EFFECTS OF TAPERING ON PERFORMANCE: A META-ANALYSIS
By Laurent Bosquet, Jonathan Montpetit, Denis Arvisais and Iñigo Mujika

This group of researchers selected 27 studies out of 182 to conduct a meta-analysis on tapering. The criteria for selection was that they had to involve competitive athletes; the study had to provide details of how the taper was conducted; and then be based on a competition or other highly regarded performance criteria.

A meta-analysis is a statistical technique that can combine the results of several studies into a single result. It allows the researcher to have a larger database and to identify key findings across different studies.

The idea of the taper is to reduce training in order to achieve a better performance at a key competition or series of competitions. The concept is one of reducing fatigue to allow the athlete to compete in a somewhat “recovered” state, but not reducing training so much that it has an effect on performance. It is easy to see from the above statement, that how you do the taper and for how long are key components.

How
If we want to reduce training loads, there are three main factors that can be used: volume, intensity and frequency. Volume is the amount of training done each day, intensity is the percentage of maximum effort and frequency is the number of workouts that the athlete is doing. Of course, you can manipulate all three areas independently or simultaneously.

However, Bosquet, et al found that “Maximal performance gains are obtained with a total reduction in training volume of 41-60% of pre-taper value. Training volume can be altered through the decrease of the duration of each training session and/or the decrease of training frequency. It seems that the first strategy should be preferred because decreasing training frequency does not result in a significant improvement of performance.”

The best way to do a taper is to reduce training volume, but not decrease frequency. If you feel you have to reduce frequency (cut back on two-a-day practices), they recommend “maintaining training frequency at 80% or more of pre-taper values.”

That leaves us with the final factor-intensity. “It seems clear that the training load should not be reduced at the expense of training intensity, probably because it is a key parameter in the maintenance of training-induced adaptation during the taper.”

The conclusion is to reduce training load, you would reduce volume, maintain at least 80% of frequency and maintain intensity.

How Long
"Duration of 8 to 14 days seems to represent the borderline between the positive influence of fatigue disappearance and the negative influence of detraining on performance. Performance improvements can also be expected after one, three or four week tapers.” The optimal taper should then be between 8-14 days, however more data is needed to see if
longer tapers may be as effective.

**Other Factors**

“Diet also may affect the benefits that can be expected from a well-designed taper”. The athlete is doing less volume in training, so some adjustment to diet may be in order as they go through the taper period. However, “muscle glycogen concentration has been shown to increase during the taper.” “Consequently, a rich carbohydrate diet seems to be an important component of a successful taper.” This can be advantageous for the athlete as long as they monitor their caloric intake during this period of time.

The meta-analysis looked at gender (no differences).

Overreaching/Overtraining prior to taper “results in higher performance gains, but also that taper duration and percentage decrease in training load should be adapted to dissipate this extra accumulated fatigue”.

**Styles of Tapers**

Four different types of tapers have been studied: linear taper, exponential (slow decay), exponential (fast decay) and a step taper. Linear is a daily reduction in volume over the two week period and in a graph would appear as a straight downward sloping line. Exponential (Slow) would be a more gradual reduction and would appear as a slightly curved line ending about where the linear taper would end. The exponential (Fast) would have a greater degree in reduction towards the end of the taper and would be more significant than the slow decay. Step is characterized by a sudden drop in volume that remains constant throughout the taper.

In this study, the linear taper and the two exponentials (slow and fast) were combined and referred to as a progressive taper. The progressive taper improved performance over the step taper. It appears that the exponential fast decay is the best of the four styles.

**Conclusion**

When medals are determined by 1/1000th of seconds or just the smallest of edges in team sports, a proper taper can be a determinant in a podium placement.

Through the meta-analysis process, the researchers have determined that “a two week taper during which training volume is exponentially reduced by 41-60% without altering training intensity or frequency appears to be the most efficient strategy to maximize performance gains.”