Everything you always wanted to know about training volume (but were afraid to ask…)

1- What counts as an hour of training?

In order to have a common understanding of training volume it is important to consider what is counted as training. Every coach and athlete will have a slightly different way of counting hours, but as long as the key fundamental concepts are the same, the overall training volume should be relatable between different programs. What makes up an hour of training comes down to the question of training quality and a huge number of factors are involved in that discussion. As a general rule, quality training is any training that is specifically planned into an athlete's program with a purpose and desired outcome and for which the average intensity corresponds to one of the prescribed training zones for a given stage of development.

General guidelines for workouts and recording training volume:

- Planned workouts should be a minimum of 30mins of continuous activity (i.e. a 20min slow bike ride to school or a 30min gym class with limited activity should not count) but doing only 15-20 minutes is better than nothing!

- Workouts should be at a minimum of zone 1 intensity (above 60% of max HR, i.e. a slow walk with parents or a dog doesn't count as training). For non weight bearing activities such as cycling, HR may not always reflect a given intensity level reliably; in this case, the average speed may be associated with a targeted level of intensity by comparing levels of perceived exertions or workloads achieved in other activities for the same duration. For example, for a given skier, maintaining an average cycling workout speed of 28km/hr could be comparable to a zone 1 running workout. Therefore, regardless of the time spent on the bike, a 42km cycling zone 1 workout could be counted as a 1h30 of training. Pre-determined average speeds for various intensity levels may be adapted to reflect more strenuous environmental conditions or terrain. Climbing the Alps would deserve a 1:1 ratio!

- During workouts athletes should count the time they are actively training, long drink breaks or equipment changes should not be included in training volume (going downhill is part of training and racing and should be counted as part of the overall workout)

NB: Deliberate play and phys. ed. classes are often hard to account for precisely but should nonetheless be factored into the planned training volume if they are intense or long enough to affect training and/or recovery. For example, coaches coaching athletes at the L2T and T2T stages in particular should take into account that athletes at those ages are (and should be!) still spending a fair amount of time just playing outside with their friends and maybe getting up to 2 phys ed. classes per week (if they are lucky…). Athletes up to the L2C stage may also practice other sports. In these situations it is very important that coaches of the different sports that the athlete is involved in communicate regularly and as much as possible collaborate in designing the athlete's overall training plan together.

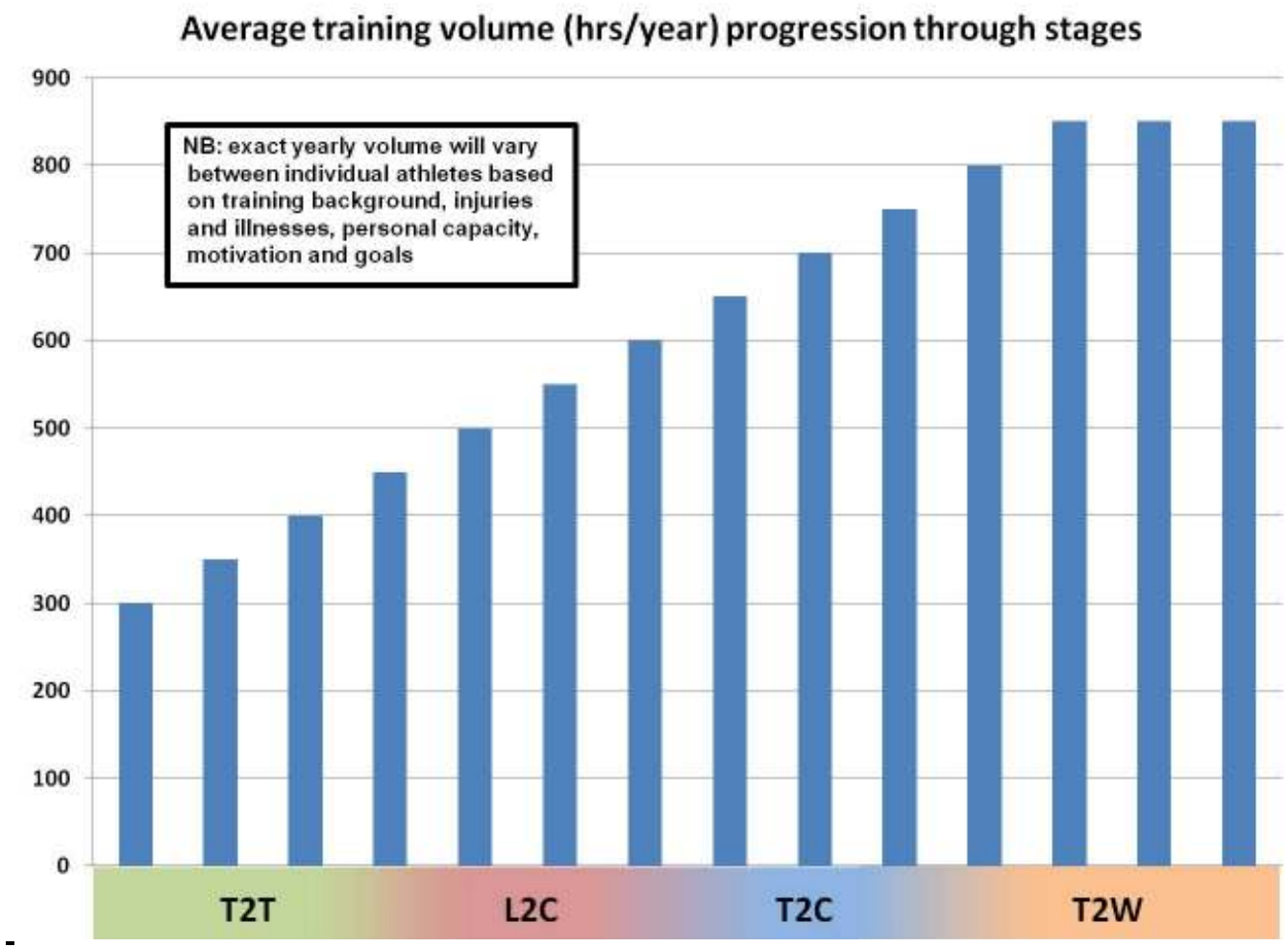
2- Factors affecting training volume progression per stage of development and over years

1. **Athlete's history, background** (refers to the number of training years, the quality of training and the level of engagement an athlete has experienced up to a point in time; this "history", along with other factors, will determine to what stage of development an athlete may belong to in cross country skiing and consequently the adequate yearly training volume)

2. **Growth rate and maturation** (refers to the individuality of the rate of growth and maturation for which the inter-individual variations are particularly acute during adolescence)

3. **Major injuries or illnesses** (refers to the more or less severe impact that injuries and illnesses can have on an athlete's training plan from time to time, possibly impeding an athlete's ability to meet originally planned yearly training volumes)

4. **Personal capacity, motivation and goals** (refers to differences between individuals in regard to their training and recovery capacities and the choices that they make for themselves)



Average training volume % per training intensity/type over a year:

- Aerobic capacity: 75-80%
- Anaerobic Threshold and higher intensities (including racing): 5-10%
- Strength training (recovery between intervals or sets are included in training time): 10-15%

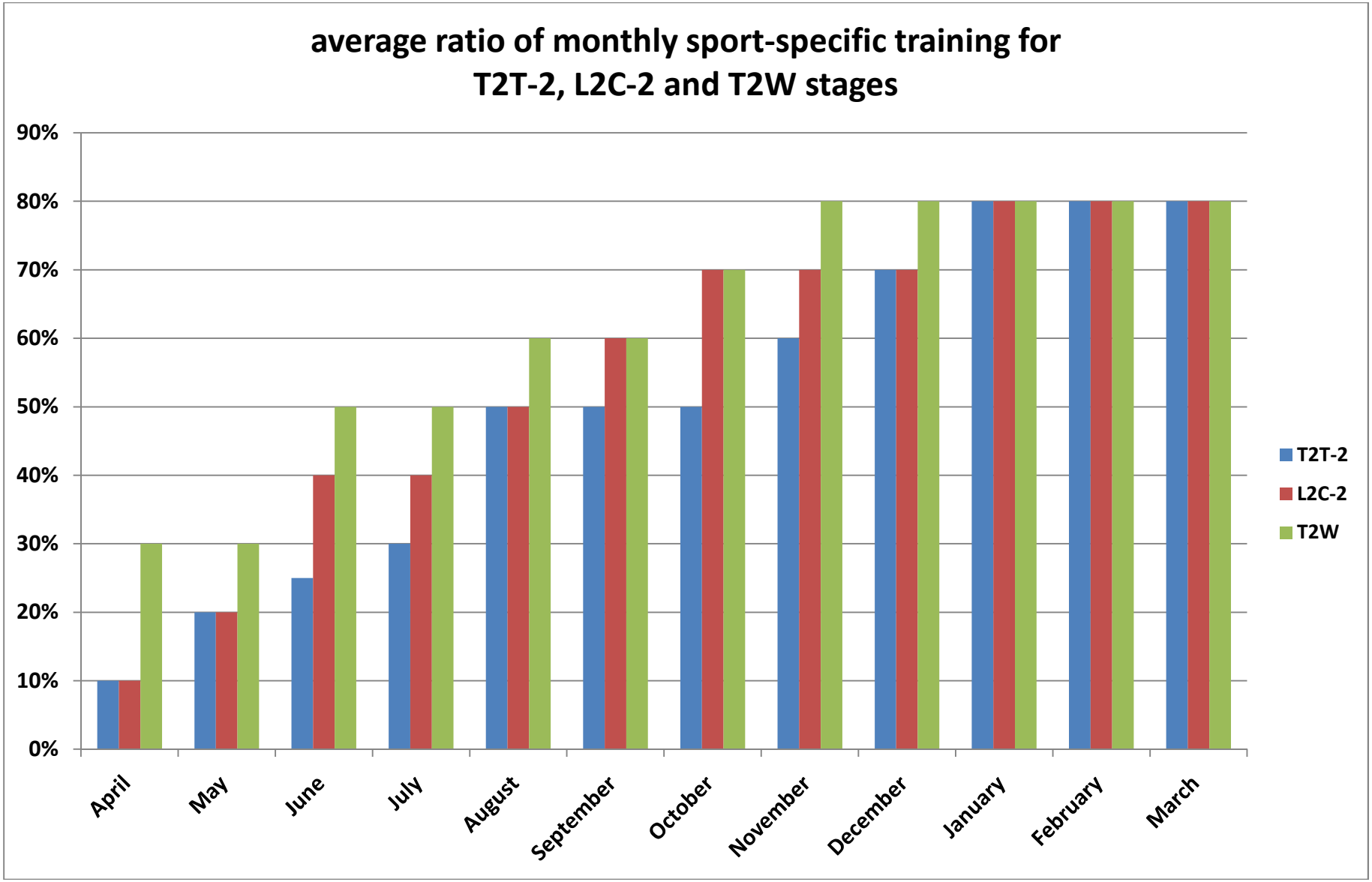
3- % of specific vs non-specific training

As you know, the **quality** and **type** of training an athlete does will have even more influence on development and performance than just the quantity of training (or overall training volume). Since cross country skiing is an aerobic sport that requires a significant amount of training to meet developmental and performance goals, it is often useful to provide more specific guidance as to what the training volume will consist of in terms of the time and focus spent on improving each developmental factors but also as to their sport specificity.

Generally speaking, sport-specific training will simply refer to training activities that reproduce skiing technique fairly faithfully. Thus, roller skiing and ski-striding (with poles) usually make up the bulk of sport-specific training during the off-season while the sport-specific training during the on snow season is essentially made up of skiing on snow. That is not to say that non sport-specific activities are a waste of time, on the contrary, but given the very technical nature of cross country skiing, it is important that a good part of the yearly training volume be done using sport-specific activities. This principle will apply more and more as athletes progress through development stages to a point where T2W athletes will do the bulk of their yearly training volume skiing, roller skiing and ski-striding.

It is important to understand though that the increase in % of sport-specific training should not be accelerated beyond the recommended ratio per stage of development. Just as there are all kinds of LTAD guidelines that are specific to each stage of development, the specific vs non-specific ratio is one of them. The reason for that is that during the first development stages physical literacy will be developed by athletes experiencing and taking part in a **vast array of activities** (up to the T2T stage). From the T2T stage and up, athletes will also need to continue to master different motor and sport specific skills as well as progressively develop their capacity to handle a higher ratio of sport-specific training.

The graph below illustrates the differences in % of monthly sport-specific training volume for three different stages. Although the differences may not seem that significant and actually don't even remain during the core racing season (January to March), consider that athletes at the higher stages of development train considerably more than younger athletes, therefore executing a much larger amount of specific training than younger athletes even though the balance between specific and non-specific can be the same at some point during the year.


average ratio of monthly sport-specific training for
T2T-2, L2C-2 and T2W stages
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
April
May
June
July
August
September
October
November
December
January
February
March
T2T-2
L2C-2
T2W