

How to Improve Movement Recovery after Stroke

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Regaining movement ability after a stroke can be a long and difficult process. Often times, lots of improvements are made in the first few weeks or months, but then progress slows down. This can be a very discouraging time.

Fortunately, research has shown that there is hope. Continued rehabilitation exercises are proven to restore lost movement ability even years after a stroke. However, it is important that those exercises are done correctly.

In this article, we will talk about the “Three D’s” of stroke rehabilitation exercises, and the role they play in optimizing your movement recovery after a stroke. But first, it is important to understand what makes stroke rehabilitation exercises different.

Brain vs. Body

When you think about exercising, what images come to mind? People lifting weights in the gym? Joggers going for an early morning run? Or maybe just a brisk walk through the park?

These are all great examples of what I will call “Traditional Exercise”. In Traditional Exercise, we work out our body, and then our muscles, heart, and lungs get stronger as a result. These are the exercises we are all familiar with.

Now, if I asked you to think about *stroke rehabilitation* exercises, what images would come to mind? Chances are, if you haven’t been to an occupational or physical therapist, you won’t really know what to think.

If you have, you’ll know that a lot of times, it does not involve the types of heavy lifting or extended exertion that we see in Traditional Exercise. A rehabilitation exercise could include anything from picking up and moving blocks of wood on a table, to simply stretching out your fingers or hand.

Some of the most difficult of these “Rehabilitation Exercises” may look nothing like the Traditional Exercises we all know.

The main reason these two types of exercises can be so different, is that Traditional Exercise is primarily focused on *training the body*, while Rehabilitation Exercise is all about *re-training the brain*. Because of this, the strategies that work for one type of exercise won’t necessarily be as effective for the other type of exercise.

Unfortunately, while there are thousands of websites, magazines, and TV shows that teach us how to do Traditional Exercise better, there isn’t nearly as much information on how to make Rehabilitation Exercise as effective as possible.



Improving recovery after stroke is all about retraining the brain.

Which, of course, brings us to the main point of this article. Below I am going to talk about the “Three D’s” of stroke rehabilitation: Dose, Difficulty, and Drive. I’ll explain how each of these things can improve your recovery, and I’ll give you some tips on how to incorporate them into your own therapy regimen.

Dose

The number one most important thing for recovery after stroke is the dose of rehabilitation you perform. Put simply, the more exercises you do, the more you will recover.

It sounds like a simple formula, but it can be difficult to put in to practice, especially when your body just doesn't respond like you want it to. But when it comes to re-training your brain, it is all about patience.

To explain, think back to the example I gave for Traditional Exercise of going to the gym. If you have ever lifted weights, you will know that even after the first day, your muscles will feel sore, and you can tell you worked hard.

Now, when you are recovering after a stroke, what is really happening is that the brain is learning new ways to control your muscles. It is almost like a child learning how to walk.

You won't necessarily notice progress right away, because the brain has to try something over and over and over again before the new connections become strong. And just like that child learning to walk may fall down over and over again, if they stick with it, their brain will learn how to put the pieces together. Again, it is all about patience. Exercise a lot, and keep doing it. The progress will come.

Difficulty

The second key point is difficulty. This means that when you are doing your exercises, you need to challenge yourself appropriately (in the academic world, this is referred to as the "[Challenge Point Framework](#)").

For example, check out the humorous video below. You will see a young child going one-on-one against an NBA basketball player. In this video, it is clear that the task is much too difficult the child to ever be successful. Because of this, his brain is not getting the opportunity to learn new things. He is just failing over and over.

At the same time, for the NBA player, this task is way too easy. He doesn't have to try to succeed every time, so his brain isn't being stretched by having to solve new problems. Clearly, for both the child and the basketball player to improve their skills, they need to practice differently. The task they practice should be challenging enough that it pushes them to their limit, but not so challenging that they can never succeed.

When you are recovering after a stroke, the same rules apply. The rehabilitation exercises you do need to be appropriately challenging, otherwise they won't help you improve. The trick here is that every single person that is recovering from a stroke is different. And that means that each person will have a different level of challenge that works for them.

One on hand, you need to push yourself. You need to be working hard to improve. But on the other hand, if a task is too difficult, it is discouraging, and ultimately will not be beneficial. It is all about balance.

Drive

The final "D" is Drive. A better word might be "Motivation", but that doesn't start with a "D"!

This one is pretty obvious, but it is also perhaps the most difficult one to achieve. If you are not motivated to recover, chances are you are not going to challenge yourself, or perform the high number of repetitions needed to reach your full potential.

But it can be extremely hard to maintain a high level of motivation, especially when you are limited to perform a very limited number of movements over and over and over again. Trust me, I know how boring that can be.

Because of this, my best advice is to **find what drives you**. Maybe it is listening to music while you exercise. Maybe it is setting a goal for every week, and then rewarding yourself when you reach it. For example, if you exercise for three hours in a week, then you get to go out for a nice dinner on Saturday night.

Another great way to keep up your motivation is to accurately measure your progress. It may seem like you are stuck in one place, which can make it hard to continue. But if you have a good tool that can show you even the smallest improvements, it can be extremely motivating to see that progress bar tick up week after week.

Putting it All Together

So, to recap, when you are recovering from a stroke, the goal is to re-train the brain. To do this, you need to do a lot of exercise (Dose) at a balanced level of effort (Difficulty), and you need to stick with it, even when it is hard or boring (Drive).

It may seem like a lot, but the good news is, you are not in this alone. Clinicians, friends, and family can all help to keep you on track to meet your recovery goals. It is also helpful to find therapy options that work for you and help keep you motivated. Here at Flint, all of the therapy tools we develop are built on the principle of Dose, Difficulty, and Drive.

For example, our **MusicGlove hand therapy** uses rhythmic gaming to prompt a high number of repetitions. It also features several difficulty levels so you can find the mode that pushes you to improve. Plus, we spent a lot of time making sure it is fun to play. We even play it ourselves! This makes it easy to stay motivated throughout the recovery process.

That's it for now. Feel free to leave comments below with any questions or techniques of your own for retraining your brain.

About the Author

Dr. Daniel K. Zondervan received his Ph.D. from UC Irvine, where he performed research on novel methods for optimizing stroke recovery. He has over six years of experience in the field of rehabilitation science and has published several peer-reviewed journal articles on the topic. He now writes for Flint in hopes of using that knowledge to impact a broader audience.