

The Penelope-Effect: When less is more

Climbers seem to have a weird tendency towards self-destruction. They squeeze into shoes that are at least two sizes too small and continue climbing until blood is dripping from their fingertips. And they even take pride in that. Some might say that's a "hard-core mentality", but you could call it masochism as well. However, aside from the question of whether that's a desirable culture in sports, there is a problem with the approach of training to complete exhaustion every time you enter the gym. Sessions in this mindset usually end – more or less literally – with one crawling towards the wall on all four and just refusing to let go, until one (hopefully) reaches the top. In doing so, it may very well be, that you reach a few more top holds – which unfortunately reinforces the behaviour. Most certainly, though, this will be done with a technique that leaves much to be desirable. The real problem, however, is not that you did these specific climbs in an unsightly manner, but that you will learn and internalize this technique. As – to slightly rephrase a quote from Paul Watzlawick – you cannot not learn. Consequently, you might undo all the technical progress you have made and might even be worse off after the session than beforehand.

This effect is named after Penelope, the wife of Odysseus. During her husband's journey, she was courted by various suitors. To delay remarrying, she claimed to be weaving a shroud and said she would remarry when she had finished it. However, every night she pulled out the threads and undid the work of the day, so the shroud was never completed. Essentially the same thing happens – although unintentionally – if you continue climbing in an overly fatigued state: Because the bad technique is learned, the work done previously is undone.

In laboratory studies, the effect is usually isolated by giving subjects an easy motor task and varying the number of practice trials they do. One exemplary result of such a study is shown in Figure 1. In this case, the performance of those subjects, that had done 300 practice trials per session was essentially the same as the performance of subjects, that did a meagerly 50. In other words, the subjects in the 300-group essentially did 80% of their practice in vain. Not a very good track record. Furthermore, they performed significantly worse, than the participants, who did 150 practice trials per session. That means, that about half of their practice was not only not beneficial, it actively harmed their performance. Again, not what one would hope for.

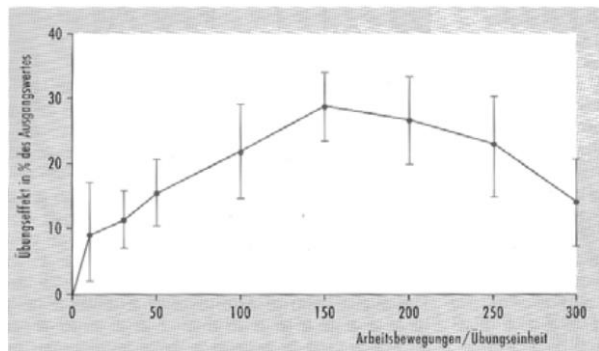


Figure 1 - Hollmann H, Hettinger W. Sportphysiologie. Springer-Verlag Heidelberg (2000)

This becomes especially problematic if the bad technique is overlearned to a point, where it becomes completely automatized¹, as such habits are incredibly hard to unlearn. This is something, that musicians and a couple of other sports have long known, which is why there is so much emphasis placed on beginners practicing with correct technique from the very beginning.

¹ This will be most likely to occur if a big part of the time you spent climbing is in a fatigued state or you never make any attempts at correcting the acquired behaviour.

The conclusion is clear: Continue climbing only as long, as you can stay technically clean. The moment your technique starts deteriorating, the session should be done. So far, so good. However, you might have two (and a half) objections:

1. BUT I have to train to get stronger. Of course, that's true. But that harks back to a distinction, that, in my opinion, is done way too seldomly in climbing: The difference between practice and training. When I say practice, I mean everything that is aimed towards improving one's technical and tactical abilities. When I say training, however, I am talking about everything that is supposed to enhance one's physical abilities², mainly strength and endurance. Of course, too much training can also harm progress in these physical capabilities (overtraining, injury risk, etc.). Nonetheless, in order to be effective, training has to induce a certain amount of fatigue. If you stop your endurance training, as soon as you start getting pumped, you misunderstood something. Practice, however, should stop, as soon as your performance begins to decline. At first glance, this seems to lead us into a dilemma: I should stop climbing if I start to fatigue, but I also have to continue, because the fatigue is necessary for my training to be effective. There is a rather simple solution though: Separate practice and training by using other modalities besides climbing, that is strength training. This minimizes the negative impact of the reduced quality of movement on your climbing since the transfer – both positive and negative - between any two activities is largely dependent on their similarity. Furthermore, the technique in those more isolated movements is usually less affected by fatigue in the first place, as the movement patterns are simpler.
2. BUT I have to climb in a fatigued state during competitions. Of course, that's also true. But – at least I assume that – you don't want to climb badly. You cannot improve your ability to climb well technically under conditions of fatigue in a competition, by doing the opposite in your practice. Instead, you should aim at automatizing your good technique to a point, where it persists even under fatigue. Furthermore, you can practice dealing with the effects of fatigue by occasionally climbing in such a state while completely focusing on remaining technically accurate. However, since this requires a very large amount of focus, this should be done sparingly.
- 2.5 BUT I like climbing a lot a lot. Well, I do too. This is also why I have been guilty of climbing in a very fatigued state with very sloppy technique time and time again, despite knowing the consequences. But that's the point. I knew what I was getting into, and I made an informed choice. Plus, I know, I can't do this too regularly if my goal is to improve. If your goal is different and you just want to have fun, I'm not here to tell you what you can and cannot do. Just don't fool yourself.

² Other people might use different terms, these are simply the ones I prefer. However, the concept remains the same