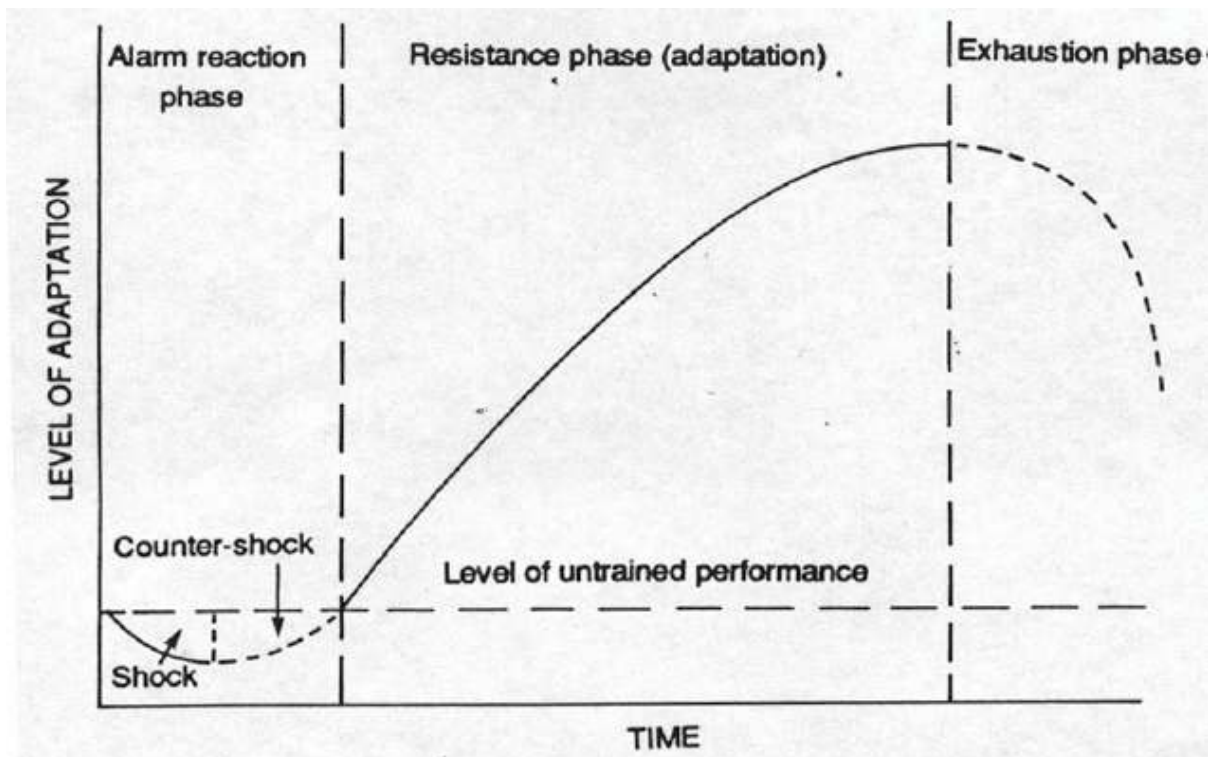


The runner's cycle by Philip Tan

“Faster, Higher, Stronger”. The 3 comparatives that make up the Olympic Motto, and which are also commonly associated with the desires of an athlete. As runners, we train so as to increase the ability to sustain the fastest speed for a given distance or amount of time. When not done correctly, we may be putting ourselves at risk of overuse injuries.

The approach towards structuring a running programme safely and optimally is the understanding of the 6 principles of training combined with the knowledge of periodization. The latter, sadly, is often overlooked. Periodization is the alternation of training load with recovery in a running programme. Its greatest purpose is really to minimize long-term physiological and psychological fatigue and hence preventing the onset of overtraining.

What happens when you train?



The above diagram is commonly known among exercise physiologists as the General Adaptation Syndrome (GAS). This model depicts the process that the runner's body actually goes through when he / she trains.

The first phase or the Alarm reaction phase refers to the introduction of a training programme or when you begin to increase your mileage above the usual volume. The body enters a state of “shock” and this is reflected through the soreness, stiffness and tiredness which the individual experiences. It will struggle to return to its original level through the counter-shock state.

With time, the human body begins to adapt and enters the second phase or the Resistance phase. Through a good balance of training and recovery, the runner's body would be able to perform at a higher level.

Should the runner continue to be stressed with a greater training volume without adequate recovery, the body will enter the final or Exhaustion phase. Prolonged dwelling in this phase would put the runner at risk of reaching the state of overtraining.

The 6 principles of training (a brief overview)

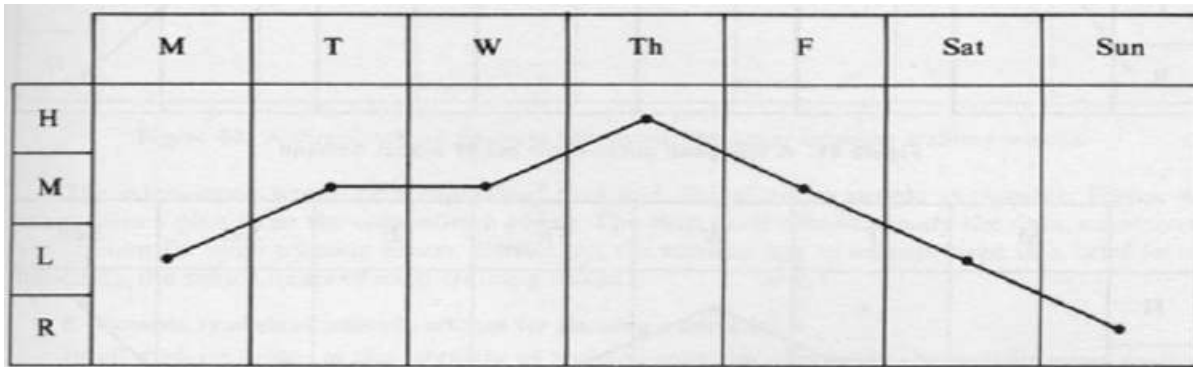
- 1) **Individuality:** No two runners will react to a training program in the same manner due to our different genetics. Hence, individualize your training whenever possible.
- 2) **Progressive overloading:** To minimize overuse injuries, gradually and slowly increase your running distance. While the rule of thumb is not to increase more than 10% of your weekly mileage, you should maintain or reduce your training volume should you begin to feel fatigue.
- 3) **Recovery:** Improvement comes from a combination of stress and recovery. It is important to have off days from running to rest.
- 4) **Variety:** Cross-training (e.g. swimming, gym-work etc) is valuable in minimizing injuries and helping you avoid mental staleness.
- 5) **Specificity:** Runners run, bikers cycle, swimmers swim, tri-athletes do everything. If you want improvements in your running, you do not cross-train more than you run.
- 6) **Reversibility:** Aerobic fitness would be reduced when you stop training. Maintain your fitness by decreasing the frequency and duration of runs yet keeping or even increasing intensity. ~~slightly higher.~~

Understanding the 3 cycles

The components that make up periodization are training cycles, usually 3 different types in the following ascending order:

- a) Micro-cycles = the smallest training cycles which constitute the Meso-cycle; usually 1 week in duration.
- b) Meso-cycles = shorter blocks which make up the macro-cycles; usually 4 – 8 weeks in duration.
- c) Macro-cycles = the longest blocks which usually last from 3 months to a whole year.

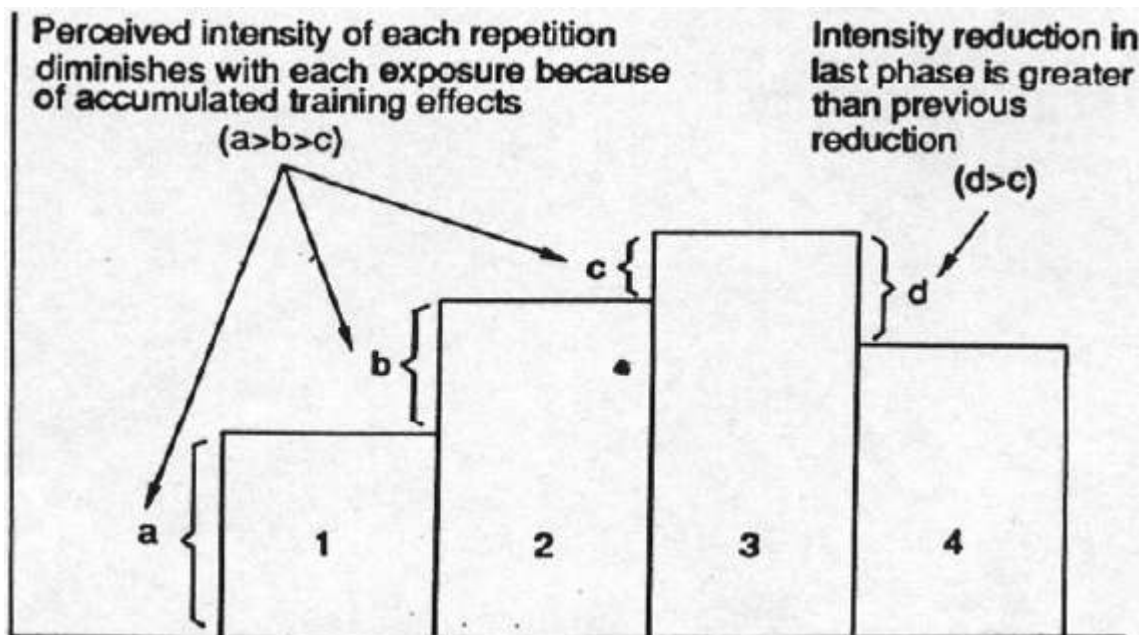
The Micro-cycle



(X-axis = days of a week, Y-axis = training intensity; H is high, M is moderate, L is low, R is rest)

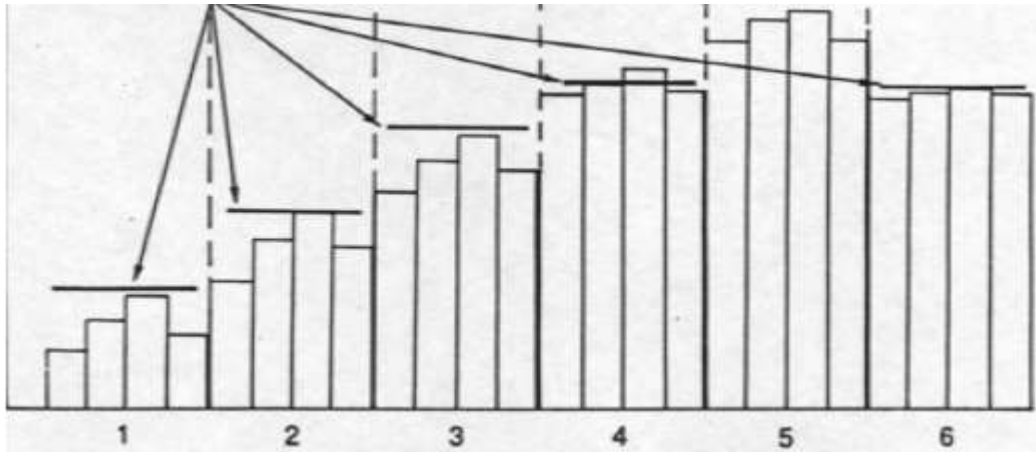
The micro-cycle normally refers to a weekly running programme (Monday to Sunday). When designing a micro-cycle, the exercise physiologist has to consider the training purpose and current fitness level of the runner. The example above is known as a “low-load” cycle which is commonly used by most recreational runners.

The Meso-cycle



The above is a common example of a meso-cycle. Making up of 4 micro-cycles (1 week per cycle), training volume is increased each week until the 4th week where a reduction occurs. This is to allow adequate recovery from any residue fatigue accumulated through the past 3 weeks of training. Such is known as the 3:1 strategy; 3 weeks of gradual mileage loading accompanied by 1 week of unloading.

The Macro-cycle



(Number = month)

In the management of races of prolonged duration (e.g. marathon, ultra-marathon etc), a macro-cycle tends to consist of at least 6 meso-cycle (1 month each). As seen above, the 3:1 micro-cycle strategy is commonly employed with the last meso-cycle reserved for tapering (for more details, refer to the article “Tapering and peaking for the final victory”).

Summary points for optimal periodization

- 1) Learn to employ the 6 principles of training in your programme.
- 2) A good running programme involves periodization, familiarize yourself with the cycles.
- 3) Have a mixture of loading and unloading micro-cycles, the 3:1 strategy is a good start.
- 4) Ensure your macro-cycle comprises of more meso-cycles should the event you are undertaking requires high-mileage training (marathon to an ultra-marathon).

Mr Philip Tan is an Exercise Physiologist cum Head Strength & Conditioning Coach in Changi General Hospital's Changi Sports Medicine Centre. He specializes in enhancing sports performance of athletes and works closely with the injured population to bring them back to sports as well. Philip is also sitting as the program director of the clinic's Weight Management Program and had 3 years of experience working with elite athletes back in the Singapore Sports Council.

