

Ep #67: Biomechanics of Balance



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With Your Host

Susi Hately

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Male Announcer: You're listening to *From Pain to Possibility* with Susi Hately. You will hear Susi's best ideas on how to reduce or even eradicate your pain and learn how to listen to your body when it whispers so you don't have to hear it scream. And now here's your host, Susi Hately.

Hello and welcome back. Welcome back to *From Pain to Possibility*. With this episode I want to dig into the biomechanics of balance, and this is building off of last week's episode on better balance. And by building off of it I want to dig into some key components of biomechanics and why these key components, when we can get to some of these foundational pieces, make balance naturally happen.

I like to think of balance as being a result of and that when we train foundational concepts we just have better balance. I sometimes find that the talk that is out there more and more and more about fall prevention, there has a tinge of fear to it, like, "Oh my God, we've got to prevent falls." Which I agree with, but I think sometimes it can lead to almost more unsteadiness and more bracing patterns.

Whereas if we can focus in on nimbleness, agility, reaction time there's almost dare I say a more positive bent to the idea of what we're actually training. So I want to train the things that lead to better balance as opposed to resisting something like fall.

I might be getting a little bit too much into semantics here, but I find that there can be a different outcome based off of how we're actually looking at a problem and what part of the problem we're looking at. So that's really the inherent idea behind this episode. Some of the language that I'm offering, if you don't come from an anatomically background some of it might seem a bit heady, but follow along with me and I'll keep repeating it and coming back to it. And then by the end of it I think it will all kind of come together.

When I think about biomechanics how I like to describe it is it's the way forces work on our musculoskeletal system and in turn how our body tissue

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responds to those forces. So think about your structure and all of that which is you, I sometimes like to call it your skin sack. And then inside of your skin sack you have tissue and fluid and chemical reaction, and electrical impulses, and your skeleton, lots of stuff inside that skin sack.

And then that skin sack, how we embody it is our posture. And our posture impacts our structure. And our structure impacts our posture. And then how that structure, how that skin sack and how that posture are related in movement.

So think about internal and external forces. Forces that are acting outside upon us and then forces that are acting inside of us and how our tissue responds to those forces. How our structure responds to those forces, our skin sack, our posture. Just kind of play within that idea of how these forces are internal and external.

And then consider how balance is this dynamic nature of staying steady on our feet, on top of the base of support. And then being able to dynamically shift and change in response to these external and internal forces. Really that's what balance ultimately is.

And so then consider sometimes as we are fatigued or if we are going through different treatment protocols what are the aspects of those fatigue or treatment protocols that then impact our ability to be balanced? Do they impact reaction time? Do they impact our motor control and coordination? Do they impact our cognitive or our brain clarity?

Those are just ideas and so then as you start to be able to get more granular about age, or treatment processes, or fatigue. Or, I mean, a variety of things, sight, vestibular issues, how those then impact different parts of balance. We then can be more specific in terms of where we then support somebody.

Another piece of this which relates to all of it is stability. And stability, like the word balance, like the word strength can have many definitions. So the

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one I like to utilize, which I'm going to drill down a bit more is motor control and coordination over a range of motion. And those three words are important, control, coordination, and over a range of motion.

So control is the ability to regulate mechanisms in a smooth and effective way. Coordination is enabling muscle synergies. So think about multiple body parts working together efficiently, sometimes carefully, sometimes quickly, but with a synchronization.

So nowhere in there is the word rigidity, bracing, or gripping. So we're wanting to build up and build upon this idea of smoothness, of synchronization, synergy, the ability to meet the forces externally, internally and respond to them.

Another word that's really important in there is over a range of motion. Well, that's multiple words but the idea is, is this control and coordination is happening over a range of motion. And this is really vital because you can have good control and coordination over a small range, but then lose it over a larger range.

And by losing it, what we end up doing is compensating. And compensation is one of the great body brain activities that we can utilize when our brain has an ambition about wanting to do something but our body doesn't quite have the mechanics to do it. And so it finds a way to meet the ambition of the brain.

Over time, though, what can happen is we're utilizing another area of the body to do something it's not designed to do. So we're pulling from another area to try and make the original area stronger. But in fact, we make the whole system weaker.

So in a moment, over a short period of time compensation can be super effective. But over a long period of time, it can actually create more inherent weakness. Which is why when I work with people I focus a large

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amount on compensation and reducing that compensation because I want to improve motor control and coordination.

I want to improve motor control and coordination over a variety of ranges of motion so that they inherently create more and more stability because by doing that we create greater synergies and greater ability to be responsive, have more efficiency. And as it relates to the balanced conversation, there is inherently more balance as a result of that better control and coordination over that range.

So what you're getting here is that I like to work on fundamental and foundational concepts. Kind of like learning your letters as a preschooler, kind of like learning scales as a musician. And why many musicians come back to the scales and keep training them over time. Because it just keeps them honed into that process, those fundamental processes.

Because when we can build upon foundational principles, when we can hone those foundational principles, we continue to build more endurance and more stamina on a really well developed foundation. Whereas when we have sort of the clutter of compensation, we have a more unsteady base of support.

And I think that can be sometimes why we feel less steady on our feet. Because there is an inherent unsteadiness between our brain and our body. Between those neuromuscular connections within our neuromuscular habitual patterning.

So, ultimately, when I can help someone work on foundational concepts, I'm helping them work on the scales, so to speak, of their movement patterns. On the scales of those habitual patterning between brain and body. And then that enables someone to be able to really tune in to what's going on within their system, that listening to what's inside.

And then as a result, you just notice yourself more steady. You notice yourself more confident as you're stepping off a curb. You notice yourself

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like, “Oh yeah, there's ice out there, I can see that.” Or when you are walking on ice and you do kind of lose, you can catch yourself.

So consider this then, this idea of improving some of these foundational principles of biomechanics, motor control, motor coordination over a range of motion. It helps us to improve our ability to absorb and dissipate load, and improves our musculoskeletal's ability to manage the forces inside and outside of us. It's foundational concepts of how our joints move and those neuromuscular patterns between brain and body.

And by gaining that patterning, alignment happens naturally. We don't have to force alignment, like, “Okay, get those shoulders over top of the hips, over top of the feet. Stack yourself.” But rather because you're functionally moving better, you're naturally stacked, you're naturally fluid. You're naturally able to respond to the twists and turns and there's way less tension, way less gripping, and way less bracing.

It's why I think that particularly when I've run my certification training programs we have multiple training weeks where we get together for weeklong periods of time. And it's interesting when we have older trainees and when they start to move better their face softens out. Their wrinkles start to settle out, which we all always find so remarkable. And I think one big reason is because there's less tension holding pattern and things just smooth out in a very interesting way.

So to take these concepts and bring them actually into practice, in the show notes there is a link to a video, both on YouTube and on Facebook, where we dig into some of these motor control patterns, helping you to improve control and coordination. I start off with a little discussion on the skeleton, then we get into chair pose. And then I help you through chair pose and then we'll start to move into balancing on one foot and swinging a leg.

But it's a way that you can kind of take these ideas and really listen. Pay attention to your structure, pay attention to your posture, and then just discover what you notice through that process. And then if any questions

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come up around that, send us an email. I'm happy to answer the questions to the best of my ability, knowing that on email I can only do so much because I can't see you. But by all means send questions to me.

And if you find that this is interesting and it's like, "Oh, yeah, I want to dig more into balance," then join me for the Better Balance program version 2.0. We begin in October, send us an email to health@functionalsynergy.com and we can set you up.

We've made some great gains and refinements from the last program when we dig into those key components of motor control and coordination. And other key components of balance like vision issues, vestibular issues, and how they all come together. So send us an email at health@functionalsynergy.com to be a part of that process.

Oh, and if you love this, I would love it if you can post a review for me on iTunes. We'll show you the link below on the show notes. It would be so fantastic so that this episode and this podcast in general can reach more people. Thank you so much and we'll see you next week.