

Jonathan Schmid Training

Category: Physical Practice

22 December 2020

The Bigger Picture

"Managing Fatigue"

In this lecture we will have a look at what we call „the bigger picture“ in terms of training, fatigue and adaption and we will see that we humans tend to look at it the wrong way too often. Previous texts you should have read at this point are *Theoretical Training_DOC* as well as *Stress_LEC*.

PROGRAMMING AS „MANAGING FATIGUE“

In his book „Super Training“, Mel C. Siff states that training programming could be considered as „managing fatigue“. This is an interesting consideration, which tells us that in the context of training planning it is extremely important to look at the whole process and not just at individual sessions (remember training vs. non-binding physical activity from *Theoretical Training_DOC*). We will come back to this later. It also becomes clear that structuring training obviously becomes more difficult quickly - which is nice, because it sharpens our critical thinking skills and the amount of questions we are allowed to ask ourselves.

Before we look closer at it let us first look at the sweater metaphor used by Katie Bowman about eight years ago. Usually we use these in one-to-one trainings with students who have acute pain or injury to explain that there is no point in just working on the symptom. In this article, however, the metaphor refers to the “Everything is input issue” and is intended as a metaphorical support for it in order to understand with what we are dealing here.

THE SWEATER METAPHOR

Let's start the metaphor with a question: “When does a sweater break?”.

I think that at first you shrugged your shoulders and did not find the one answer. And yes, it is a very hard question to answer because, as we know, there are no factors or parameters inherent in that question. We could maybe say “when it's worn down” but then the next logical question would be “When or how is a sweater worn down?” Which also leaves space for too many unknown factors.

I think it is clear, but I say it nevertheless, the body is NOT like a sweater, but we can find some similarities. So let's take a closer look on the metaphor.

If you pull one end of the sweater, the whole sweater is affected. You could pull the lower-left corner of the sweater and track the load in the upper right corner or even the sleeves. The input of the load would diminish over time but nevertheless, the whole sweater gets affected - just like the body. Further

the sweater, especially if it's very fashionable, consists of different kinds of fabric that have different kinds of properties, that break at different rates when exposed to different types of stimuli. The seams are very strong and good at connecting fabric to fabric but not very elastic. The shoulders of the sweater are thicker and therefore warmer and more durant but take more time to dry if they get wet, because of their thickness. The cool white print on the front looks cool and gives texture but stains more easily etc. The body is similar in the way that it is comprised of different types of tissue, with different properties, that respond differently to different kinds of input.

Continuing the sweater metaphor, external forces act on the sweater all the time. The sweater is constantly working with or against these forces. Sometimes (usually after a while) the sweater cannot cope with the accumulated external forces or the conditions under which they are imposed and a tear occurs or the sweater gets damaged. But the important thing to know is: The sweater is constantly being damaged. If we were to make "friction tests" on a sweater that was being used by someone on a daily basis, the sweater wouldn't just resist tears when making those "friction tests". The sweater would eventually break because it was worn down, on a daily basis, over time from when you take the sweater on and off, when you put a jacket on top of it, when you scrape it against a surface etc. Even if we observe something we would call an "instant tear" if you looked at it in slow motion, the tension in the fibers of the shirt would increase and increase until they couldn't cope with the tension anymore and they would snap.

What is nice about this metaphor and what we can derive from it are mainly two things:

- a) Nothing exists in a vacuum, neither a sweater nor the body. It is therefore misguided to assume that adaptations only take place when we isolate them.
 - Example 1 - Increasing mobility **doesn't** only taking place when we stretch.
 - Example 2 - Fatigue **doesn't** only spikes when we feel tired or are under heavy amounts of stress.

- b) No injury happens instantly and it is therefore misguided to think that we can fully isolate or fully understand what causes an injury.
 - Some days you roll your ankle and bounce it back other days you roll your ankle and sprain it - you cannot predict which days which is going to happen.
 - Some days your shoulder feels weird after weeks of intense training and during a "badly executed movement" other days you felt great and as if you did everything right but you discover a weird sensation in your shoulder post training. Again, we cannot predict which day is which.

After we have understood the metaphor and in the best case got a better picture of „Everything is input“, we now look at the ways where the body is not like a sweater:

- It can regenerate - it constantly builds itself back up.
- It's adaptive, it doesn't only build itself back up to how it was before, it rebuilds itself to better handle the damage imposed upon it (hopefully) —> it's antifragile.
- It's made up of different kinds of tissue (like mentioned earlier) and the different kinds of tissue handle different kinds of input in different ways (you'll learn this at another point of your process with us)

- Another big difference is the neurological component or our nervous system. We are not only affected by stress but maybe even more by how we interpret stressors and how our state of mind is when experiencing physical & mental stress (remember Stress_LEC).

For now, we can suffice with somewhat the same ideas used in the sweater metaphor. Our Central Nervous System (CNS), when talking training and recuperation, is constantly being affected by all sorts of factors that are not directly related to training. Our organism is constantly trying to manage all the inputs and figure out which is the biggest stressor so it can adapt to it to get itself back into balance. In doing so, the body doesn't distinguish whether we call something "a stretch", "a strengthening exercise", "climbing" or "lying on the couch". It will simply always take care of and adapt to the strongest stressor first. It gets good at what we do a lot.

So that's why the Eastern Europeans realized that it was important to track and regulate almost every aspect of their athletes' lives. Because if you want to achieve top performance on day X, it plays a big role which stressors influence you outside of your training and in what form and to what extent they do so. And of course, if I train "only" to feel good, to be active and to move for the sake of moving, then none of this plays a big role. But if I pursue specific goals with my training, it is interesting to consider the topic of stress and „everything is input“ in this context. And in the extended JST group, there are some who do this and who train almost or even like an athlete just with a much broader perspective thus also more influences and stressors. To make this a bit more clear one more time, here is another example:

Let's take Peter and Juan as an example. They both train handstands for two hours a week according to the same plan. While Juan is making great progress, Peter just isn't getting anywhere - even though he always follows through with his training. At first glance, there is no explanation, since both do the same training and both follow through with the same discipline. But when you get to know them better, you discover some interesting differences. While Juan is currently unemployed, has no steady relationship, lives in a sunny place, and has nothing to stress him out except training, Peter has a 40+ hour work week, a relationship that requires a lot of inner and social work, and lives in a place where it is often overcast, even rainy. In addition, Peter has to deal with some unconscious fears from his childhood, which are reflected in the training and additionally burden him.

What should be clear in this example is that although both are doing the same training with equal effort, Peter's organism has to take care of far more strong stressors on the side, so it gives little to no attention and positive adaptation to the handstand training. Because it doesn't know that the handstand is INTENTIONALLY Peter's priority. So no matter how great the training is set up, until Peter succeeds in weakening the other stressors (by eliminating them from his life or dealing with them better) he simply won't make any real progress - even though he trains diligently every week.

This is often where the vicious cycle begins. Since, despite regular training, nothing progresses, Peter begins to question himself, to evaluate negatively and to deny himself talent or abilities. Unfortunately, he questions himself in the wrong place and thus does not get to the root cause. He becomes more and more frustrated until eventually one day he stops and holds on to it as truth: I can't do this OR the plan was shit. That's drama, baby! BUT: Now that Peter knows about it, he can approach the matter with a different consciousness and try to change and adjust certain things in his life. This requires absolute honesty, choices, extra training and effort, but it pays off in the long run.

STRUCTURING WEEKLY AND OR MONTHLY TRAINING

As said at the beginning, training programming could be considered as managing fatigue. While it is of course also about managing strength adaptations and optimizing progress, fatigue could be considered more important because it can limit the other factors.

Fatigue is classified as that which determines one's ability to sustain a specific type of effort. With endurance being defined as one's ability to resist fatigue.

While many of us are keen on scheduling our daily life and training very rigidly or at least filling our schedules as much as we can with stuff and training, some important questions to ask ourselves are: When was the last time I consciously managed my energy tank/level? When was the last time I took two days off from training, work, my relationship etc.? And even more important: When was the last time you took two days off from all this purposefully or with a good conscience?

Because not having time to cram training or other things into your schedule shouldn't be confused with understanding the importance of deloading! What I want to say and it is really important to understand this, is, that you're not "resting" just because you don't have time to train, are not creative for work, you can't really spend an evening with your partner because of work etc. - you should realize that deloading is part of a (training) process and not something that happens because you cannot make time to do something.

But let's go back to training, because we want to talk about how to plan your training with an eye of your fatigue. Of course you can use this concept „managing fatigue“ for other scenarios in your life as well. If you're clever and open-minded you will see again and again how you can apply ideas, principles and concepts you learn in training to your general life.

So before you start a training phase or a training week, you should think about all the stressors that will accompany you during this time. For this process you could think about the four Ps which are problem identification, prioritizing, planning and pacing. Of course it is not possible to make a list once and not adjust it again. Life remains dynamic and requires constant updates and adjustments. So again the aim is to think of the four Ps at the beginning of each day, week or at least phase to help you manage your energy levels. It can take a while to master this way of thinking, but it's worth being patient with it because it can make a difference and help you to get a bigger picture of yourself.

Step 1, Problem Identification - It's easier to manage your fatigue if you can work out what stressors might be adding to your fatigue and thinking of ways around them. Think about your life and all you do and what is affecting you (of course there are many things you don't know and you cannot think about). First write down all stressors you find, no matter if positive or negative, just create a big brainstorming map. Second, start to rate the stressors you've found - means, is a stressor negative to me or positive and also how strong is this stressor from a subjective perspective?

Step 3, Prioritizing - Now it becomes important to prioritize or rate your stressors. You can prioritize in two different ways:

- a) which negative stressor is the strongest?
- b) which one is the easiest to remove?

Step 2, Planning - In the next step try to plan what you want to achieve that day, week, phase and then match your plans with your stressors and decide what stressors are getting in the way of them and how you can eliminate them to have a realistic chance of achieving your plans.

Questions you could ask yourself:

- Does this really need to be part of my day/my week?
 - > If not, how can I remove it?
 - > If yes, are there any possibilities to improve the way I deal with it?
- Does it need to be part of my life at all?
 - > If not, how can I remove it?
 - > If yes, are there any possibilities to improve the way I deal with it?
- Do I have to do it, do I want to do it or can I ask someone else?
- Can I get someone to help me with parts of a thing?
- Can I break the task/scenario which is stressing me a lot into smaller more achievable parts that can be spread over my day/week?
- Could I change the time at which I do this or that task?*
- Is there something I could use to counteract the stressor?**
- Etc.

As an example, if cleaning your house is becoming an overwhelming task and using up so much energy that you find it difficult to do anything else, how could you make it easier? Would it help to get a cleaner? Sometimes we all have to pay someone to help get a job done. If it means you have more energy to do other things, such as relaxing at the lake or doing a training session after a long day of work. The benefits should be greater than the cost.

I'm not saying you should pay someone to clean, of course that was just an example. What I want to say: Often small changes can alter the amount of energy you use and the way you feel about yourself.

*Plan to do bigger tasks at a time of the day when you tend to have more energy.

**Plan lighter activities and rest breaks around like for example a power nap. Also plan activities you enjoy into your day, it's not just about getting tasks and chores done. Taking part in activities you enjoy can improve your mood and energy levels even if this may once be contradictory to your actual life and values. You enjoy what you enjoy and not what society tells you should enjoy. It's your fun.

Another important thing regarding the planning is that you should try to stick to your daily or weekly plan, but don't beat yourself up if you can't do everything. If needed talk with other people about your struggles to figure out they have similar ones and it's just very human.

Also I wouldn't plan to change everything at once. See also here the process. Good things take time.

Step 4, Pacing - Try to not use up all your energy in one go. We've already talked about breaking activities into smaller tasks, particularly ones that you'll need a lot of energy for. You could then spread out these pieces of activity over the course of a day, a week or longer. For example, instead of doing one big session and then feeling wiped out later that day and the next day, could you spread it out over the day, a few days or a week? This could make it more manageable and less overwhelming.

Manage your stressors and resulting fatigue before all the focus goes to the actual training. Then realistically match your training with these and plan meaningful deloads. Make sure there are few to no stressors that are stronger and more impactful than the training. As a final scout, look for more "positive" stressors to support the training (which we also will share with you through our Nourishment Practice in the course of time).

TYPES OF FATIGUE

Fatigue, much like strength is very specific (Siff & Verkhoshansky). This is SUPER important to understand because this means that the idea of "being in shape" is quite misguided. Like we learned before we adapt to resist the fatigue of specific things or disciplines, or even specific patterns/movements inherent in those things/disciplines. So the idea of being "in shape" as an overall idea is incompatible with knowing this.

Specifically regarding training now some might ask what about runners who seem to have better oxygen transport than other athletes when put on a bike? Yes, there are spill-over effects due to cardiovascular adaptations, studies by Saltin & Rowell and Gollnick & Saltin attributed long-term endurance as much to specific metabolic changes in the musculoskeletal system. This means that there are specific metabolic changes in the muscles to adapt to different endurance exercises, and they don't necessarily transfer between activities. We will dig more into fatigue at some other point but here is a short summary of the types of fatigue we have which is also interesting to know when looking at your stressors and how they fatigue you:

a) Central Fatigue

- Rapid
- Delayed

b) Peripheral Fatigue

- Low-Frequency Fatigue
- High-Frequency Fatigue

Central fatigue happens in your central nervous system and can be induced rapidly or as a delayed response. As we talked about already, many, if not all, external factors can have an effect on your Central Nervous System.

An interesting note is that Rapid Fatigue is usually perceived as very important, especially by dancers, but usually doesn't last very long and usually doesn't have an overall effect on your long term training. Whereas Delayed Fatigue is generally quite hard to perceive and not paid much heed to but it has a much bigger impact on your training and general wellbeing.

Peripheral Fatigue is the fatigue of your musculoskeletal system and there are two kinds: Low-Frequency which occurs early and for any exercise with muscle activity above (around) 15 % and disregards the characteristics of muscle contraction, and High-Frequency Fatigue appears at intensities above 70%.

An important implication of the Low-Frequency Fatigue is this: EVERYTHING requires energy and EVERYTHING fatigues you. This, we believe, is especially important for teachers, as we might sometimes make some students do some time-filling low-intensity activities, to keep them busy while focusing on other students. While this makes sense in short duration classes, to keep the students engaged, in longer workshops and classes it could be better to give the students time-off to recharge, rather than wasting their energy in an attempt to make the class “seem busy”.

SUMMARY

To finish this lecture I want to summarize some important takeaways.

Planning and structuring long-term training could be seen as managing fatigue, before we look at managing strength adaptations and optimizing progress. Planned deload-sessions or -weeks matched to possible stressors in your everyday life are an important part of making long-term progress and enjoying the fruits of your training. Anyway it is important that, as we talk a lot about rest and deload, you do not forget the principles we talked about for development: Keep increasing the intensity and complexity and keep specifying and refining your goals and movements. We now know that everything is input and our organism just takes it as that. In addition to obvious stressors, there are also many "invisible" stressors that we are not even aware of, but which may affect us greatly. Such things can be supposed trifles, such as the Wi-Fi at night, the lighting conditions throughout the day, etc. If we have problems with progress in our training or we're feeling tired way too often then we should start to work with the four Ps and start a process of problem solving. But keep this important thing in mind: This process should not lead to more stress. So if you notice that you are putting too much pressure on yourself with the implementation, then you are on the wrong track.

The more experience we gain and the more sensitive we become different stressors come to affect our training and life more. This makes it more and more important to be aware of your stressors and to include them in your daily life and training planning and NOT to consider single training sessions or daily tasks as isolated. Keep caring more about the bigger picture.

This by the way, this would also be important to remember for faculties in dance and circus schools and is why it again is important to write things down, because we are biased towards immediate impressions much higher than long term statistics. Read the book of Daniel Kahneman „Thinking Fast and Slow“, a very insightful book on how we process information and how we make choices based on that. Let me tell you: we're not very good at it. I'm sure it has happened to all of you that you've had a bad session and it has really gotten you down, up to days afterwards. It's a lot easier to remember that in your last workout your archer pull-ups felt much easier but completely forget that two months ago you weren't even close to being able to do archer pull-ups. This is just one of endless more examples.

Some of you are certainly aware of the contradiction in which knowledge stands. The more I know, the better. It may be. But it also makes many things more difficult, because I think about too many factors, I notice too many things or I am only busy with theory. The same applies to this subject area. We are slowly but surely starting to give you so much information that you might think “holy shit!” there is so much to think about now and it is terrifying how much I have to take into account. There are a couple of answers to this if you want to stay motivated and keep progressing:

- Intensity/complexity should gradually increase.
- Take care of your stressors. You do not have to consider all these factors - you cannot. However, if you start realizing that there are countless factors beyond your comprehension that influences the simple question: “How do I get better at my discipline/how do I make my students better”, THEN you are one step ahead of most people. Because then you will realize that most answers, including your own, are just attempts at answering questions and these attempts will only sometimes work.
- You should slowly get the awareness that you are choosing to focus on a few elements of the bigger picture and ignoring other elements - this is fine, but it's good to be honest about it.
- You will hopefully come to realize that somewhere out there, someone has studied some sort of answer to your question or solution(s) to your problems so there are usually tools to be found when bumping into issues.
- We are there to support you on this journey!