

## PREVIEW\_ Dr. Jacob Wilson - Ketogenic Diet & Resistance Training (SD 2016)

**Dr. Wilson:** "Wait a second! There's no way you can gain that muscle without glycogen." Glycogen is our stored form of carbohydrate, right? "There's no way can gain that much muscle without carbohydrates." Well, we did. "But there's no way that can happen.

There's no way you can stimulate protein synthesis." Protein synthesis - you take amino acids, you put them into muscle. That's the molecular thing that's making you grow. "There's no way that can happen!" So we did an animal model... The first one is a human model. And that is a clever little tool.

So here you basically have an animal in this running wheel. But the running wheel has resistance and, you know, they like to exercise. There are some mice and rats that don't, but, it's like humans. But we got ones that liked to exercise.

So they go in here and they start training kind of. They're running around their wheel and then all of a sudden we bump up the resistance on the wheel. Just ever so slightly. But they keep going. And then we up the resistance again and again.

So they're getting progressive resistance. Pretty cool, right? I've done a lot of resistance training models of rats. On climbing ladders and a bunch of stuff like that... But anyway, this is the best one I've seen. Now protein synthesis...

Again you take the protein through dieting and you incorporate it in the muscle. This is at molecular level, so we're looking at the molecular level here. No difference. At molecular level you seem to ingest just as much protein synthesis on carbs or not on carbs.

Fascinating! Now this is kind of what blew our mind. We looked at glycogen levels and there was no statistical difference in the muscle in glycogen. After six weeks of being on ketogenic diet, no statistical difference in glycogen...

It means that carbs that were in their muscle, there was no difference. So they were like on a 5% carbohydrate diet. Near the same amount of glycogen in their muscle. And Volek's find, they're replenishing carb source in their muscle just as fast. And that's mind blowing, isn't it?

But you can make carbohydrate that you need without actually taking in exogenous carbohydrate.