

## **OBSERVATIONAL CASE REPORT: TRAINING OF A PARA-POWERLIFTING ATHLETE**

<sup>1</sup>Wilcox, D., <sup>1</sup>Sato, K.

<sup>1</sup>East Tennessee State University, Department of Exercise and Sport Sciences, Johnson City, TN

**INTRODUCTION:** Working with disabled athletes is challenging on every front with a plethora of different obstacles from athlete to athlete. Every para-olympic sport demands its own highly specified training techniques and allowances and the very popular bench press event in para-powerlifting is certainly no exception. With an assortment of circumstances leading athletes to compete in this sport, the need for specific training and accommodations are done case by case. The significance of this case report is to examine recurring principals that can lead to an athlete finding success in this arena.

**OVERVIEW:** When athletes are required to use altered methods of transportation aside from walking like using crutches or a wheel chair they begin to develop differently than typical athletes you would train for the same events. Specifically with para-powerlifting athletes on crutches or in wheel chairs the volume of work doesn't only occur only in training but in every single step they take moving from place to place. The repetitive movements involved in their locomotion results in several imbalances and overuse issues (Hanada, 1993) that must be considered in training. Chronic inflammation in the wrists, elbows and shoulders are commonly seen in these circumstances which lowers the maximum recoverable volume in training. With the nature of the recurring downward pressing movements of athletes using crutches or who are wheel chair bound, the rotator cuff musculature would likely to experience different types of loading from their daily function as compared to what able-athletes would function. Constant stress and shortened range of motion on the internal rotation muscles will result in rigid and inhibited range of motion compared to normal while the external rotator muscles are used minimally comparatively (Lin, 2006). This can cause detrimental imbalances with tendinitis and chronic tightness.

**CORRECTIVE PROCEDURE:** A basic method of countering these chronic issues that result from repeated use of wheel chairs or crutches is external rotation stretching (Figure 1) that lengthens the internal rotators of the shoulder to alleviate the rigidity in the shoulder joint. Corrective strengthening exercises such as band resisted external rotation (Figure 2) or an isolated dumbbell clean and press will strengthen external rotation and will also aid in equalizing tension between the agonists and antagonists involved and increase the range of motion of the shoulder joint (Harshbarger 2013).

**TRAINING PROTOCOL:** In competition para-powerlifters are strapped onto the bench for stability purposes so this should also be practiced in training for familiarity. Other aids such as transferring the athlete to and from exercise positions such as to and from a pull up bar or on and off a bench. Properly periodized training protocols become even more important with disabled athletes on crutches or wheel chairs to prevent these fatigue related injuries while allowing them to continuously progress in performance (Pontillo, 2014). By using the principals of phase potentiating periodization (shown in total volume loads in figure 4 below) fatigue is accounted for with reduced volume and each 4 week block of training building onto the next with the overall trend being positive over time (Stone, 2006, 2007; Issurin, 2009). The absolute intensity over time during the training protocol follows the same positive trend but has inverse values when compared to the volume loads tracked over the same time period shown in figure 5.

**EXERCISE SELECTION:** With different forms of disabilities there are various exercises that can or cannot be used in training. Finding ways to work the associated musculature often takes creativity in coaching and knowledge of anatomy and the kinesiology there of. While exercises in or near the prone position are easily attainable, other more upright positions can be more difficult requiring bracing or other additional leverage. In Figure 3, this lifter is using a bench for a base and a dumbbell under his foot to aid in balance during a barbell shrug. This heavy barbell movement stimulates the upper back musculature (Andersen, 2008) which provides a stable base for the bench press and would otherwise be impossible to complete with his condition.

**CONCLUSION:** Competition prep for a para-powerlifter is similar to an able-bodied athlete with allowances made for the previously mentioned chronic issues. Careful monitoring of the athlete’s physical condition will need to be considered when going into a high intensity phase. A planned over reach before the competition paired with a taper (Siff, 2003) in volume and intensity leading into the competition is optimal for translating the work and specified training into the most optimal physical condition for your athlete (Stone, 1996, 1998) (Mujika, 2004).



Figure 1

Figure 2

Figure 3

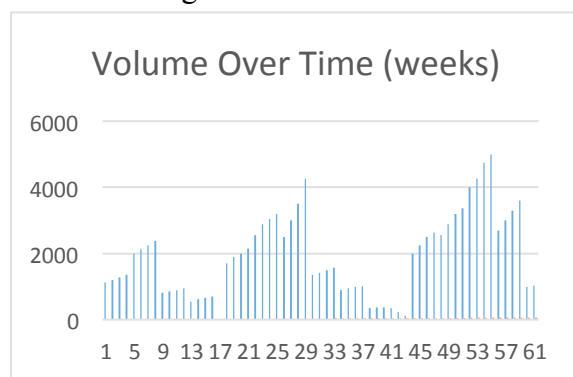


Figure 4

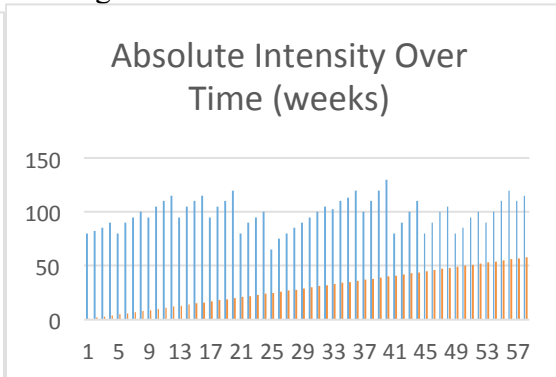


Figure 5

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