusory ideal promoted in our popular culture.

It is this last point, the boost to self-esteem, that gives running its greatest benefit. The sport allows us to set and achieve goals, asserting control in over least one aspect of life in a world increasingly beyond individual control. We can reach out and grasp the title of athlete in a society obsessed with professional sports, use our run to think through life’s dilemmas or simply burn off the stress of a working day.

Most of all, running can, and should be fun. In contrast to the “no pain no gain” philosophy that pervades our society, and the gym teachers who sent us to run laps as punishment, a sound program keeps the intensity down and allows you to capture the freedom of movement and the spontaneity of play. As we attain the mythic “runner’s high”, we fulfill humanity’s age-old quest to experience the feeling of flight.

In order to keep the sport fun, we need to keep the training sensible and safe. Much of the material covered over the next ten weeks will address this in more detail, but there are certain safety tips we need to keep in mind right from Day 1.

SAFETY POINTS: ON THE RUN

1. Wear reflective clothing if you are out after dark. We may joke that drivers are trying to hit us, but they'd rather not dent their cars, so we are safer being visible.
2. Obey traffic rules, especially in large groups. You may think you have time to beat a stoplight, but by the time the end of the pack follows, cars are upon us and we are at risk.
3. Stay alert. Keep to well-lit and traveled areas (preferably in daylight) and try not to run alone. Canadian cities are pretty safe, but why tempt fate? If you need to run alone, vary your routine and try to let someone know your route.
4. Carry water (and make sure you drink it). Even in winter you can get dehydrated.
5. Especially in winter, start you runs as much as possible against the wind and finish with the wind at your back. If you get into trouble, you'll have an easier (and warmer) time getting home with the wind, instead of against it.
6. Carry subway fare, or at least a quarter for the phone in case injury or another emergency strikes.
7. On clinic runs, keep the pace group together as much as possible. That's the whole point of the group dynamic.
8. Eat something rich in complex (starchy rather than sugary) carbohydrates before each run (and after). Experiment with the foods and timing that work best for your individual stomach, but don't try to run while "down a quart".
9. Pay attention to your stretching. Get your legs warmed up a little before stretching; be gentle with the intensity and don't forget to do your cool down stretches.
10. Read the manual sooner rather than later. Each week we have a half hour to cover one or two topics in some detail, but most of the topics we address are relevant right from day one. Since we can't sit until 4am covering everything the first night, try to get a preview by glancing at the manual.
11. Adapt the schedules to your needs. Back off if necessary, and consult the instructors before adding anything on.
12. Listen to your body. Back off at the first sign of an ache or pain before it becomes an injury.
13. Ask questions. That is what we're here for.
14. HAVE FUN!



Chapter 1: GOAL SETTING

One of the most important aspects of any endeavour, including running, is to be pursuing a set of realistic, meaningful goals. These objectives help keep us focused when the going gets tough, and make the accomplishment more rewarding when it's something we've been actively chasing. The key is that your goals have to be your own; they must be something of value to you and cannot be imposed by someone else. It is all well and good if someone tells you that you have the speed to run a certain time, but if you are not interested in speed, do not let anyone push you to adopt this goal. Your ambition may be to run a certain distance or time; it may be to keep running into your second century or to discover a healthier lifestyle through the discipline of athletic training. Whatever meaning you find in the sport, it is your own, and it makes you every bit as much an athlete as the speediest characters we see on television every four years.

SHORT TERM AND LONG TERM GOALS

Goals, of course can be short or long term, but you'll get the most out of your running if you set both long and short term objectives. Ask yourself what you ultimately want out of your running life, and set interim benchmarks along the way: for the year, for the next six months, and for each week in the process. By having both long and short term objectives, you'll avoid both the discouragement of seeing a distant reward that fails to get noticeably closer, but also the short term letdown of crossing a finish line with nothing left to look forward to.

REALISTIC GOALS

In order for your goals to remain meaningful, they need to strike a balance between challenge and realism. If you set an objective that is too easy, you'll soon lose interest; if it is too unrealistic, you'll lose hope. It often helps to set multi-level goals: an ultimate dream if things go better than expected, a central ambition to focus your efforts and a fallback achievement that will still give you a sense of reward if unfavourable circumstances develop beyond your control. This is a key balance, since achieving a properly chosen goal should depend primarily on what you put into it, but inevitably circumstance will play at least some role. Plan your goals around both good luck and bad.

LONG TERM REWARDS

It is also essential to keep reevaluating your goals to make sure they still hit the right balance of challenge and realism – especially for your longer term objectives. You may find your career progressing faster than anticipated and you need to set new challenges. Conversely, you may find you are overestimating your abilities and need to scale back on your ambitions. Do not use this as an excuse to bail out on your dream every time the going gets tough: the most rewarding goals are those that require tenacity and courage against at least some risk of failure. Do, however, maintain some flexibility in defining the victory you pursue so it remains difficult but not out of reach.

Chapter 2: BIOCHEMISTRY – THE ABBREVIATED VERSION

The essence of sound training involves a counter-intuitive grasp of the fundamental gulf between the level of distance or intensity that we are capable of on any single day and the more restricted level we can safely maintain over a period of time. Seldom, if ever, should a workout be to run as far as we can as fast as we can. In contrast with the “no pain no gain” philosophy that pervades our society, we need as runners to keep the intensity within the aerobic, or oxygen-burning zone for most of our workouts. The fuel we burn to produce energy comes from two sources.

WHY FAT IS GOOD

The ideal source is fat, which is in almost limitless supply even in an exceptionally lean runner. Unfortunately, this fuel source can only be tapped at a limited rate. This is especially so early in the run, when our fat stores have not been mobilized into the blood stream: thus the added importance of a thorough warm-up and a cautious early pace on race day. Even once mobilized, fat can only be burned at a limited rate, with oxygen as part of the chemical reaction.

HOW CARBOHYDRATES WORK

Any demands for energy beyond the speed we can burn fat are met by carbohydrate: mostly in the form of glycogen stored in the muscles, but also the limited amount we can process by eating on the run. We can recruit this fuel as fast as we need to, but the supply is limited; though we can train our legs to store more glycogen, we can never make the store limitless. To make matters more difficult, the breakdown of glycogen happens in two stages: the first stage requires no oxygen and produces energy plus lactic acid. The second step uses oxygen – also available at a limited speed – to break down the lactic acid and produce more energy. If we run at too high a speed and outstrip our ability to process oxygen, we get less than the full capacity of energy from our most limited fuel source. If we really push the pace, the lactic acid builds up in our muscles faster than the blood stream can carry it away, and our muscles tie up to avoid acid damage: the classic “rigor mortis” of a shorter race. If our speed is more modestly excessive, as in a longer race, we can flush out most of the acid, but miss out on the potential energy supply. When our glycogen stores are exhausted we are thrown back to the slow process of mobilizing fat alone as a

fuel source. This painful moment is the infamous WALL: the brain sends a warning signal (in the form of overall body pain and central nervous system fatigue) that we are depleting the glycogen needed for the brain to continue functioning. Moreover, the limited speed of fat burning physically compels us to slow down, regardless of our courage and pain tolerance. Both Rigor Mortis and the Wall may be traumatic, but they are completely avoidable if we train properly and run at a sensible pace.

MAXIMIZING GLYCOGEN

To train ourselves properly to get the most energy we can from our glycogen stores, we need to remember a couple key terms from physiology:

- Our **Max VO₂** is the maximum amount of oxygen our bodies can breathe in, absorb, carry to our muscles and burn to produce energy. This is the most fundamental component of our fitness level, which we build largely through our slow easy runs. As a rule, when we increase our demand for energy, the body will tap into this aerobic capacity before turning to the anaerobic (“without oxygen”) side of the energy equation. However, there is a grey area at the top of our Max VO₂ in which increased demands for energy are met by a combination of aerobic and anaerobic work.
- The **Anaerobic Threshold** is the boundary marking the proportion of our Max VO₂ that we can recruit before switching into that combination of aerobic and anaerobic recruitment. With training, we can increase this threshold – largely through the repeats that we do in our speedwork sessions. When we combine this with a higher Max VO₂ capacity our training will allow us to run longer at a faster speed before we exhaust our glycogen stores.

Chapter 3: THE ESSENCE OF TRAINING

MYTH: MORE IS BETTER

Unlike some sports, in which technique and strategy are more dominant than conditioning, the building up of our fitness level forms the essence of training for distance running. Form and tactics are important, but the whole program hinges on conditioning. Here, it is important to differentiate between dedication and stubbornness. In our North American sporting ethos, we have been accustomed to a “more is better” philosophy that knows no limit. In running terms, however, the unbridled application of this philosophy leads to more injuries. Planning a training program would be simple if all you had to do was run as far as you can as fast as you can and come back for more the next day. Yet as impatient as we may be, we need to recognize the distinction, at times a vast gulf, between the amount of running we are capable of on any given day and the volume that fits into a sound training program.

ACHIEVING BALANCE

Key to all of this is the cycle of stress and rest that represents the two sides to our training. When we run, or engage in any other training activity, we do a controlled amount of damage to our bodies, breaking down muscle tissue, energy stores and even our immune systems. When we rest, the body repairs all these things stronger than ever. Thus, as a pairing, work and rest need to be kept in balance: too little training and we get out of shape; but the far greater danger when we are chasing exalted goals is that with too much work OR too little rest, we dig ourselves ever deeper into fatigue, illness or injury.

In other words, there is no single magic workout that will bring our goals to fruition. The key is consistency over an extended training season. To stay consistent, we need to remain healthy – by exercising patience, implementing moderation in training and taking our rest. The key components to this moderation are the Ten Percent Rule, the Hard-Easy Rule and the seasonal breakdown of a training schedule.

EXECUTING THE TEN PERCENT RULE

The ten percent rule refers to the maximum increase that is recommended in the total volume of training for a week, whether we measure it in distance or time. For someone running twenty minutes three times a week, this total of sixty minutes allows

for an increase of six minutes for the following week; someone running twenty kilometers one week is allowed twenty-two the next one. The six minutes, or two kilometers, can be spread evenly through the week or weighted more heavily toward one or two significant runs. Be careful, though, not to overdo the increase on any one run either. As you will notice in the actual training schedule, ten percent is not a hard cap for a daily basis, but you can't make your longest run leap safely from 3K to 10K by simply packing three days' worth of last week's runs into one day this week.

This applies as much to making up lost ground as it does to premeditated impatience. If you miss one or more runs, don't try to jam the mileage blindly into the remaining days of the week. Keep in mind the moderate progression of individual runs, as well as the need to schedule easy days between hard runs. This hard-easy principle has been a cornerstone of training even for elite athletes, and while you may read of some newer alternatives, it remains the safest way to structure your week. Under this principle, no two hard runs can be on consecutive days. Long runs, hill work and speed sessions all need AT LEAST one day of rest or easier running before the next long or fast session.

These faster workouts – the hill or speed workouts – will only be found at certain points in the training season, and only after a solid period spent building your fundamental fitness level through slow easy runs. The harder, faster work is also harder on the body, and each requires a period of preparation to be done safely. If your running goals are non-competitive, you need not worry about the stress of harder workouts. However, once your running career has found its feet, you may feel you want to try a more competitive aspect of the sport. If this is the case, try to break a training year into no more than two seasons with a peak goal for each. In any season, the long slow runs will be the largest building blocks for improving your fitness level.

THE BUILDING BLOCKS OF TRAINING

Half your season should be dedicated to this BASE PERIOD consisting strictly of slow, easy mileage and long runs. This will strengthen the cardiovascular system and the muscle fibres in order to begin safely the next phase, the STRENGTHENING PERIOD. This phase, lasting about a third of your season, will replace one easy run with a session of hill repeats—running up and down a moderate hill fast up and easy down. This harder workout is tougher on the body, but will give you the physical and mental toughness to cope with the final SHARPENING PERIOD in which you replace

hill work with speed work – alternating fast running with rest on a more level surface. This speed work gives you the quickest boost to your running pace, but is highest on the wear and tear scale. This phase of your program needs to be of limited duration and culminate just before your peak goal for the season. From here, the TAPER gives you two to three weeks of de-escalation so you can be rested and tap into your hard-earned fitness level. After your peak race, you need to recover a couple weeks (or more) before starting your next base period.

THE PRINCIPLE OF MODERATION

Between seasons, and even in the progression of weeks within a season, we need to follow a cycle of two steps forward, one step back. Every few weeks, there will be a pause or even a cutting back of mileage and /or intensity to give the body a chance to catch up to the progressive increase. Once we have run the peak event of our season, we need to build in a couple weeks' recovery (or more) before going back into the base period for our next season. If we jump into a race during this new base period, we should be neither surprised nor disappointed to find our times slower than they were at our last peak. We have lost little or no fitness level, but the sharp edge of speed cannot be maintained indefinitely; we'll have improved from the same time last year, but to compare base period races to peak season performances is an apples-to-oranges comparison. Have patience...your wheels will return when you resume speed work. Again, this harder work is only necessary if you are interested in running faster (or if you develop a warped sense of humour). If your goals remain fitness and health related, you can keep strictly to a life-long routine of easy runs. However, the principle of moderation, especially the ten percent rule, applies regardless of your competitive ambitions.

MONITORING YOUR PROGRESS

Once you have a plan, you need to monitor your body's response to the progression of workouts you have set for yourself. Even the best-designed programs for the most advanced athletes are educated guesses about our bodies' ability to recover from these workouts. Constant vigilance is required to make sure the cycle of tearing down and rebuilding is still in balance. You may feel some lingering fatigue the day after a hard workout, but if this persists two days later, you'll need to back off before fatigue becomes an injury. Mileage targets are not carved in stone, either for the day or for the week. Don't be afraid to reduce or even skip a workout to rest legs that are not

recovering as fast as expected. We do not start to lose fitness until after a week of inactivity, so losing a workout here and there will not seriously harm our training. Try to prioritize the workouts you keep: if you are training for a competitive goal, the long run comes first, followed by your hill or speed work; but it is better to sacrifice even one of these than to spend a month on the sidelines because we allowed our tenacity to cross the line into pig-headedness.

THE ROAD TO DEDICATION

Of course, the other side to consistency is dedication. You are embarking on an initial buildup of ten weeks, and future training seasons can be up to half a year in length; we need to brace ourselves for the motivational ups and downs that are inevitable in an undertaking of that duration. We will face extremes of heat or cold, rain, darkness and the siren song of the beckoning television (or refrigerator) at the end of a long day. At times, our legs will be fine, but the mind will give us numerous excuses to cancel our run. On these occasions, we need to force ourselves out the door, even if we tell ourselves we are just going for a walk. One trick is to make small, incremental decisions about what you WILL do, not what you won't. Change into your running gear for more comfortable TV viewing; do some gentle stretching; tell yourself you are going for a walk. Before you know it, you will often have talked yourself back into doing your run. If you do miss a run, you need to pick yourself back up for the next one and not get discouraged by the momentary lapse. We lose fitness no more rapidly during a motivational dip than we do during an injury prevention day; but the pattern we set is the key. As you begin to see your goals come to fruition, you will take pride in achievements that are greater tests of your dedication than of your physical abilities. Use the energy of the group to pull you through the motivational dips, but don't be afraid to back off if the mental obstacle becomes a physical one.

Chapter 4: THE SCHEDULE

Now we come to the heart of the entire program: WHAT should I be running, and WHEN? The training schedule in this chapter is set out as a goal, but as we discussed in earlier chapters, these goals need to be flexible according to changing circumstances. You'll need enough dedication to stay focused, but you also need to be responsive to the way your body reacts to the gradual increase in training loads. You may find, especially early on, that the training seems too easy. DO NOT add mileage to the schedule without consulting your instructors, as the training will escalate readily enough, and you need to be rested and healthy, as well as fit to accommodate the harder volumes later on.

On the other hand, if you feel sluggish for several days in a row, or if you have any aches and pains, amend the schedule by backing off – reducing or even canceling a run here and there to prevent these minor difficulties from becoming serious. There is enough margin for error in this program to allow you to miss a few workouts and still achieve your goals, but you can't achieve them if you are on the sidelines injured. Remember, you can take up to a week completely off without losing any fitness, so don't panic over a couple missed runs. After making a reduction in one week, though don't forget to follow the ten percent rule in trying to catch back up to the printed schedule. DO NOT try to cram the missed runs into the remaining days of the week, and don't worry if your mileage stays below the scheduled level for the remainder of the program. As well, feel free to rearrange the days of the week to fit your schedule, but remember the hard/easy rule, and distribute the workload as evenly through the week as you can.

THE IMPORTANCE OF WALK BREAKS

The program envisions building your mileage by alternating running with walking breaks. The walk break functions within a run the same way a cutback week functions within a season. It helps reduce the intensity of the run, reducing the wear and tear without compromising the training effect. Like drinking on the run, it is the early breaks that do you the most good, so build them in right from the beginning, even if you do not feel the need for them right away. We will start most groups off with a minute run-minute walk cycle, building gradually the intervals between walk breaks the same way we build the overall length of the workout. Even in a race, you will often find that the walk breaks help you maintain your speed at the point when other runners are hitting the wall; thus by investing a few seconds every few minutes, you will actually run a faster time. Keep a brisk pace with long strides as you walk, and the break will double as a dynamic stretching session.

10 WEEK START RUNNING PROGRAM

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
1		10x1mR/1mW			10x1/1		10x1/1	30/30
2		6x2/1			6x2/1		8x2/1	40/20
3		4x3/1			5x3/1		7x3/1	48/16
4		4x4/1			4x4/1		6x4/1	56/14
5		3x5/1			3x5/1		6x5/1	60/12
6		3x6/1			3x6/1		5x6/1	66/11
7		2x7/1			2x7/1		5x7/1	70/10
8		2x8/1			2x8/1		5x8/1	80/10
9		2x9/1			2x9/1		5x9/1	90/10
10		2x10/1			1x10/1		1x10/1	40/4
11	5K!!!							

Chapter 5: THE PROPER EQUIPMENT

As runners we are lucky to enjoy a relatively inexpensive pastime. There are no lift tickets to buy or ice surfaces to rent; nor do we need a thousand dollars' worth of gear. However, we do need to refrain from cutting corners on the equipment we do need: proper shoes and clothing. Though some runners will feel drawn to build a more elaborate wardrobe than others, there are a few pieces that are indispensable for safe and comfortable participation in an extended training program.

SHOES

The single most important piece of equipment you will need is your shoes. While proper clothing is essential to keep you comfortable, the right shoe goes beyond this to help reduce your risk of getting injured. In this, your shoes will be a highly individual selection, based on the function and fit for your unique foot. Every shoe you see on our wall is a good shoe, but only one or a very few will be good for your feet. The shoes that your running buddy raves about are not likely the right shoes for you.

Once the focus of any one workout becomes the run, your shoes need to be made specifically for running; cross trainers offer the tantalizing prospect of one pair for all purposes, but the structural trade-offs will be unsuitable for the amount of running you will be doing. A "running" running shoe will be unique in promoting the proper heel-toe roll that helps dissipate some of the shock of impact. Moreover, the running line will offer a broad range of options in support or flexibility under the arch to address your degree of pronation.

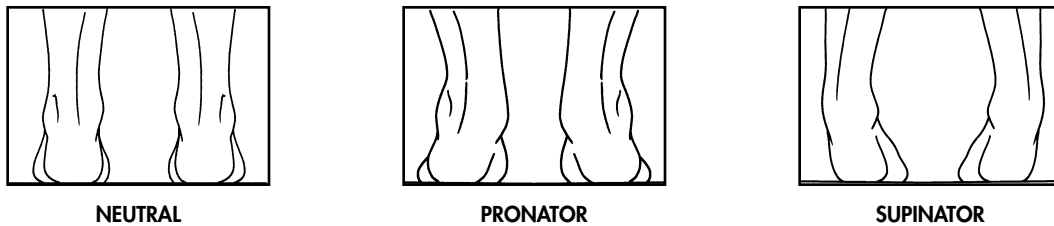
You'll often hear the word PRONATION thrown around as the runner's worst four letter word; yet some degree of pronation is actually beneficial. As we swing our leg forward toward the ground, almost all of us tilt the foot outward, or SUPINATE, and land on the outside corner of the heel. It is what happens next that is crucial in determining the type of shoe that we need. As part of the foot's shock-absorbing mechanism, we want to roll from heel to toe, and to pronate, or roll inward to a neutral, or straight up and down position. If you have a high, strong arch and a rigid foot, chances are you will have this neutral gait. In this case, you will want a neutral, or "cushioning" shoe which gives you the flexibility to allow your foot to pronate as much as possible to get back to the neutral position.

The problem arises, however, because most of us have a more flexible foot, often with a flatter arch. As a result we pronate too much and the resulting twisting motion sends a lot of torsional strain echoing up the legs and is one of the most common causes of almost all the classic runners' injuries from the arch of the foot through to the lower back. Instead of a neutral shoe, we need varying degrees of stability or motion control to block the excess degree of pronation without pushing the foot back into supination. Thus a mild to moderate overpronator will need a mild to moderate stability shoe, while a severe overpronator has to step up to a stronger motion control shoe. Again, DO NOT blindly assume that more support is better without knowing your foot, because if you get too much support the resulting supination will create the mirror image of the stresses we are trying to eliminate.

Different shoes will combine different technologies, but the most common are a plastic roll bar on the inside heel, and/or a "medial post" or harder density of cushioning foam under the arch to block the foot from rolling inward. (This is usually coloured grey for ease of detection.) You may also hear runners talk about straight versus curved lasting, and board versus slip lasting. The "last" is the mold the shoe is built on; a straighter shape, wider through the arch will be more stable, and fit the shape of a flatter foot than will a scooped out curved shoe. Similarly, gluing a cardboard piece under the insole will increase the stability compared with slip lasting that leaves the board out. ("Combination lasting" puts the board only in the rear half of the shoe.)

HOW TO DETERMINE IF YOU PRONATE OR SUPINATE:

You can test your own foot type at home in a couple ways. Take a look at the wear on your old shoes: you'll almost certainly see the greatest wear on the outside corner of the heel, but track where it goes from there. If the shoe is the right degree of support, the wear in the front half should flow straight off the centre of the toes. If it stays on the outside all the way forward, you want a more flexible shoe; if it falls too far inward you want more stability. Another option is the footprint test: step with a wet foot onto a sheet of newsprint, fuzzy bathmat, or anything that will show a clear footprint. If you see the print almost disappear under the arch, it indicates a neutral gait requiring a cushioning shoe; if you have to check closely to even see where the arch is, you have a flat foot with severe overpronation and need solid motion control. A moderate curvature indicates a more moderate need for stability. Be sure to check both feet, as most of us have some difference from left to right.



Better yet, have the staff check your feet when you are buying shoes. We can take a look at your gait and assess the level of stability you need. Make sure we measure your feet to get a good starting point for the fit. Different models will fit differently; so don't be alarmed if you try on different sizes in different shoes. Our two feet will often be slightly different, so make sure you fit to the larger foot (and as the foot swells during the course of the day, fit to the foot at its largest phase). It is better to have one shoe a little generous than the other a bit tight. You are looking for a comfortable feeling right away; do not count on the shoe to stretch and become comfortable later on. Your foot should be held securely in place; it should not be able to slide around, but it should not be pinched or constricted either. Expect to have room for your toes to wiggle, even if this is unfamiliar in comparison with your everyday shoes. There should be at least half a thumbnail's length space between the end of your longest toe and the end of the shoe. As your foot comes down with four times your body's weight, the force of impact splay the feet and forces the toes forward; if they are already too close to the end of the shoe they will hit the end with each step. The repeated impact can bruise or break toenails and even rip them out of their sockets – a nasty and preventable little injury.

THE LIFESPAN OF A RUNNER'S SHOE

One of the most frequently asked questions is how long a shoe should last. It will vary from person to person, but about 500 miles or 800 kilometers is a good average. As the cushioning compresses and rebounds with each step, it will eventually reach a state of material fatigue at which it no longer rebounds adequately and your feet will no longer be protected from the shock of impact. If you have a light efficient gait this will take longer than it will if you crash down very heavily with each step. There are however, few visible signs when it does happen. The cushioning will normally break down before you wear out the tread or poke holes in the upper; the shoe will look perfectly fine, but your feet will be at risk from the added impact. Keep a log of your mileage in each shoe, and as you get close to the expected 500 miles start trying on new shoes. When you feel a big difference in cushioning between yours and the new pair, IT IS TIME. Another of the most common injury causes is the attempt to spin too many miles out of a worn out pair of shoes.

Chapter 6: CLOTHING FOR RUNNERS

Also important for your comfort through ten weeks' training is the clothing you select. Though the word polyester may conjure bad memories from the 1970s, this and similar synthetics will help enormously by wicking, or pushing sweat outward and away from the skin to keep you drier and more comfortable. By staying drier you will be cooler in hot weather and warmer in the cold. Cotton may be a soft, inexpensive fabric, but when it gets wet it stays wet and so do you. Leave it at home and stick with the wicking fabrics.

SUMMER

In warm weather, keep with lightweight, loose items. The loose fit will allow more air to circulate and cool you. Shorts should have a wicking lining and a fast-drying outer layer, while a mesh weave for your shirt will increase the air flow. If you are out in the sun, make sure you have sleeves to protect you from UV radiation; long sleeves offer the best protection, though they will be a little hotter. Sunscreen, sunglasses and a hat to keep the sun off your head are also important. Don't forget to choose a synthetic sock; shorter, thinner socks are usually more comfortable in the heat. The most common summer form of wicking polyester is Coolmax, a lightweight version produced by Dupont. Other variants will have a different weave and feel, but will perform the same function of pushing sweat outward away from the skin to keep you drier and more comfortable. These wicking fabrics are more expensive than cotton, but the difference in comfort is enormous.

You will also want to integrate the proper clothing with common sense in your summer schedule. Run early in the morning as much as possible, when both the temperature and the UV radiation are near their lowest. Monitor both the actual temperature and the humidex, as well as the pollution index: be prepared to cut short the duration or move indoors if these reach abnormal levels. You certainly will want to back off on your intensity in the heat to allow your body extra opportunity to stay cool. Pick shadier routes if you are running in daylight hours, and plan more water access.

Above all, monitor yourself for signs of dehydration or overheating. Premature fatigue, hot dry skin or cold clammy skin, cessation of sweating, loss of concentration or co-ordination, slurring of speech, nausea or dizziness are early warning signs of both

conditions and should set off alarm bells: STOP, HYDRATE AND COOL OFF! Dehydration and overheating can lead to serious illness and in extreme cases, death. Pay attention and stay safe.

WINTER

The fabrics you choose in winter will be along the same principles as in summer, but with opposite applications. If staying dry keeps you cooler in hot weather, it will keep you warmer in the cold. Obviously, you will want thicker, heavier fabrics, but don't overdo this. Multiple layers of moderate thickness will give you more flexibility through varying temperatures than will a single heavy garment. Closer weaves and tighter fits will help reduce the flow of cold air, but don't make it so tight you restrict blood flow. In the dead of winter, many runners will go with a three layer system: a light base layer to initiate the wicking process, an insulating layer to continue moving the moisture outward and to provide the bulk of the warmth, and an outer windproof layer. A good jacket will give at least some water resistance, but must also be breathable. Like the reverse principle of a lobster trap, water vapour from your sweat is allowed to pass outward, but incoming rain or snow is blocked. This combination of windproofing and breathability is more important for a winter jacket than is full waterproofing. Be careful not to overdress; if you are too warm and sweat faster than your clothes can wick it away, you risk chilling later on. Remember to keep your legs as warm as your torso. These working muscles generate enough heat to tempt many into dressing lightly in the lower half, but as the muscles get cold they tighten up: you lose efficiency and increase the risk of injury.

FROST, BITES!

Pay attention as well to smaller exposed areas to prevent frostbite: mitts are warmer than gloves, and hats are warmer than headbands. On very cold days use a balaclava to protect the cheeks and nose. You may want to consider thicker socks, but make sure they do not make your shoes fit too tight and restrict blood flow. This increases the risk of frostbite in the toes.

As with summer running, winter clothing goes hand in hand with other winter safety tips. Try to run in the brightest, warmest times of the day that your schedule will permit. Select routes with the best combination of shelter from the wind, dry footing

and light traffic – a sometimes contradictory combination in a world dominated by the automobile. Try to set out against the wind, getting the hardest, coldest part of the run over while you are still well rested and enjoy the wind at your back on the way home. Be aware of the wind chill factor and watch for signs of frostbite. Skin turning deep red and then pasty white should set off alarm bells; try on cold days to run with a partner who can act as a lookout. When the footing is questionable, slow down. Take extra care to keep your feet under you, especially while turning; and if you feel yourself falling, let yourself go down (under as much control as possible). You can injure yourself badly trying unsuccessfully to catch yourself as you bend a joint in the wrong direction. Don't worry if your winter runs don't match your anticipated speeds. The priority is to put in the miles and to do it safely. The speed will wait.

Chapter 7: STRETCHING

WHY STRETCH

One of the keys to running safely and efficiently is maintaining (and improving) your flexibility. Runners are notorious for having tight muscles, especially the hamstrings. By increasing the range of motion in the various muscle groups, we can run faster with less energy. More importantly, the muscles will face less strain and the risk of pulls and tears will decrease. It is essential, though, to stretch properly, or you will actually decrease your flexibility and increase your risk of injury.

THE IMPORTANCE OF WARM MUSCLES

Your first priority is to make sure your muscles are warm when you begin to stretch. Too many runners try to stretch cold, tight muscles before their workout and trigger a stretch response that tightens the muscles still further; this prompts some to question the value of pre-run flexibility sessions or even stretching at all. If you are stretching before a workout, try to jog easily for ten to fifteen minutes before stretching; if at home or work during the course of a day, make sure you've loosened the muscles up by moving around or taking a warm shower. The pre-stretch jog presents logistical challenges in the winter, when you warm up only to pause and stretch in a cold snow bank. If you can, circle back to stretch indoors after the initial warm-up. The best time to do most of your stretching is after a workout, when the muscles are still warm. Give your legs a few minutes to loosen back up after the tension of high intensity work and then use this time to make the most progress in your flexibility.

HOW TO STRETCH

Make sure you stretch gently and hold each one for at least 30 seconds. You should feel a sensation of tension, but not pain as you move into position. As you elongate each muscle toward the limit of its flexibility it will tend to contract in what is called the "stretch reflex"; the muscle tries to shorten itself to move away from the potential for injury by over-stretching. Lean gently into position and hold it until you feel the muscle relax; you will then be able to go deeper into the stretch and hold it for the remainder of the 30 seconds. Three repetitions on each muscle group should give you a good session's progress. You should notice a general trend toward improved flexibility, but do not expect linear progress each day. Some days your muscles will

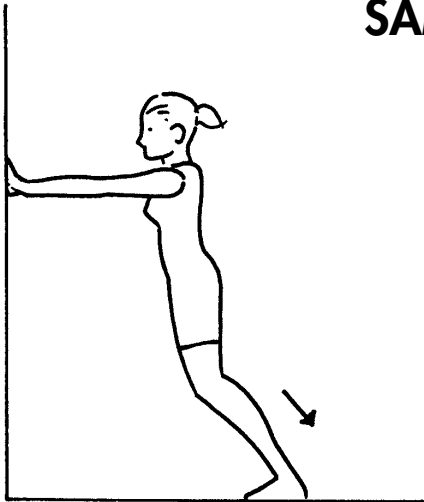
be more tired and stiff; on these days your flexibility will be diminished. Expect this and DO NOT try to set a personal best with each stretching session; rather, look for a long term trend in the same way you take two steps forward and one step back in phases of your running.

RANGE OF MOTION

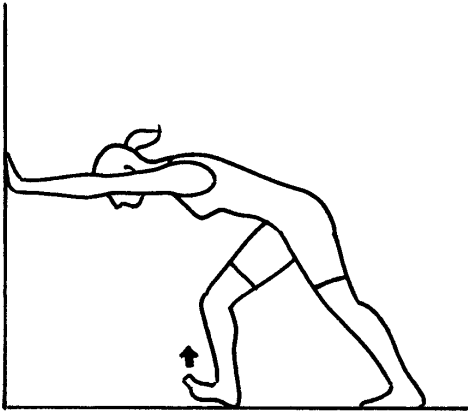
There will be times when some muscles will be stiffer than others. Do not be afraid to give extra attention to problem areas, but make sure you include some time for all muscle groups. If you focus on a problem area to the exclusion of others, you might create a new imbalance with the formerly tight muscle looser than others. Your goal is a balanced flexibility with the maximum range of motion and strength for all muscles involved in propelling or stabilizing your activity. As well, be extremely careful about stretching injured muscles: consult your doctor or physiotherapist on whether your specific injury will allow you to continue gentle flexibility work.

Your clinic instructor will show you specific stretches, but make sure you target all the major muscles: separate stretches for the two muscles in the calf, hamstring, quadriceps, iliotibial band and groin. If you have particular issues with the various hip and gluteal muscles, different stretches will work on these smaller areas. Do not forget your upper body as well. Remember, the goal is balanced flexibility.

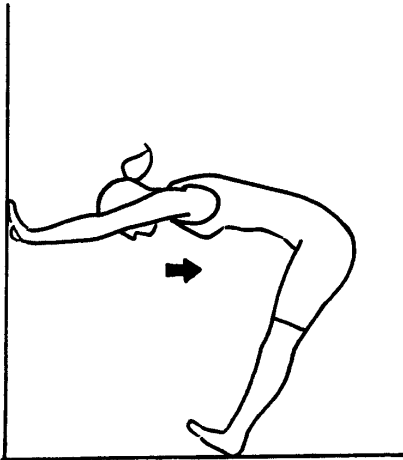
SAMPLE STRETCHES



WALL PUSH 1
STRETCH



WALL PUSH 2
STRETCH



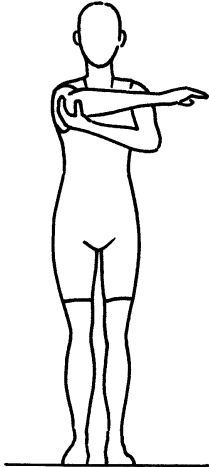
WALL PUSH 3
STRETCH

HIP/LOWER
BACK STRETCH

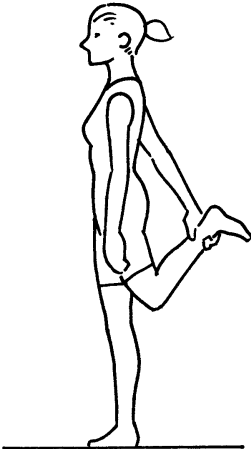


GROIN
STRETCH

BACK
SCRATCH
STRETCH



HEEL TO
BUTTOCK
STRETCH



Chapter 8: NUTRITION

As we saw earlier, the muscles have very specific demands for fuel. While the body does a great job metabolizing a variety of foods into the fatty acids and glycogen our muscles burn, we need to pay attention to these foods to make the process more efficient. This attention begins with our day-to-day diet and proceeds through the foods we select as the run (training or competition) approaches, during the run and in the recovery after the run.

There are a number of competing dietary philosophies on the market, including those higher in fat and protein and some with very strict rules about the foods you are allowed to eat together. The best principle though, is to go with the most traditional and thoroughly proven route. On a daily basis you want to eat the same healthy, well-balanced diet that "Canada's Food Guide" prescribes for the population as a whole. You will need more calories to offset the increased activity, but the principles remain the same. Try to get at least 55% of your calories (and ideally 60-65%) from carbohydrates and restrict your fat intake to less than 20% (sources will recommend this limit anywhere from 15 to 30%). As athletes, we need more protein than the average person, but the North American diet makes it difficult not to get enough protein unless we follow a vegetarian program, in which case more careful attention is required. Do not turn your effort to reduce fat into a crusade against all fat, as we do need some in our diet. It is difficult, but possible to get a diet too low in fat. The types of fat in our diet are important too: saturated fats in meat sources are the most dangerous, while fish oils and the polyunsaturated fats in vegetable oils (especially canola) are healthier.

GOOD CALORIES

A balanced selection of foods as broken down by the Food Guide is important for getting the full complement of vitamins and minerals: on a daily basis 5-12 servings of grains, 5-10 servings of fruits and vegetables, 2-3 of meat (or meat alternatives) and 2-4 of dairy products. As your running progresses and your mileage increases, your caloric needs will increase as well; consequently, you will need to steer more toward the upper end of these limits. Focus as much as possible on less processed sources: whole grain instead of white bread, for example, will give you more dietary

fibre and more nutrients. Supplements, in the form of vitamin pills or energy bars/drinks, make good insurance policies if you feel you might be slipping, but they do not address trace nutrients found in natural foods, so try not to rely too much on them. Of course, there are also the “junk” foods like chocolate or potato chips: high in fat and low in nutrients, they are best kept to limited quantities. Do not, however, feel you need to eliminate these totally; in proper moderation they will not detract from your running program, and this moderation will be better insurance against the temptation to binge than will an attempt to eliminate a favourite altogether.

HYDRATION

As we touched on earlier, hydration is important. The old rule of eight glasses of water a day is being questioned, but only in the sense of crediting other fluids in our diet toward that quota. Exercise, hot weather and the dehydrating effects of caffeine and alcohol will mean you need to increase your fluid consumption. As a rule, try to spread your drinking as much as possible through the day, and drink enough to keep your urine almost colourless.

RUNNING FOR WEIGHT LOSS

Runners will often ask about weight loss, often in the belief that only those who match the slender build of the elite Kenyans can run effectively. If you feel you need to lose weight for health reasons, running can be a great part of that goal; however, such a program should be undertaken in consultation with a registered dietician. For athletic purposes, the general principle applies that a lighter body can go farther, faster on the same energy than can a heavier one. Be careful not to take this to the extreme, though. Pushing the body from lean to overly thin, or simply losing weight too quickly, reduces the power and energy you can bring to your running. The best approach is to eat a healthy diet, lead a healthy lifestyle and let your weight settle into the level it naturally comes to. If you look around at the finish of any race (even a marathon), you will see finishers of all body types, so you do not need to drive your body fat into the ground to achieve your goals. Moreover, there is some evidence that the body will adjust its metabolism (as well as your appetite) to return up or down to a “set point” weight. This set point can be reduced through an active lifestyle, but will actually increase with “yo-yo” dieting.

PRE-RUN FUELLING

In the hours before your run, pay closer attention to your fuelling process. If your blood sugar is stable, you can run more efficiently and preserve the limited supply of muscle glycogen. Try to eat something in the few hours before you begin, even if it means getting up earlier to get breakfast or squeezing in a late afternoon snack. This meal should be high in carbohydrate, low in protein and fat. Try to select starchier “complex carbohydrates” over simpler sugars. The latter will give you a quick rush of blood glucose, which will trigger the release of insulin to store it away in the muscles. As a result, your blood glucose will drop still lower, leaving you feeling fatigued before you even start the run. Complex carbohydrates on the other hand, will be released more gradually, stabilizing the blood sugar and giving you a more even, prolonged source of energy.

ENERGY BARS

The exact choice of food and the right time to eat will vary from person to person. Some people need longer than others to digest their meals for their stomach to be settled during the run, and a heavier meal will take longer than a light snack. One to three hours’ digesting time will be typical, but you’ll need to find your own pattern. Similarly, some people’s stomachs handle different foods better than others: breads, cereals, pasta, rice and potatoes are common favourites, but you’ll have your own. Energy bars are a good choice for those in a hurry, but make sure you pick one lower in fat and protein such as Power Bars, Harvest Bars or Clif Bars. Experiment early in your training with the combinations and timing that work best for you, as you will want a familiar pattern for the longer harder runs and races.

PRE-RUN HYDRATION

Of course hydration is important too. Try to achieve a complete top-up prior to an hour before your run; this gives you time to process and get rid of the excess before grabbing one last glass on the way out the door. Sport drinks like Gatorade are popular for combining fluid and carbohydrates, but are often better as the last minute drink since the carbohydrate is a simpler form designed to give you a quicker boost on the move.

Caffeine is a more controversial choice, as it is a double-edged sword. On one hand, it stimulates the release of fatty acids into the blood stream, allowing you to burn more

fat earlier and thus save on your carbohydrate stores. Moreover, the mental boost can be a significant psychological factor. On the other hand, caffeine is a diuretic that promotes dehydration – hence fatigue and potentially more severe problems. Too much can also produce long term health problems, and the Olympic drug testers list it as a restricted substance: it is not banned outright, but in large quantities produced by caffeine pills (beyond the reach of even a dedicated coffee drinker) it is considered cheating. The best compromise is to drink coffee or other sources on run day only so far as it is part of your daily routine, and not as a conscious attempt to influence your run. If you do have caffeine in your diet, make sure you get extra water to compensate for the dehydrating effect.

ON THE RUN

Once your runs begin to get longer, you'll need to pay some attention to refueling. This begins with hydration: for any run lasting more than 45 minutes, (shorter in hot weather) you need to drink on the run. The amount will vary from person to person, as it will with different weather conditions and exercise intensities; but a good starting point is half a cup to a cup every 15-20 minutes. As the sessions get longer and the weather heats up, pay careful attention to the signs of dehydration we discussed earlier and drink more liberally. Even if you stay well short of medical problems, your fatigue will increase and your performance will suffer with even a mild degree of fluid loss. Start right away, as the fluid you take in long before you feel thirsty is the portion that is absorbed in time to do you the most good. Once dehydration has begun, it is too late: you'll continue to sweat faster than your stomach can absorb what you drink. Until the run ends, you can slow the dehydration process, but not reverse it.

SPORTS DRINKS

Sport drinks can be helpful by replacing not only carbohydrates but also the electrolytes – salts like sodium, potassium and magnesium – that you lose in your sweat and which help reduce cramping among other things. At the proper concentration (about 7% carbohydrate) these drinks are actually absorbed faster than water. Neither carbohydrate nor electrolyte replacement should be an issue for runs under an hour, but in extreme conditions of heat and distance, drinking water without salts can produce an imbalance called hyponatremia (in which the body is adequately hydrated but depleted in electrolytes), with the same nausea, dizziness

and potential fatality as dehydration. This is rare, however, and should not deter you from drinking water if you can't find a sport drink that sits comfortably in your stomach.

Again, for workouts lasting under an hour, water is the only fuel you need to consume on the go. If your running career takes you past the hour mark, however, your muscle glycogen will start to be depleted and can be spun out longer by topping up the blood glucose. Here, exercise has buffered the insulin response we mentioned earlier, so you don't need to worry about avoiding simple sugars. In fact, the simpler the carbohydrate, the quicker you'll have access to the energy. Some runners prefer natural (if highly processed) foods like candy or sugar tablets, while the use of carbohydrate sport drinks or gels like Clif Shot or Power Gel is increasing in popularity. Others find these options sit poorly in the stomach and prefer to stick with more complex carbohydrates. These will still help, but as they take longer to digest, you'll need to start earlier.

Though you'll do no harm by starting right away, you do not need to start eating until you approach the hour mark of your run. Try to get about 30 to 60 grams of carbohydrate per hour (approximately the equivalent of 1 to 2 gels) depending on your body size and the intensity of your exercise. Whatever form of fuel you choose, unless it is already a fluid make sure you drink water with it. This will not only help wash down the solid or semi-solid food, but is also an important part of the absorption process from the stomach into the blood stream. By taking in extra fuel, you cannot eliminate the Wall, but you can push it back toward the horizon.

POST RUN FUELLING

After a long or hard run, you may not feel like eating much, but try to over-ride that feeling and begin the refueling process. Rest and stretching will be among your priorities, but eating and drinking should also become part of the routine. Even with the most aggressive program of hydration during exercise, you will still lose fluids during the run. If you can, weigh yourself before and after your workout. The weight you lose will be almost completely water, which needs to be replaced as quickly as possible. (Even if you are trying to lose weight, water loss does not count.) For every pound you have lost, you need to replace two cups of fluid.

Your muscle glycogen will also be in need of attention. There is a window of a couple hours after exercise when the muscles are primed to absorb more carbohydrate out of the blood stream. By topping up right away, you can speed up your legs' recovery, and with the right combination of training and nutrition build the storage capacity to push the Wall back further toward or beyond the finish of your next run. Again, focus more on the complex carbohydrates, but for replenishment purposes a mix of carbohydrate and protein will be most effective. Try to get a ratio of 3 or 4 to 1 carbohydrate to protein and keep the fat to a minimum. Good examples include cereal with milk, sandwiches with lean meat or fish, beans, rice or pasta with lean meat sauce. As a grab and go item, high protein energy bars and sport recovery drinks are also good. After a particularly long or hard workout, you'll have an increase in food consumption for the rest of the day, but again try to get as much as possible in within a couple hours of the run.

Chapter 9: RUNNING FORM

As we discussed earlier, running is a sport in which the roles of conditioning and technique take on reversed priorities from most sports. This is not to say that form is not important. The more efficiently you can run, the more energy you will have saved to run farther or faster. Any motions that do not contribute to pushing you forward waste energy and slow you down.

POINTS ON FORM:

- Relax. We often carry a lot of tension from our daily lives into our running lives, and compound this by tensing up in anticipation of the workload or fatigue we are about to experience. When tense, we use energy contracting muscles that contribute nothing to our forward motion, or worse yet, that block those muscles that are helping us run. Especially in the upper body, we need to relax: face, neck, shoulders, arms... and eventually the whole body.
- This does not mean we slump forward and melt into a pool of gel on the sidewalk. Though seemingly a contradiction, we also need to “run tall”: with our head up looking straight forward, chest out and hips forward. By standing to our tallest stature we can relax the largest number of muscles; the lungs are given the greatest space to fill easily and more fully with new air; our running muscles are given their fullest range of motion and the leverage of our legs is at its most efficient. By staying upright, we also keep our weight and our centre of gravity over our legs and use less energy to keep from falling. If we lean forward, back or to one side we use energy fighting gravity that can be put to better use pushing us forward.
- Similarly, though our muscles are relaxed, we want to minimize any unnecessary motion from the head, neck and torso. Only while accelerating or running hills will we want to lean forward into the stride.
- The arms are also important, even if they carry no weight. They provide the counterbalance to the motion of our legs, so we don’t have to waste energy fighting to stay upright after each blast of force from the push-off and forward swing of the leg. Keep your arms relaxed, without clenching them up around the shoulders in a way that restricts the range of motion; but don’t let them hang limply too low at your



sides. They should swing naturally with your elbows at a fluid angle of about 90 degrees so your forearm is parallel with the ground.

- Try to keep them moving fairly straight forward and back; though some inward swing will happen as the hands come forward, they should not break the midline of the body. Too much inward movement will pull your torso out of balance and waste energy.
- Use the arms to control the cadence of your stride; when trying to run faster, pick up the pace of your arms and the legs will follow. Allow your arms to drive forward, but do not reach awkwardly too far up. Keep it relaxed.
- The ideal footstrike is to land on your heel and roll forward off your toes. This, combined with the neutral degree of supination and pronation that we discussed earlier, will help absorb part of the shock of impact; it will allow for a more efficient transition from landing to push-off and will conserve energy. Try to keep your stride relatively low to the ground to reduce impact and wasted energy as well: a good strong push-off will drive your lead leg forward, and the faster you run the higher your leg will come, but do not listen to the catcalls of “lift those legs” you hear from the sidelines. As with the arms, keep the movement of the legs as much forward and back as possible, for any quirky sideways motions will also waste energy.
- Stride length is an important, though often misinterpreted aspect of your form. If you can keep the same energy expenditure while increasing the length of your stride, you will run farther, faster on the same aerobic capacity. Unfortunately however, most of the time when we make a conscious effort to lengthen our stride we decrease our efficiency and actually harm our performance. It is tempting to simply reach out farther with our lead leg; this only makes our foot land too far out in front of our knee, where it acts as a ‘brake’ on our momentum. Try to land with your foot more or less directly under the knee, where it will start changing almost instantly into the push-off phase. The knee becomes the hinge of a giant spring that loads and releases in a fluid, continuous cycle.
- As your legs become stronger the push-off will grow more powerful and will increase your stride length, but do not reach out for it. If you want to run faster, increase the frequency of your steps instead of their length. At least in the short term, this will actually decrease your stride length, but you will move faster.

TRAINING YOUR FORM

All these aspects of running form represent a lot to remember at one time, and it is unrealistic to expect your style to change overnight. Try not to think about your form all the time; the constant focus on technical details will rob you of the spontaneous joy to be had from carefree running, and is not necessary. In fact, even if you pay no attention at all to form, your body will adapt gradually through a subconscious process of trial and error to find a progressively more efficient way of running. Though many runners have used this latter approach, it is a very slow one, and a better compromise is to set aside a limited portion of your running week to devote to form improvement. For about fifteen minutes a couple times a week, focus on one or two aspects that you feel need improving. As the body gets used to the more efficient style you cultivate during these short periods, the improvements will carry over into the sessions when you run spontaneously. The hill workouts we will discuss later are good opportunities for conscious form work, as the faster you are running the more your body will be attuned to seek greater running economy.

DRILLS

You can also do exercises a couple times a week after an easy run. Your instructor can show you bounding and "A-B-C" drills; another good form exercise is the "acceleration". Find a level stretch of ground 50 to 100 yards in length. From a standing start, accelerate gradually to a near sprint, hold it for a few seconds and gently decelerate to a stop. Jog slowly back to the start for the next repetition. Work on individual aspects of your form, but above all stay relaxed and keep it short of an all-out sprint; a full sprint will cause you to tense up and will hinder your efforts to improve your style. Keep it under 100 yards and take plenty of rest between accelerations: this is not a speed workout, and you should not build up any fatigue while doing this. Start with 3 or 4 repetitions and build 1 or 2 per week to a maximum of 6 to 8. The end of an easy run is the best time, when you are thoroughly warmed up, but not fatigued. Make sure though, that you jog a few minutes after the session to shake out the legs before your post-run stretching.

Chapter 10: HILLS

Once you have built a solid base of fitness through the slow, easy runs of your Base Period, you are ready to incorporate harder workouts into your program – IF you are interested. The first element is the hill workout for the Strengthening Phase. Once a week, insert a session of hill repetitions as the first component of faster running that builds toward the speed or interval work that will cap your season. This is an important transition phase that toughens you mentally and physically; without this transition the speed work is too sudden a shock to muscles that are only used to slow easy running. Hill work is faster and more difficult than base period runs, but the slope of the incline reduces the impact on the legs in comparison with interval sessions. As a result, you get a more effective workout for your cardiovascular system, and you also develop more power and resilience for the muscle fibres. As we discussed earlier, it is also an excellent opportunity to work on your running form. If there are hills in any of your upcoming races, you will have a significant advantage for having done your hill work.

SELECTING YOUR HILL

Your hill workout day should be separated as far as possible from the long run, so you can enter each one as well rested as possible. Though you'll have to work with the geography that nature (or the department of highways) has given you, try to select a hill that is moderate in length and difficulty. 150 to 200m at a 10-15% grade is ideal; you want enough distance and grade to make it a tougher workout, but enough moderation to allow you to keep a high rate of leg turnover without beating yourself up too much. An even surface is important, while a route closed to traffic is a great bonus.

WARM UP

Make sure you warm up thoroughly before the workout. Any fast running taxes the muscles' range of motion, and if you try starting on cold muscles you risk serious pulls and tears. Jog easily at least ten to fifteen minutes, do your pre-run stretching routine and a couple accelerations before you start your first repetition. Run at a hard effort up the hill; your heart rate should reach about 85% of its maximum by the time you reach the top. On the way back down, run as slowly as you can to get plenty of rest. Unlike some variants of speed work, you want to be completely recovered at the start of each repetition. Take extra rest at the bottom if you need it, but it is better to run yet more slowly, or even walk down the hill to get your recovery. This will reduce the

pounding on your legs; if the incline reduces the shock on your way up the hill, you get even more impact if you run too quickly on the way down. There will be times when you want to practice technique for faster downhill running, but this is not an appropriate moment. When you do need to race down the hill, tilt forward a little, staying upright relative to the road surface, but allowing gravity to take you and do some of the work of running. Stay relaxed but in control, keeping as fluid a motion as possible with the legs. Though your stride will lengthen, remember not to reach out too far with your lower leg or the braking effect will slow you down and jar the legs mercilessly. Use your arms for balance, swinging them wider from the body if you need to in order to maintain control.

HOW IT SHOULD FEEL

Going up the hill, you want to lean forward a little from your level surface form, but not too much. As with downhill running, it is more a tilt of the entire body than a lean from the waist. Shorten your stride a little and swing the arms with more vigour to increase your power and maintain your turnover. "Run tall" and keep your head up, despite the temptation to slouch into the hill. Look past the crest of the hill, visualizing the incline as flat. When you get physically to the crest, keep going another 30 to 50 yards to accustom the legs to re-accelerating when you reach the top of a hill in the race. It also prepares you mentally to run through the finish line instead of fading a step early if you are dueling with a rival through the final stretch. When you finish the workout you should feel tired, but not fully exhausted; you should be physically capable of one more hill even if you are content not to test that ability. Do not forget to jog easily for ten to fifteen minutes as a cool-down before embarking on your post-run stretching, hydration and nutrition.



MODERATION IS THE KEY TO SUCCESS

Start with a manageable number of repetitions – two is a good launch point if you are doing hills for the first time – and add one per week. Remember, the principle of moderation applies as much with intensity as with mileage. Start small and build gradually. Your hill work season should be at least four to six weeks, but can last longer if you are used to these workouts. Once you have completed your season of hills you will be ready for the pinnacle of speed work.

Chapter 11: SPEED WORK

Once you have completed the hill work portion of your season, you are ready to embark on the final sharpening phase: speed work. This is the part of your season that contains the most difficult workouts, but which gives you the most rapidly visible benefits. It is also the most dangerous segment in terms of running injuries. Consequently, you will want to ensure you have a year or more running experience before attempting it, and if you are not concerned with running your fastest possible, you may wish to skip the speedwork altogether. At the point you do begin these workouts you stop doing hills and replace this workout with intervals on a flat level. **DO NOT try to tack on the speed sessions in addition to the hills;** it is a replacement, not a supplement. The stress a speed workout puts on the body is even greater than that of a hill session, so if you try to do both you are asking for injuries.

THE BENEFITS OF SPEED WORK

Many of the benefits of speed work are the same as hills, but they accrue at a faster pace than in the earlier phase. Depending on the specific workout, these interval sessions develop your Max VO₂ more rapidly, push back your anaerobic threshold, improve your ability to continue running through lactic acid buildup, build muscular power and develop raw leg speed. As with your hill workouts, speed is a great way to work on your form and mental toughness.

Also in common with the hill workout is the basic concept that speed sessions alternate short bursts of faster running with rest periods. This allows you to do more total work within the same finite limits of fatigue compared with a single stretch of hard running. In this setting, we'll use the terms "interval", "repeat" and "repetition" interchangeably to mean the distance you are running fast, though you may hear others refer to the "repeat" as the fast segment and the "interval" as the rest period.

THE WORKOUTS

The shorter the repeat, the faster you can run, and different workouts will focus on different aspects of your fitness level. Very short, very fast intervals such as 200 or 400m will work on leg speed or lactic acid tolerance. Repetitions of 800m or 1km will more often focus on Max VO₂ development; while mile repeats typically aim at improving your anaerobic threshold. Regardless of the distance, the format begins

with the same thorough warm-up as the hill workout. Your muscles will take even more pounding than before, so this becomes still more important.

HOW TO DO SPEED WORK

Start with a manageable number of repetitions (such as 2X1 mile) and add a modest amount (for example 1 mile) each week. The mile repeat should be run at a speed slightly faster than the anaerobic threshold pace we discussed earlier, while shorter intervals are run at correspondingly faster paces. Again, these workouts should leave you tired but not obliterated at the end. Focus on staying relaxed and on running with proper form. At the end of each interval, rest for the next one. Different workouts will prescribe different rest: for some it will be to jog slowly a certain distance, while for others it will be a timed rest. Some workouts will give you plenty of rest so you can run faster on each interval, while some will limit the recovery so you get used to starting up again while still tired. (This last variant is often reserved for the later portion of the speed season, with a return to longer rest and higher speeds to sharpen you in the very last weeks.) Regardless of the type and duration of the rest, you do want to keep moving, either at a slow jog or a steady walk. If you stop completely, especially in cooler weather, your legs will stiffen and you will have a greater risk of injury in the later portion of the workout. Try to run all the intervals at as consistent a pace as possible, erring on the side of a slower start and stronger finish; do not expend your entire energy on the first one at the expense of a progressively slower pace toward the end. As with the hills, be sure to get a thorough cool-down in when you finish.

WHEN TO SCHEDULE YOUR SPEED WORKOUTS

Remember as well the hard-easy rule and separate your speed sessions as far as possible from your long run. Some runners will do two speed sessions per week at the peak of their season, but you need to be careful not to do this until you are thoroughly toughened to one per week. You need at least 48 hours, and preferably 72, of rest or easy running before and after your speed in the same way you do for your hills and long run.

Some may question why, if speed helps develop our abilities so much more quickly, we don't do it all year. This is because of the high rate of stress we put on our muscles while in this phase of our training. When we run at a higher speed we land with even more force of impact each step and do more damage to our legs. (This is

one of the key reasons to run slowly on our long runs and easy days.) Even allowing for the easy days of the week and the recovery weeks we build into our schedule, we do accumulate fatigue gradually over the course of our speedwork season. As we discussed in relation to overtraining, the trick is to conclude this phase just before we start to decline. Typically, even the most competitive athletes can maintain only eight to ten weeks of their most intense training before they plateau and face greatly increased risk of injury. This, in addition to the need to toughen ourselves before starting speed, is the reason we delay speedwork until the final period of our season. Counting back from our most important race, we time the speed to end in time for this race.

When planning your season, remember that the purpose of speed is to help you run faster. The long runs get you to the finish line, and hills make you more comfortable getting there, but the sole philosophy behind interval training is to improve your race time. Many of you will be unconcerned with running faster at this point in your journey. As long as this remains the case, then the intervals will be an option but are not fully necessary. If speed sounds too much like work and not enough like play, leave the speed alone. Even if you are chasing a time goal, be sure you are fully healthy and recovering well from your existing workouts before you embark on mile repeats. If you have any lingering fatigue or nagging soreness, you'll need to delay your introduction to speed work.

OTHER WAYS TO IMPROVE SPEED

As an interim step toward interval work, fartlek and tempo runs are a great way to introduce speed training into your program with less wear and tear. Tempo runs are like an interval workout, but with a single fast stretch. After a thorough warm-up, accelerate smoothly to hold a pace slightly below your anaerobic threshold. Start with a few minutes and build gradually each week. Don't forget to cool down after the tempo segment with your usual jog and stretching. Fartlek, on the other hand, retains the alternation of fast and slow paces, but in a much less structured environment. The word is Swedish for "speed play", and in its purest form you run fast when you feel like going fast and slow when you feel like going slow. There are no preset distances or speeds. From there you can add back into your workout elements of structure: for example planning the length of time for each segment or the number of segments; but without the predetermined pace both a fartlek or a tempo run will be at a lower intensity than an interval workout, giving you less wear and tear, and thus less risk of injury.

Chapter 12: INJURY PREVENTION

As you progress through the middle weeks of your training program, you enter the riskiest period of your season for injuries. Your long run is increasing in distance; you are starting the more taxing hill phase and have been building up for enough weeks for the wear and tear to start catching up with you. Now is the time to take stock and make sure you are running as safely as possible. In a sense, this becomes a review session, as every aspect of your program has an impact on injury prevention – from stretching and nutrition through footwear to proper mileage and pacing.

AVOIDING OVERUSE INJURIES

The key is to listen to your body – an oft-repeated cliché but an important principle. While sudden trauma injuries like sprained ankles occasionally do happen, the vast majority of running injuries are “overuse” injuries: the microscopic damage that is a normal part of the training cycle accumulates faster than our rest days are repairing it. With proper vigilance we can usually prevent this, as most of the more common runners’ injuries share an overlapping set of common causes. This can be from excess pounding—the result of too much mileage or speed, or from inadequate or worn out shoes. The stress can also be a result of twisting strain, most often from the over-pronating motion we discussed earlier. Uneven surfaces can produce similar torsion, so you want to pay attention to finding relatively flat surfaces: the camber of a crowned rural road is a particularly insidious culprit. Less frequently, an uneven structure in your own body will overload a vulnerable area: imbalances in the strength and flexibility of different muscle groups, a tilted pelvis or even differences in leg length can be assessed and corrected by a health care professional with a background in athletic injuries. Together, these causes account for the bulk of cases in the runner’s vocabulary of horror: plantar fasciitis, Achilles tendonitis, shin splints, runner’s knee, iliotibial band friction and even the dreaded stress fracture.

ACHES VS. PAIN

There will be times when your muscles are a little sore from a previous workout, but there is a difference between one day’s lingering fatigue and the sharper, more specifically located soreness that is the first warning sign of an injury. If the pain lingers more than a day or two, treat it as an injury. We as runners tend to have a common

alma mater in the “ignore it, it will go away” school of medicine. We go into denial that we really feel the pain we think we’re feeling, or cling to the arrogant belief in our own invincibility. Either way, we push through the nagging soreness, as it grows progressively worse: eventually we are forced to take a lengthy period of time off when an earlier rest of a day or two would have averted the problem. Remember, you lose no fitness level from taking an extra day off, and any good schedule has enough of a buffer to accommodate the extra rest without compromising your goals. Back off and rest a nagging ache before it becomes an injury.

R.I.C.E AND TREATMENT

If you do become injured, seek treatment from someone with both a health care certification and a background in treating athletes (preferably runners). Rest, ice, compression and elevation are good first aid elements, but you want professional advice on your specific injury, its causes, treatment and the timing of your return to running. Some injuries will allow you to continue running at a reduced intensity or volume; others require you to make a temporary substitution of another activity for your normal workouts, while a few demand complete rest. When coming back, be careful to re-escalate gradually, giving the damaged areas time to rebuild their strength. The health care professional can give you more specific advice, but a good general guide is to run up to the point of feeling pain and stop immediately: do not try to run through pain.

POST INJURY RUNNING

When coming back from an injury, or after a short preventative rest, use this as an opportunity to fine tune your training schedule and refocus on keeping the stress in line with the level your body can adapt to. Better yet, avoid nagging aches and full scale injuries in the first place by listening to your body. Pay attention to the safety principles of moderation in your training volume and intensity; wear the proper equipment; stretch properly; eat, drink and sleep well; develop a balanced fitness through cross training and pay attention to any nagging soreness.

Chapter 13: CROSS TRAINING

One important and often overlooked aspect of injury prevention is cross training. This can be defined simply as the use of one or more alternative activities to provide supplemental training for your primary sport. This will provide you a number of benefits. At its most basic level, it allows you to build extra fitness without the same pounding (and risk of injury) that you get from running. More than this, however, the right blend of activities will round out your strength and flexibility to give you a more balanced fitness with more resilience to running-induced injuries. If you do get injured, you can often continue cross training as a partial replacement for your running while you recover. (As we discussed earlier, be sure you get medical clearance relevant to your specific injury and your chosen activity.) Finally, the inclusion of new sports in your routine can be a good mental break, adding the variety that keeps running from becoming stale.

SPORTS THAT COMPLEMENT YOUR RUNNING:

Almost any sport will give you some cross training benefit, but to get the most efficient use of your time you want to tailor the activity to your objective in cross training.

Soccer or ultimate Frisbee

These sports give you a great change of mental pace, but the essential action is still running, so your body does not get the same break from the pounding.

Cycling, in-line skating or Nordic skiing

These non-impact sports are gentler on your muscles, tendons and ligaments. Nordic skiing works your upper body.

Swimming and rowing

These sports are also excellent; they are non-impact and also work the upper body muscles that are often neglected by runners.

Yoga, pilates, tai chi and other martial arts

These practices combine flexibility with strengthening and mental relaxation, often with a good cardiovascular component. Be careful, though, not to begin too aggressively with the stretching component if years of running have eroded your flexibility.

Weight training

This is a classic cross training activity for building strength. This sport can add power to your running stride and is an excellent opportunity to strengthen the neglected upper body. Make sure you get proper guidance if you are using free weights, so you do the exercise properly without undue risk of injury. For both upper and lower body, try to focus on a larger number of repetitions at a lower weight. This will develop the endurance aspect of your strength. Large volumes of weight will develop power, but

it will also develop bulkier muscles than endurance strength. In the upper body especially, these muscles may look impressive, but are unnecessary extra weight to carry around and will actually hinder your running. The lighter muscles developed through endurance strength will serve you better over the course of a run by not tiring toward the end of the race. In the case of lower body weights, try to spread these sessions as far as practical from your long run and hill/speed workouts, as the strength work will leave you more fatigued if done too close to these harder runs.

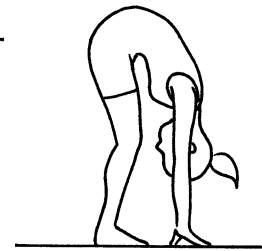
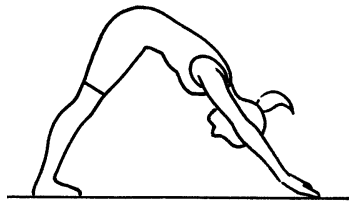
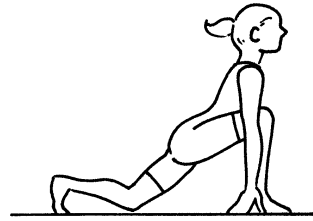
CROSS TRAINING DURING A RUNNING INJURY

If you are using cross training as a means of keeping up your fitness during an injury, the opposite principle from variation applies. You want an activity that works as many of your running muscles as possible without aggravating the injury. Be sure when choosing your activity in this respect to get medical advice on which sports are permissible. Often the best activity is pool running. Similar to treading water but mimicking the running motion as closely as possible, this removes the shock of impact while giving the most accurate translation of your alternative workout to running fitness. Some people have the co-ordination to perform this unaided, but many of us need a floatation device to keep us upright and allow the maintenance of proper running form. It can be a mind-numbing activity, but it beats watching our fitness ebb away while we await permission to start running again.

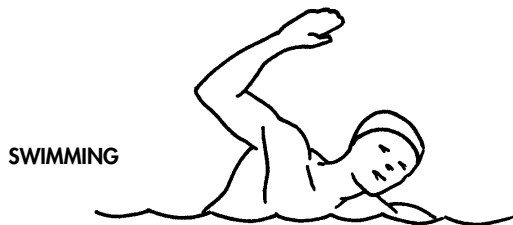
Principles of Cross Training

- Your alternative sports will add some stress to the body, and you need to back off a little on your running volume. Treat cross training as a combination of replacement and supplement for running: if you cross train two days a week use one to replace a run and the other to replace a day off.
- Though pool running comes as close as anything, no alternative gives the exact benefit of running. The cardiovascular system will benefit from any aerobic activity, but the muscles will derive different benefits from workouts in different sports. Cross training can supplement our running, but it cannot replace it; prioritize the runs you keep – especially the long run, hill and speed workouts. No alternative sport will give you the push toward the finish line that these runs do.
- We cannot blindly translate our running fitness into a flying head start on our new activity. Whether moving from running into a cross training activity or from that sport into running, do not use the cardiovascular fitness from your first sport as a guide to your fitness in the new activity.
- Be sure to follow the same principles of moderation and gradual buildup in cross training as you do in running.

SPORTS THAT COMPLEMENT YOUR RUNNING



YOGA



Chapter 14: HEART RATE AND TRAINING

We have already discussed the importance of regulating the intensity of your workouts to make sure you are training the right aspects of your system and not overworking yourself to the point of injury. The traditional route has been by perceived effort, for example, the “talk test”, or the ability to carry on a detailed conversation while running as a means of keeping the long run and the recovery runs at a low enough intensity. However, you can bring greater precision to this by factoring your heart rate into the equation. The higher the intensity of your runs, the higher your heart rate will go. We earlier related the types of workout to the concepts of Max VO₂ and anaerobic threshold; your heart rate allows you to measure precisely how your actual workout matches up with these objectives.

CALCULATING YOUR MAXIMUM HEART RATE

Start with your maximum heart rate: the highest you can physically drive your heart rate during the most intense workouts. **The different intensities of workout are all expressed in relation to this maximum.** There are two calculations, one for men, and another for women:

Men normally have lower max heart rates, so the formula is based on 220 - age. For example, a thirty year old male's MHR is estimated at 190.

Women often have higher max heart rates, so the formula is often modified to 226 - age. A thirty year old female's MHR is estimated at 196.

Yet another formula takes into consideration the fact that athletes lose max heart rate more slowly than the general population, and changes the value to 210-1/2 your age. As you can guess, these predictions will have considerable margin for error, and your own max heart rate may be 10 or 15 beats per minute off the formula. You can have a precise test done at an exercise physiology lab, or do a fairly accurate test yourself. Run two repetitions of half a mile with half a minute rest in between – pushing almost all out in the first and completely all out in the second. The heart rate at the end of the second half mile will be very close to your max. Be careful, though, not to try this too early in your running career. Running all out like that can be

gut-wrenching, and will give you a bad first impression of the sport – not to mention the increased risk of injury if your muscles are ill-prepared for the strain. The formulas work well enough to carry you through your first season or two until you are ready for the aggravation as well as the rewards of greater precision.

THE IMPORTANCE OF ANAEROBIC THRESHOLD (AT)

You will seldom run at your maximum, but if you target each run at a set percentage of maximum you will have greater reliability in achieving what you want from each workout. The anaerobic threshold we discussed earlier is the key marker for runs that are at, above or below this level. The “AT” will typically be around 85 percent of your max heart rate, though you can raise this through specific AT workouts. Elite Nordic skiers will sometimes have AT’s above 90% of maximum. For greatest accuracy, test your own threshold by doing a tempo run at the fastest pace you can maintain for an extended period: you should feel you can run that speed forever, but that even the slightest increase in speed will bring you crashing to a halt in a few hundred yards. As with your max heart rate, this test will be a strain, and should be reserved for your second or third season. To start off, use 85% as a ballpark figure.

AT for different types of running:

- Assuming your AT is 85%, your easy runs should be below 80%, and preferably between 65 and 75% of your maximum, especially for the long runs.
- If you are trying to focus on training the body’s fat burning ability, lower this number another ten percent.
- Hill work and AT workouts will be at 85%
- Speed sessions can climb in excess of 90%. Shorter intervals will not show this, however, as the heart will not have time to accelerate its beating to catch up with your running speed before the interval ends.
- Some writers will add the dimension of your resting heart rate into the formula, calculating the running intensities as a percentage of the difference between your resting and maximum heart rates (a concept known as heart rate reserve). This more complicated formula will recommend percentages about 10% lower than we just discussed, but the number of beats per minute will be similar.
- Keep the easy runs about ten percent below your anaerobic threshold.

THE TECHNICAL GENIUS OF HEART RATE MONITORS:

You can keep track of your heart rate the old fashioned way with fingers and wrist; this can be difficult while running, or even in the fatigue of freshly finishing. It takes time to find your pulse and get a count, during which your heart rate will drop as you begin to rest. A heart rate monitor gives you immediate and automatic feedback. The most reliable brands (the best known of which is Polar) consist of three pieces: a transmitter and strap that go around the chest and the wristwatch/receiver. Unlike older technologies, there is no wire to string up your sleeve and the monitors are ECG accurate – down to the exact beat per minute.

FEATURES FROM MODEL TO MODEL:

The basic model

You can get a basic unit for under a hundred dollars which will only give you heart rate, elapsed time and average heart rate, but the same accuracy as the most expensive model.

The next model up

This gives you a vital feature in the programmable target zone: you can relax and stop looking at your watch every two minutes because an alarm will tell you if you are running too fast or too slow. Also useful are the stopwatch features that allow you to leave your other watch at home – including the countdown timer that keeps track of your walk breaks.

All the bells and whistles

The more expensive, the more numerous the features, including: calorie count and body mass index, fitness test, multiple target zones and timers for speed workouts and recovery phases, memory capacity and even the ability to download the memory into your computer so you can chart past and future workouts.

Most of the more complex features are not absolute necessities, but can be useful as you add more sophistication and precision to your training as the years progress.

Chapter 15: OVERTRAINING

Another use for a heart rate monitor is to track your resting heart rate as an early indicator of overtraining. Overtraining means exactly that: too much volume or intensity for the level of resilience you have developed in your body. The consequences can be serious. We have already covered the issue of athletic injuries, which are most often caused by overuse. Closely related to this is the issue of illness. The training cycle of wearing down and building back applies as much to the body's immune system as it does the muscle tissue. A sound level of training will strengthen the immune system, but if you overload it you become more vulnerable to colds, flu bugs and even more serious illnesses.

Myth: More is better

Even if you escape the most serious consequences of injury and illness, overtraining will have a devastating effect on your performance as an athlete. We have all been exposed to the "more is better" philosophy that pervades our culture: the enduring image of the hockey player staying after the game to take shots and gain an advantage on his rivals. Yet it is the repair process while you rest that builds your fitness level, even if it is the workout that triggers it. Too much work and not enough rest will undermine your fitness level just as it leads to injuries and illness. This can be from the short term process of too sudden a jump in workload, or from the more gradual stress of trying to hold your heaviest workload for an extended period of time. This latter problem can be insidious, as you watch your performance gradually improve through the course of a season, only to see the improvement stop just when you enter the most important part of your season. Worse yet, this plateau is often a danger signal that you are about to start going backward with shocking suddenness. If you are racing on a regular basis, you can have the best race of your life one week, and the worst race the next. If this disaster is the precipice of overtraining rather than an isolated bad race, your season is largely a write-off. Once the legs become that fatigued, you need substantial rest (similar to the recovery period at the end of your season) before you begin a new buildup for a new season. You can, of course, keep pushing, but your performance will not improve until you take that rest. Moreover, as you experience the combination of disappointing times and sluggishness in the process of running, the sport loses its fun and you are robbed of the whole point of being out there in the first place.

WARNING SIGNS

Try to head off this agony by paying attention to the early warning signs of overtraining. You will have good days and bad days, both in training and in racing, but if you see a pattern developing, alarm bells should go off. There will be times when your legs are sore or sluggish, but if this lasts more than a couple days, treat this as a warning and back off. Similarly, our mental state can be an important sign of our physical condition. We will all have days of emotional fatigue when the television and the refrigerator beckon more strongly than our shoes. In isolated cases, this is simply part of the challenge of training, and we need to push through it toward our goals. However, if the mental doldrums, like tired legs, last more than a couple days, it is time to step back from the precipice. Colds and flu bugs that linger or come more frequently than normal can also be warning signs.

As we touched on earlier, your resting heart rate is one of the earliest indicators of impending problems. As we go through our season, we cannot entirely escape the stress of everyday life. Work, school or family pressures add to the wear and tear the body undergoes, and if we do not gain in fitness from them, these stresses reduce the amount of training we can safely undertake. In an ideal world we can take charge and reduce these distractions, but in reality we will face these issues from time to time in our lives and our running. They can also sneak up on us when we think we are doing everything right in our training. Thus the resting heart rate can give us an added weapon of prevention. Try to establish the habit of taking your heart rate as soon as you wake up in the morning, before even getting out of bed. Take two weeks to establish a reliable baseline, as there will be momentary stresses that cause your heart rate to go up for a day or two. However, once you've established a benchmark, if your morning heart rate goes up five or more beats per minute for more than three days in a row, it is a sign of building stress, and you need to back off.

Whether by elevated heart rate or lethargic running, if you encounter the warning signs of overtraining, treat this the same as a nascent injury. Do not be afraid to take two or three extra days off, and make sure when you get back into running your legs and heart rate are back to normal. As with an injury, take this as an opportunity to re-evaluate your training so you don't fall into a pattern of repeated approaches to the brink. Above all, practice prevention before you encounter the signs of overtraining. Keep the progression of volume and intensity within the bounds of moderation we

discussed earlier and monitor the whole set of stresses you encounter from training, lifestyle and even nutrition.

UNDERTRAINING VS. OVERTRAINING

Much of the clinic focuses on holding you back from doing too much rather than on pushing you to do enough. That is not only because of the pervasive temptation to overdo it, but also because the body and your athletic performance are far more forgiving of undertraining than of overtraining. If you are going to err, err on the side of caution.

Chapter 16: MENTAL PREPARATION

TRAINING THE MIND

When we spoke earlier of the psychological benefit of certain strategies, we touched on an aspect of training that is often ignored in our North American sporting culture: mental preparation. Of equal importance with the physical preparation is the development of confidence in our ability to succeed, combined with a realistic expectation for the highs and lows we will face in training and on race day.

Part of this mental training is the ability to cope with the discomfort we will eventually face if we incorporate racing into our running career. If we are properly trained and rested, and we pace ourselves properly, we do not need to hit the dreaded Wall or Rigor Mortis on race day. In the course of our training and again on race day, however, there will be some discomfort along the way, and there is also the possibility that we'll get carried away with our speed on race day despite our cautious plans; we need to brace for the possible need to cope with this even if we plan to avoid it. There are two fundamentally opposite strategies for coping with this discomfort: dissociation and association.

DISSOCIATION AND ASSOCIATION

Dissociation is the easier of the two to implement. In this, we distract ourselves from the discomfort by thinking about other things. Talking with your running partners is the classic training dissociation that helps pass the hours on the long run; you can also use this on race day. Running an event with your pace group can help make it seem like a normal training run. Other distractions can include the scenery along the route or the absurd outfits your competitors are wearing. You can daydream about the glory of the finish line, the friends awaiting you, a soothing massage, hot shower or huge bowl of ice cream. By taking your mind off what you are doing, the time passes quickly and you are less likely to feel your fatigue.

THE BENEFITS OF ASSOCIATION

The disadvantage of dissociation is that by not concentrating on what you are doing; you will be more likely to slow down as you tire. The opposite approach, association, is more difficult to implement; but if done properly it will help you to get the most out

of your legs. Here, instead of distracting yourself, you concentrate on what you are feeling. Analyze everything you are going through, comparing the degree of fatigue that accrues during your race with the level you have planned on at each stage. Concentrate on your split times, your running form, the remaining distance and terrain, the tactics you will use against your adversary and those you expect (and encounter) from him or her. The biggest component is the analysis of fatigue. Re-evaluate constantly whether you are on target, are able to speed up or need to slow down. This approach is more difficult, as it requires you to remain aware of your discomfort, and it takes a great deal of mental energy to remain this focused the entire way. If you can achieve this focus, however, it will help you to match your ideal pace and run your best.

VISUALIZATION VS. DAYDREAMING

To succeed at this approach you need to practice mentally in the same way you train physically. Mental rehearsal, or visualization, is crucial for maintaining your full concentration on race day. When we think about visualization, we often confuse this with daydreaming. The key difference is that daydreaming focuses on the result, while visualization concentrates on the process. Daydreaming is important in reaffirming the value of our goals, but visualization gives us the mechanics of achieving them. The latter is, of course, more work than the former, and we need the discipline to implement it; we need as well to keep from being too ambitious in the scope of each visualization session. To be effective, the session must be as detailed as possible, preferably in real time; rehearsing an event measured in hours all at once will lead to mental burnout as much as an all out race in training will bring on physical overtraining.

VISUALIZATION 101

To make the process more manageable, set aside a specific time, a couple times a week, when you will spend about fifteen minutes visualizing one segment of your race. Focus on a different aspect each time so the segments will add up to your entire event. Bring as much detail and as many senses to bear as possible: the feel of your actions, the sight of the course, the sound of the crowd, the smell of the autumn leaves, the taste of your favourite gel...this will make your preparation more realistic and more forcefully applicable on race day.

Of course it is more feasible if every aspect of the race is familiar, another reason to practice physically as many aspects of the race as possible – including practice races and if possible a tour of the actual course. This will not always be possible, but the more you can do the better.

When visualizing, build into your sessions as many different circumstances as possible. Envision perfect weather, but also heat, cold, wind, rain and snow. Rehearse for the day you feel everything fall into place and you have unlimited energy, but plan as well for the day you did not sleep well or you ate something that didn't sit as well as it usually does. Have an image of every possibility, good or bad, that is beyond your control. Visualize your reaction to these circumstances to achieve your goals. Make your reaction a realistic plan, not a daydream: for some circumstances this means visualizing a triumphant fulfillment of your fallback goal in the face of adverse conditions; for others you will envision a successful strategy for overcoming circumstances to achieve your original goal. Plan to overcome the surprise tactics of your rivals or the onset of race day jitters; when a snowstorm strikes, however, no confidence, no toughness and no strategy in the world will allow you to run as fast as you would in ideal weather. Use the fallback goals when necessary, but do not lean on them as an excuse to back out of a challenging effort when the going gets tough. Again, it is a set of strategies you are formulating. Use the rehearsals to maintain the balance we spoke of in goal setting: realistic but challenging objectives, pursued with tenacity in the face of adversity but with enough flexibility to plan alternative definitions of success when the laws of physics require it.

Chapter 17: TAPERING

When you come to the final weeks of your training program, the urgency of the approaching event will often produce the impulse to train even harder. More than ever, it is crucial that you fight this urge. After months of training you are fit to run the race; the final weeks are aimed at tapping into that fitness rather than at building more. When discussing such things as the cutback weeks in the schedule, we touched on the fact that you will accumulate some fatigue during the weeks of hard training even if it stops short of burnout or injury. The cutback weeks address some of this, but to give your best for the big race you will need to be even better rested. To achieve this, taper back on the volume of running in the final week or weeks before your event.

TRAINING PHYSIOLOGY

This process is counterintuitive, but we need to remember two important aspects of training physiology. First, it takes a week and a half to two weeks for the effects of any workout to filter through and show up as improved fitness. Second, when the body loses fitness from detraining the process does not have an impact until after a week of inactivity. As a result, training through the last week will do you no good, and a week of rest will do you no harm for race day. A week of complete inactivity will stiffen the muscles and produce mental staleness, so you don't want to stop running completely; the idea is to scale back gradually in a process that mirrors the initial buildup.

Different runners will have different preferences for the length of their taper. Some will only scale back for a single week, as will be the case in our program; others will take as long as four weeks. The longer the taper the more gradual it will need to be. In this clinic we're aiming at a relatively short distance, so we'll only scale back for the last week; but a more typical taper for longer distances will take three weeks. The hardest week in that case is the fourth from final one, with the longest run 22 days before the big day. The third from final week scales back just a little in the total mileage, with the biggest difference being a shorter long run. Continue the emphasis on training, but back off just enough to get a start on resting. The second last week sees a more noticeable scaling back, but keeps some training component as the focus becomes rest. By keeping approximately half your peak volume you prevent the clock

from counting down toward the onset of detraining from more complete inactivity. In the final week, however, you allow the clock to tick, knowing the loss of fitness will not begin until after the race. The small amount of running you do will serve only to keep the legs and mind loose and sharp for race day. It is this final week that will constitute our taper.

THE IMPORTANCE OF SCALING BACK

During your taper, the volume changes but the types of workout do not. Now is not the time to introduce new elements to your program. If you are doing speed work, continue it, but with a gradual scaling back of the repetitions. You can make a small cut to the distance of each interval in order to run a LITTLE faster, but do not make a sudden change. The legs are used to running a certain range of speeds, and anything unfamiliar this late in the program risks leaving your legs sore for the big day. If you have delayed speed work prior to this point, do not start it now. You do not have time to derive significant benefit and you will beat your legs up mercilessly. Similarly, as your body gets more and more rested, you will be tempted to run the easy runs faster than usual. You can pick up the pace slightly, but not by much. You are resting, not switching from mileage to tempo runs. The last couple days, many runners will take the Friday off before a Sunday race and then run a brief warmup on Saturday. By keeping this last run that short you are adding no significant fatigue, but will keep your legs at their sharpest state of readiness.

CHANGING YOUR FOCUS

Use the taper as well to refocus on the non-running aspects of your program that may have fallen victim to creeping bad habits. Use the extra time freed up by the shortening of the workouts to make certain you are stretching properly. Again, do not add new stretches to your routine that may create soreness on race day. Make sure you get enough sleep, especially in the final week. The night before the race is too late to make up any sleep deficit. The most important single night for sleep is the second last night, though the week as a whole is more important than any one night. The final night, do not try suddenly going to bed hours earlier than usual or you could wind up lying awake worrying about not sleeping. Losing sleep that last night to pre-race nerves will do you little harm, but you do want to be at least relaxed when you wake up.

NUTRITION DURING THE TAPER

Your diet should retain its general principles through the taper. Again, renew your focus on hydration, and keep the balance of high carbohydrate foods. You will hear about carbohydrate loading regimens, but the most reliable method is to keep your normal volume of food while your mileage eases off. The last few days, try to cut back still further on fats and proteins, but stick to familiar foods. The day before, try to avoid heavily spiced foods. Although the pasta dinner is a pre-race tradition, many runners find that lunch is the most important meal that day. Everything those last couple days should be easily digestible, but focus on complex carbohydrates.

Chapter 18: RACE DAY I: THE LOGISTICS

As your running progresses and your distance passes the 5K mark, you may wish to test yourself in the occasional 5K (and eventually even longer) race. Many runners pass their entire careers without feeling the need to do this, but others are bitten by the racing bug almost from their first day. If you do decide to try your hand at racing, some attention should be paid to logistics (and eventually to tactics). It is one thing to be physically trained to complete the distance or to run your desired pace; it is another to be ready for all the small ways in which race day will differ from a normal training day. To give your best to the event, every individual aspect of what you will face should be familiar; the only novelty will be to put it all together: what you eat and drink, the shoes and clothing you wear, the type of surface you run on, your travel and warm-up routine and the excitement of all that is going on around you. As we'll see when we discuss mental preparation this is a psychological advantage, but it is also a means of testing that every decision we make, from food and clothing to timetabling is going to work for us.

HOW TO PACK FOR RACE DAY

The underlying theme to race day logistics is to leave plenty of extra time for unforeseen circumstances. This should start with packing the day before your departure. A written list of items to bring is a sound idea, but there is still the potential to forget something. By packing one day early you have a second chance to remember it. Much travel literature advises packing light, but for an important race, bring everything you might possibly need. Include racing gear for the warmest and coldest temperatures you might encounter, and include a dry change of clothing for the finish line. Err on the warm side with this, as even a mild day can seem chilly in the fatigue and diminished blood sugar of the finish.

RACE DAY TRAVEL CHECK LIST

Plan your travel route with the traffic of race morning in mind. Sunday mornings may normally be quiet, but if it is a large race, traffic may be heavier near the race site. Plan for the possibility of road closures, long lineups for registration and baggage check and other delays (including meeting old friends while you are trying to focus on your warm-up). Arrive in plenty of time to accommodate these delays as well as to scout the start area and other needed facilities. Read and reread the entry form and any

literature in your race kit so there are no surprises about when the bag check closes or whether it matters where you pin your bib.

Make sure you get a thorough warm-up, keeping to activities that you have tested in your workouts. Race day is not the day to test a radical new stretch or form drill. You want to arrive at the start line with your muscles as loose as possible, with your heart rate elevated to start mobilizing your fat stores (thus sparing your limited glycogen supply). In longer events though, be careful not to expend too much energy on the warm-up, as you will need all your reserves during the event. Try to finish your warm-up with a few minutes of quiet time to sit and calm your nerves, and to put a final touch on your mental focus.

Make a last washroom stop with plenty of time for lineups, as the pre-race jitters can increase your need to go. Get to the start line with several minutes to spare, as you never know when the race director's watch will be a bit faster than yours. Most races will have a one or two minute warning or a thirty second countdown, but this is not always the case, so be ready. Pick a spot in the crowd as close as you can to the depth you expect to finish, so you are neither blocking nor blocked by too many people. Err on the side of starting farther back, as it is a greater psychological boost to be passing runners (even early on) than it is to be passed. Make one last check of the shoe laces, focus on your race strategy and get ready to have fun.

Chapter 19: RACE DAY II: RACE TACTICS

Once you get to the starting line, most of the hard part is over. It is time to enjoy the results of all the training you have put in. However, you do need to run a sound tactical race in order to put it all together. It can be a source of endless frustration to have done everything right for 10 weeks, only to get careless on the big day. For your first few races you will want a simple strategy based on an even pace, but in later seasons you may try more elaborate tactics.

THE START LINE

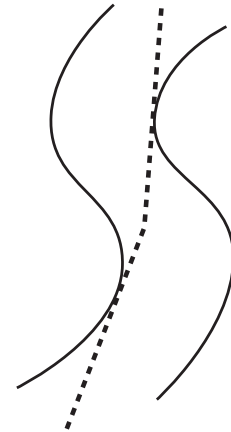
Starting where we left off with race day logistics, you want to be lined up at the start line close to the position you expect to finish in. Err on the side of caution so you can get the confidence boost of passing other runners rather than suffer the deflating experience of being passed by large numbers. Start a little cautiously as well, perhaps 5 to 10 seconds per kilometer slower than the pace you will average for most of the race, then accelerate gradually to your race pace. In larger events, the crowd of people at the start will force you into a conservative pace early on; if the pace is slower or lasts longer than you planned, let it happen. Many runners waste more energy than they can spare by weaving between competitors, sprinting and braking inefficiently and growing tense at the prospect of lost seconds. Go with the pace the traffic permits and wait for openings to pass smoothly and efficiently. Once you are able, try to settle into one pace that you will hold for the remainder of the race.

BEYOND THE START LINE

You will speed up a little on downhills and slow on the inclines, and should be able to accelerate a little in the final stretch. On the whole, however, any departure from an even effort will be wasted energy that will slow you in the end. If your primary goal is to finish, you will already be running conservatively to guarantee relative comfort; if you are seeking a time goal you will want to hold to the even pace that represents the most efficient means of reaching the finish line on time.

WHILE ON THE COURSE

Try as best you can to run the shortest distance allowed. On a winding road try to run on the inside curve of all turns, instead of sticking completely with the left, right or centre of the road. These tangents follow the path the course is measured by to achieve the official race distance, so this is the best path to follow if the traffic will allow it. While it would be cheating to leave the road to cut across someone's lawn or parking lot, it is not necessary to add distance by swinging wide on each curve either.



RUNNING THE TANGENTS

HYDRATION BEYOND THE START LINE

Remember as well to keep your hydration and walking breaks. Drink at every water station even early in the race, as it is the water you take before you are thirsty that will do you the most good later on. You can use these water stations as revised timing for your walking breaks, but keep these breaks in some form. Unless you are a veteran at the distance you are racing, the recovery you get even early on will allow you to maintain your speed in the later stages and gain back more time in the finish than you initially invested.

FOR THE ADVANCED COMPETITOR

There may be times when your focus is not on the time clock but on one or more competitors. On these occasions (more often in shorter races) you will want an array of tactics to draw on beyond the theory of even pacing. Bear in mind though, that any of these weapons will force you to sacrifice (or invest) some of your speed: they will only be successful if they manoeuvre your rivals into sacrificing even more of theirs. The classic tactic in longer races like the marathon or half marathon is to "sit and kick"; if you judge that a rival has a slower finishing sprint than you, you can tuck in behind an individual or group and rely on your finishing sprint to carry you past them in the end. Run as close as you can behind them so they do the work of blocking the wind; as well, you can relax mentally, letting their effort guide your speed on an instinctive level while they tense up wondering what you are doing behind them where they can't see you. Having saved this energy, you will be in a better position to sprint by them with a couple hundred yards to a few miles to go. This tactic is also common in track races, though some will argue that good sportsmanship in the marathon calls for you to take a share of blocking the wind.

The opposite tactic, an aggressive start to burn out an opponent's sprinting muscles, is often seen in shorter events, but is suicide in the marathon and for most half marathoners. A variant on this theme is the mid race surge – also a very risky move in the longer distances. Here, after an even early pace, one competitor will accelerate to a speed that they cannot hold for long, but which will force the opposition into a difficult choice. To respond by matching the surge adds the psychological drain of not being in control to the physical toll of the faster pace, leaving the advantage with the runner who seizes the initiative and retains his or her confidence. To not respond, on the other hand, often carries an even steeper price in lost confidence as you watch your rival pull away from you. The longer the race though, the more this is generally the best approach. Unless you are in the last few miles, let your opponent go, and focus on keeping your confidence and relaxation. Remind yourself that he or she has just sacrificed some speed, and that you will be there in a few miles to collect the price of that sacrifice.

SHORTER RACES

In shorter events, you can add a new wrinkle with a partial response: when your opponent moves, accelerate by a quarter to a half of that difference. Your rival will still pull away, but you will have the mental edge of making a response. In a short time he or she will slow up, thinking your spirit to be broken, but will face the psychological blow of having you come back on them like a pit bull. Now you are in control, having sacrificed less both physically and mentally. Be prepared, of course, for them to repeat the surge; or you can inflict the finishing blow by making a surge of your own.

The key in racing against people rather than the clock is to learn as much about them, and about your own strengths, as you can. This is most easily done with runners you've trained with or raced before, but you can develop the skill of evaluating a new rival on the fly. Try to maintain control, steering the tactics toward your strengths and their weaknesses: be it hills, headwinds or snowy footing. The subtleties of this process can remain an engaging challenge decades after you've run your fastest times.

Chapter 20: WHAT NEXT? RECOVERY AND BEYOND

CONGRATULATIONS! You did it!!!!

CONGRATULATIONS! You did it! Now what? This blend of emotions is common in the day or so after the race. On one hand, you have achieved something few of your non-running friends can even comprehend. On the other, the goal that has fueled your ambitions for ten weeks is no longer in front of you. To avoid the accompanying letdown, you want to have a plan in place to combine your celebration with a transition to the next goal.

At the finish line, take in the atmosphere and celebrate. Try to keep moving, however. Keep the legs as loose as you can in the circumstances; look for the thermal blankets being handed out on cooler days and grab your change of clothing as quickly as you can. As your heart rate drops and your body cools off, you will notice how much you chill with lowered blood sugar. Make sure you have packed warmer clothing than you normally require for the temperature. Once safely into dry clothing, get to the food tent and begin the process of refueling. Don't forget to include fluids even if cold liquid on a cool day does not sound appealing. Try to take advantage of the massage tent, and if needed the medical tent. (Having run a sensible race, of course YOU will not need this...) If you can, track down your running buddies to share your experiences. For the remainder of the day, keep eating, drinking and resting, but if you can, get out for a walk.

THE DAY AFTER THE RACE

The next day begins the process of recovering from the season. The race itself may inflict on your legs a significant level of fatigue even if you run conservatively. This escalates if you pursue an ambitious time goal. On top of this, you have just gone through the physical and mental strain of a long training season. Your mind and body both need time to recover from both the training and racing. Unfortunately, the mind tends to race ahead of the legs, producing one of the more hazardous periods for overtraining and injury. Though some literature will question this, a good rule of thumb for getting over this wear and tear is one day of rest for every mile raced: in the case of a 5K you need at least three days, a week for a 10K and 4 weeks if you decide to run a marathon. This does not mean you are required to jump back into training immediately after the prescribed number of days, but you need to hold yourself back for at least this length of time. For shorter events like a 5K, add some recovery time

to account for the long season in addition to the race-induced fatigue – at least a couple weeks once or twice a year.

WHEN TO START UP AGAIN

You do not need to give up running completely for this rest sentence, though some runners will take a complete break. You can do some running, but keep it gentle and make sure you do not consider it training. The first week especially should contain very little running. Some runners will try to jog an easy mile or so on the Monday and Tuesday to get the legs moving again before taking three or four days completely off, while others will start with the days off. During this time try to get some easy walks in, as well as massage and Epsom salt baths. By the second week you can run a bit more, but keep it short and gentle; run only if you feel like it. By weeks three and four your mind may be getting impatient to start training again, and while you may get some training from your runs, don't be afraid to maintain an unregimented approach even longer if you feel you need to.

Soon enough though, you'll want to start training for the next goal. To provide a smooth transition, you'll want to have put some thought into formulating the next goal before you finished chasing the last one. As we discussed earlier, it is easiest if you have short and medium term goals lined up as stages in the pursuit of a longer term goal. As you begin training again, remember you are back in your base period. You can't ride the crest of your speed work and run as fast as you were a few weeks ago. Build a new base of slow easy runs before heading into a new set of hill and speed workouts, and if you jump into a few races, don't expect your times to match you last peak. Remember it is a cycle of two steps forward, one step back with your mileage as well: you can start your new base higher than the start of last season, but not at the peak: make only a moderate addition to the starting point of your last program and keep listening to your body. As you start chasing your new goal, you may want to participate in (or even teach) a new clinic. If not, there are still the Thursday evening and Saturday morning runs to keep some contact with the group. Good Luck!

CONGRATULATIONS ON MAKING YOUR DREAM COME TRUE!

TRAINING LOG

Week	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Tot
1	Goal							
	Actual							
2	Goal							
	Actual							
3	Goal							
	Actual							
4	Goal							
	Actual							
5	Goal							
	Actual							
6	Goal							
	Actual							
7	Goal							
	Actual							
8	Goal							
	Actual							
9	Goal							
	Actual							
10	Goal							
	Actual							