Starting Strength

Barbell Training and Physical Therapy

by

John Petrizzo

Hi. My name is John, and I am a physical therapist. It feels good to get that off my chest. Over the years, the field of physical therapy has not done much to ingratiate itself with the world of strength and performance training. Similarly, many personal trainers and coaches have given legitimate strength and conditioning professionals a bad name within the field of physical therapy due to the number of injuries patients often incur with a silly exercise their trainer or coach told them to do. It has gotten to the point that most "strength coaches" of note are more like quasi-physical therapists who specialize in "functional and/or corrective exercise."

Similarly, there are plenty of physical therapists who prescribe strength and performance training programs for athletes despite the fact that they have little or no background in the actual field. However, the purpose of this article is not to dissect the problems within the field of physical therapy or to comment on the sad state of strength and conditioning as it is commonly practiced today. My intention is to discuss how my experiences with barbell training have filled a huge void in my educational and real world application of both strength and conditioning and rehabilitation, and why I believe that everyone who practices in either field could benefit from some time under the bar.

To provide a little background about myself, I am an average athlete who was fortunate enough to see the immense benefits that strength training can have on athletic performance at an early age. Unfortunately, I also have a lot of experience with some of the silliness that Rip and others have spoken about within our field. During my undergraduate studies, I walked-on and played football at a local Division 1 University and took part in a year-round strength and conditioning program in which we ***never*** did a single deadlift or pressed anything overhead. While enrolled at this same university I majored in an Exercise Science program in which we ***never*** entered a weight room or learned anything about the basic barbell exercises. When I decided to major in Exercise Science, for some reason I envisioned actually learning about exercise. I was mistaken.

Following graduation, I took my first position for a local big-box, globo-gym and worked both as a personal trainer and manager for the personal training department. It was while working in that setting that I was exposed to "functional training." I learned that performing bodyweight exercises on a vibrating plate or some other unstable surface was, of course, functional, while anything that involved the use of a barbell was not. When I quit, I was carrying my bumper plates out to my car and one of the regional managers stopped me to say that he "never wanted to see those things in the gym again." I said, "Don't worry. This is the last time you'll ever see them." Finally, during the

course of my studies in physical therapy I was exposed to rehabilitation settings in which treatment centered on the use of hot packs and "therapeutic exercise" performed on tables with resistance bands and neoprene dumbbells. All of these experiences have further cemented my belief in the superiority of barbell training.

I do not want to give the impression that I learned nothing during this time, or that I am ungrateful to all of the people who helped me along the way. I have gotten to meet and work with many good people and have learned a great deal about anatomy, physiology, biomechanics, and all of the other basic foundational science that were required to be successful in both my undergraduate and graduate programs. I also learned that there is a great deal more that could be done to help prepare and educate today's physical educators and rehabilitation specialists.

From the very beginning of my professional career, I realized that my experience with barbells gave me a unique perspective on training that most of the other trainers I worked with did not have. However, it was not until graduate school that I realized how much barbell training would continue to help me as I moved forward in both my education and future career. If you understand how humans move lots of joints and muscles, through large ranges of motion under a load, for basic movement patterns such as the squat, deadlift, and press, it makes figuring out and understanding other biomechanical questions that arise much easier. If you can then apply that biomechanical knowledge to how humans adapt to progressively increasing stress over time, it solves a lot of the problems faced by strength coaches and rehabilitation specialists every day.

In my experience in both undergraduate and graduate level coursework, the concepts that we encounter when training and programming barbell exercise are not present anywhere. This is why I feel that barbell training is so important. Think about that: *the basic concepts of stress, recovery, and adaptation are not discussed in any exercise physiology or physical therapy related text that I have read.* Similarly, any attempt to explain the benefits of barbell exercise, let alone how to use it properly for best results, is completely non-existent in these programs as they are presently constituted. For those of us who have seen how valuable barbell training can be, it must seem strange to think that these concepts are not common-place throughout both physiology and rehabilitative curricula, but having been through it, I can tell you that it is most conspicuously absent.

There are several overarching principles that I continue to find myself adapting from my experiences with barbell exercise in my everyday practice now that I have graduated and begun my career. I was fortunate to find a physical therapy clinic that is open-minded to the use of barbell training. While I would be lying if I told you I use barbells with all of my patients, I feel that the intelligent use of the barbell lifts can be a tremendous benefit to any physical therapist that is trying to optimize patient outcomes. With that in mind, here are some lessons that I have taken from my own personal experience training with and coaching barbell exercise, and apply, to varying degrees, in my physical therapy practice.

Physical Therapy Patients are the Ultimate Novices.

We know that a novice trainee is someone who is thoroughly un-adapted to the stresses imposed on him by a properly designed strength training program. This fact allows a novice trainee to make gains in muscular size and strength at a much faster rate than he will be able to as he becomes more advanced. We also know that the process of stress, recovery, and adaptation takes approximately forty-eight to seventy-two hours for the typical novice. Knowing this, the most appropriate program for any novice will be one in which we progress in a linear fashion, incrementally increasing the stress

imposed on the system at appropriately spaced training sessions. This is known as Linear Progression and it is how we drive adaptation in novice trainees.

If there was ever a population that could benefit from a linear progression, it is your typical out-patient physical therapy patient. I have found that most of the patients I work with fall into one of two categories: 1) Patients who are so grossly de-conditioned from years of leading a sedentary lifestyle that their bodies are just falling apart and 2) The weekend warriors who end up in physical therapy due to over-use or traumatic sports type injuries. Either way, these patients are all very far from their ultimate genetic potential in terms of strength. I have seen patients have great success with modified versions of a typical novice linear progression. Whether it is for a hip fracture, shoulder arthroscopy, or ACL reconstruction, the simple principles of stress, recovery, and adaptation still apply. The only real difference between a teenage male football player and a sixty year-old female retiree, are the rates at which they will recover and adapt to the stresses imposed on them by a properly designed and implemented training program.

Intelligent exercise selection and incremental loading is the key to doing this successfully. I have started patients post-rotator cuff repair pressing with a wooden dowel, and the leg press has proven to be very useful when working with the elderly or severely de-conditioned. I had an eighty-eight year old male perform a linear progression on the leg press three times per week for a few months following a nasty fall and hip fracture and watched as he progressed from barely walking ten feet with a walker to walking un-aided without an assistive device. I have seen time and again how rapidly improving a patient's strength directly relates to improved function. Our physical strength has, and always will be, directly proportional to how well we are able to interact with our environment. This is true whether or not you are a physical therapy patient.

Barbell Training is Safe.

We all know that squats are not bad for your knees, deadlifts won't destroy your back, and presses will not impinge your shoulders when done correctly and with appropriate programming. The caveat, of course, is "when done correctly." To do something correctly, we must first know what correct is. Of the very few people who do come to physical therapy due to an injury in the weight room, *every one of them could be traced back to a combination of using improper technique, coupled with injudicious loading, and poor programming*.

Often times, the injuries that I see related to barbell training are minor and can be corrected with just a few sessions. People always seem amazed that when they do the exercise correctly, they do not get hurt. Far more frequently we see patients who injure themselves doing just about anything and everything besides barbell training.

Recently we had a college athlete that was a good example of this exact scenario. She was returning home from school where she had been rehabilitating an ACL reconstruction with the athletic training staff at her university for the previous two months. At the time she came to us, her chief complaint was anterior knee pain when squatting and climbing stairs. This is a common complaint of patients who have a patellar tendon graft. My co-worker and I watched her perform a toes-forward, knees-in, shallow bodyweight squat. Not surprisingly, this type of squat reproduced her knee pain. Following some basic instruction on proper foot and knee position, as well as depth, she no longer had knee pain while squatting. She was very successful with her rehab, and we sent her back to school squatting close to her bodyweight for sets of five across. She never complained of knee pain while performing the low-bar back squat.

The problem with this scenario however, is the fact that this girl had already spent the previous two months rehabilitating at her school with the training staff. How is it possible that one could spend two months complaining of knee pain when squatting with nobody able to correct her form? The reason they did not correct her technique is because *they did not know how.* The fact is that the staff she was working with does not know what a correct squat actually looks like. These are the same people that will tell their patients and athletes that squats are bad for your knees. The sad thing is that this girl was not rehabbing in some out-patient clinic for Medicare patients – she was with her school's athletic training and rehabilitation staff, the same people who are charged with working with the school's athletes for all sports. This is what we are up against. *It is our job* to combat this type of silliness and to continue to ensure that our clients and patients see superior results when compared to the rest of our respective fields.

Barbell Training is Functional Exercise.

Currently, it is very *en-vogue* in both the fields of strength and conditioning and rehabilitation to promote "functional exercise" to patients and clients. What's more, there are numerous health, fitness, and rehabilitative gurus who can easily be found on the internet, and who will teach you how to train in a functional manner. They will sell you programs so that you can learn to perform unilateral lower body exercises, "activate your glutes," tell you the secrets of "core training," and decrease your chance for injury with dynamic mobility drills. They can even correct your "muscle imbalances." These people generally charge exorbitant prices for their e-books or PVC pipe evaluation kits with all of them promising fewer injuries and improved athletic performance.

I have thought about this topic a lot over the years. Embarrassingly enough, I have even tried many of their methods and attended some of their seminars back before I knew any better. It has been my own personal experience, and the experiences of the patients and clients I have worked with, that barbell training unequivocally produces superior results to anything these people are selling. The reason for this is simple: *Barbell training is more functional than the stuff that the functional training crowd is pushing*. If you are reading this article, then you probably already know this.

Over the last several years, I have been fortunate enough to work with a fairly large group of middle school and high school athletes. I have had all the kids work almost exclusively with barbells during this time. Most come because they want to get stronger for their particular sport, with baseball and lacrosse players making up a good bulk of the kids I see. In general, most of these kids are not great athletes. On day one, many look awkward under the bar, with skinny limbs and joints trying as best they can to conform to the new stresses being placed on their bodies. However, after a few sessions, all of the kids perform the exercises with much more confidence and ease of movement.

The point is, all of the kids learn how to perform all of the movements correctly in just a few sessions. *They somehow manage to do this without any corrective exercise or "activation" drills*. It may seem shocking to the functional training crowd, but these kids actually learn to move better with nothing but a loaded barbell. I do not think that these are unique cases, but rather what would be the norm if, as a profession, we put more emphasis on teaching people how to do these movements and less time trying to sell them on correcting every isolated muscle imbalance they may or may not actually have – problems that doing the movement correctly solves by itself.

More importantly, all kids who dedicate themselves enough to "do the program" see outstanding results in muscular strength, sprinting speed, and overall sports performance. The ones that actually *eat* make tremendous gains in muscular bodyweight as well. In high school sports, a well-designed

strength program truly can be the difference between making the team and getting cut, riding the bench or starting, and for some it can be the difference between just being a starter to earning a college scholarship. I have seen these scenarios play out not only in my own athletic career, but repeatedly over the last few years as well, with barbell training often being the only thing separating the success stories from the failures.

In my experience, in both the fitness and rehabilitative settings, physical strength has proven itself to be the most important aspect of a person's health and performance that we as practitioners in the field can impact. Barbell training is the best tool we have to make people stronger. Whether you train high school athletes or rehabilitate the frail and elderly, we owe it to our patients and clients to provide them with the best possible opportunity to better themselves. We know the tremendous benefits that barbell training can provide and how to best use it effectively. Now it is our job to spread the word.

John Petrizzo is a Physical Therapist, Personal Trainer, and Starting Strength Coach. John has a B.S. in Exercise Science from Hofstra University where he was a member of the football team and holds a Doctorate in Physical Therapy from the New York Institute of Technology. He has worked in the fitness industry since 2006 in a variety of roles and settings and has helped many patients and clients achieve their health, fitness, and sports performance goals through barbell training. In 2012, John began competing in powerlifting. You can contact him at John.Petrizzo@gmail.com.

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