

Name: Jack Daniels  
Age: 34  
Height: 5'8  
Weight: 150 lb / 68kg



Current boulder: V9  
Current worked route: Approx 5.13c / 8a+  
Current onsight grade: 5:12b / 7b

Throughout 2015 you have focused on reestablishing training patterns after having moved employment and where you live. In previous years you have enjoyed quick improvements in your climbing grades by spending a lot of time on rock. However, due to a lack of time with a new family you have struggled to apply yourself efficiently and have therefore plateaued at the same grade for several years now.

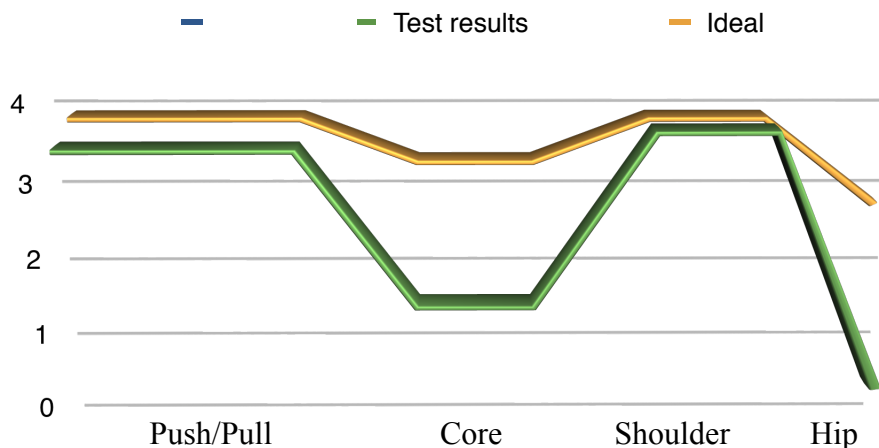
Your goal for the future is to regain and surpass previous standards by red-pointing 8b+ (5.14a) and on-sighting 7c+ (5.13a). You would also like to establish yourself at the V9 boulder grade as completing problems of this standard is inconsistent.

A peak performance will be possible for late spring of next year when sport season comes around in your local area but a large performance increase is far more likely for the end of 2016 due to base training being incorporated for a longer period.

### Strength assessment & efficiency scores

#### Muscular mobility, stability and strength

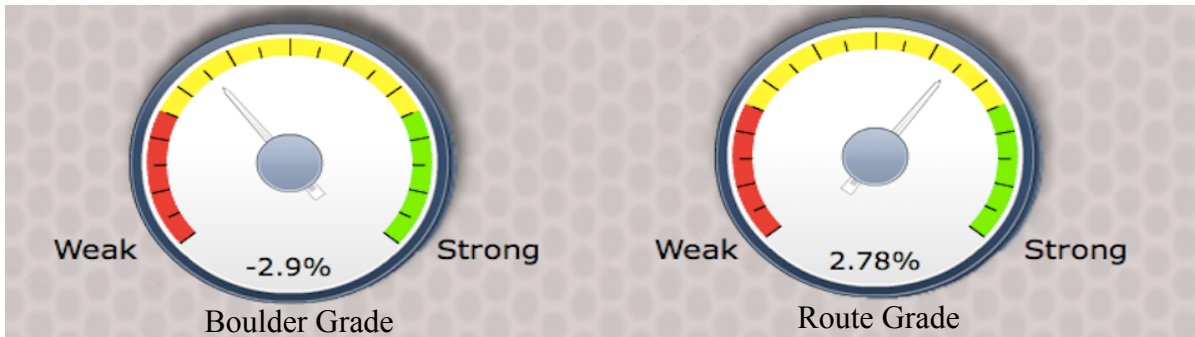
Results from the physical strength testing shows that you have a well-balanced muscular function in your upper body. The scores gained show a good level of conditioning and are typical for climbers of your caliber. However, we would generally expect to see in boulderers (height dependent) whom consistently climb V9 and above to score significantly higher, especially with regards to pull ups and lever lifts. One area of muscular weakness is your core. Scores from the testing procedures showed that this could be an area of limitation and may explain why you struggle to climb on steeper terrain. Training the core muscles is an easy process and can be added to your training program.



Based upon the functional movement testing we can deduce that you have been applying several strategies to allow good function in several key joints but there are still a couple of concerns. Whether a chronic condition or due to the injury described during the pre-assessment you have a limited range of movement in your hips. Your hip flexibility is an area to work on as it will allow better use of techniques such as rock overs and creates much more efficient movement on all terrain.

### **Finger Strength**

You scored 10.47lbs / 4.75kg on finger strength (weight added), which equates to 93% of body weight carried per arm. Your absolute pulling/hanging force was 139.5lbs / 63.25kg on the single arm hang. Anything carried over 100% of bodyweight on the single arm test should be considered the gold standard. Thus, you have reached a good level with this score but there is definitely room for further improvement in this area.



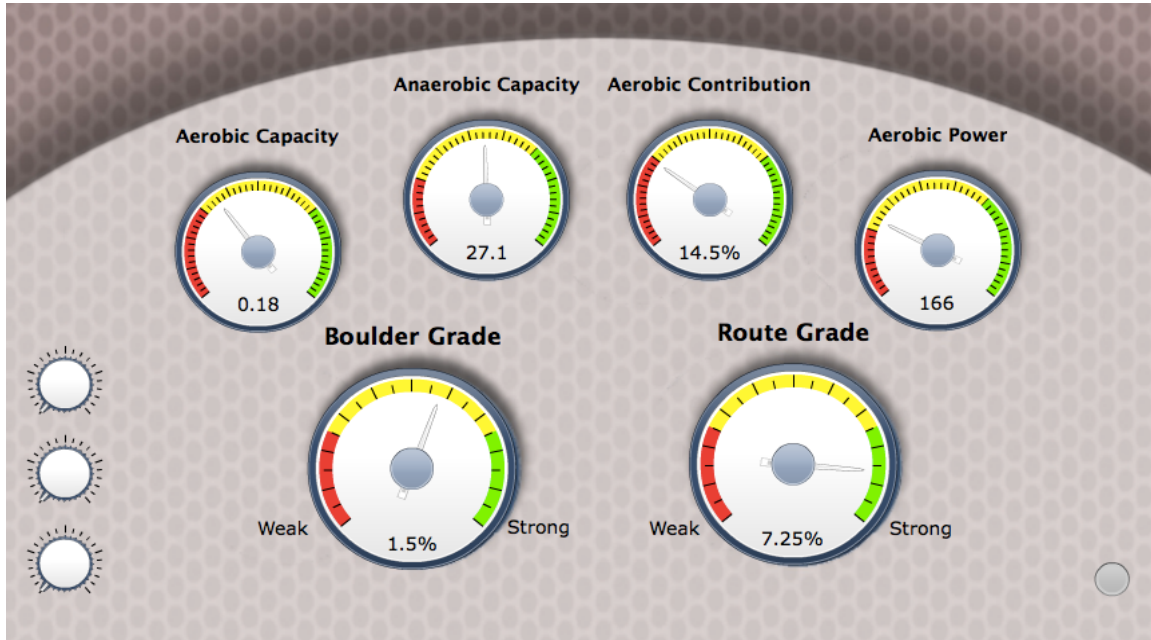
Anatomically, we have seen amongst climbers that 93-7% bodyweight held is a realistic goal for those aiming towards V9-10. As you are 5'8 you should expect to pull at the upper end of each grade boundary unless you are able to operate excessively well in either technique, flexibility or tactics. Furthermore, we note that your pull/hang force of 63.25kg is average for what the human forearm can achieve. We are certain there are good gains to be had here.

As you can see in the diagram above, you show a slight “weakness” in finger strength for your boulder grade and “strength” compared to your current route grade. This means that your forearm function is most appropriate for bouldering presently and allows you to be “weaker” for the grade. This is because whilst route climbing you are unable to apply your finger strength efficiently throughout the length of a route and therefore need to be overly strong to complete the moves. A high metabolic efficiency in the forearm will result in a higher (positive %) result for either of the two climbing disciplines.

In summary, your forearm would be capable of significant improvement but will need only slight gains in strength to establish yourself at your chosen boulder grade. With relation to your sport climbing objectives you have sufficient finger strength and therefore

need to develop the ability to apply this more efficiently by working the energy systems described below. Further finger strength training will not make huge increases in your sport grade unless on extremely short routes.

### **Metabolic function - aerobic and anaerobic contribution**



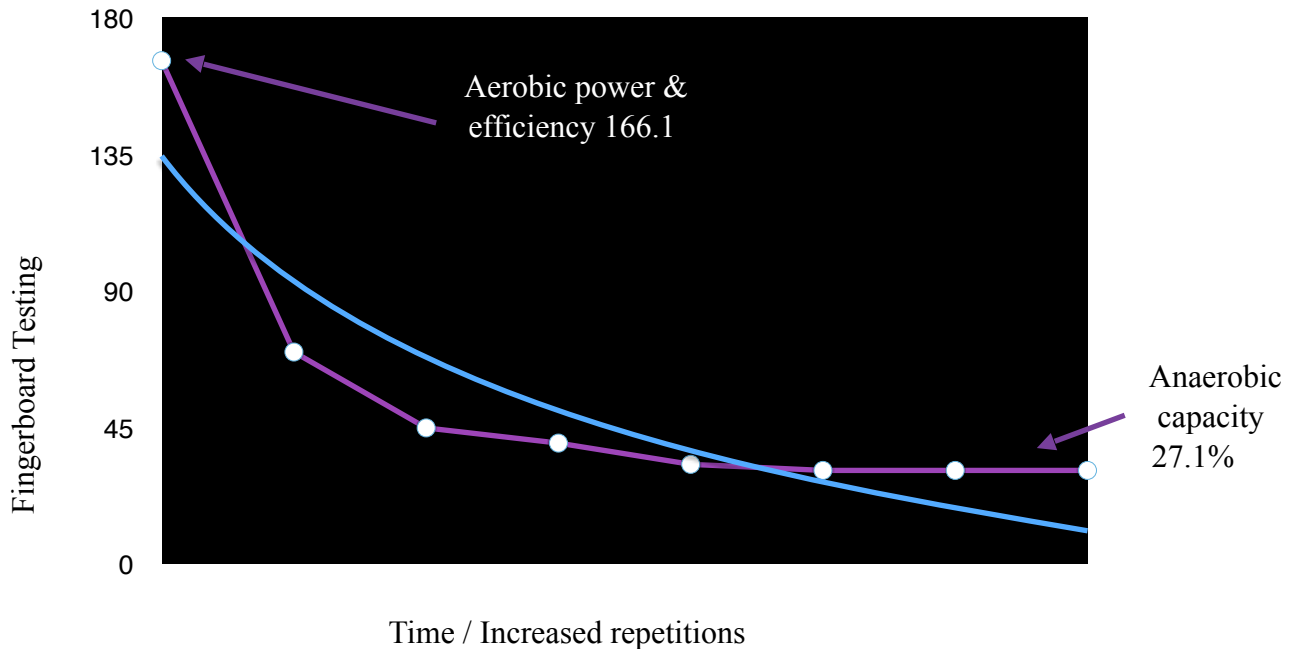
### **Aerobic Capacity - endurance**

The results from the testing indicate that your aerobic capacity has a lot of room for improvement – I think this may come as no surprise to you. As a matter of guidance, I would want the form of the purple line below (your results) to follow the blue curve in the rate of decline. What you do need to think about, is that as a route climber you're heavily reliant on the aerobic system. A lack of development in this area not only reduces your ability to recover and climb on easier terrain but also underlies your aerobic power (power endurance) and anaerobic systems. Therefore if it's really poor, it will affect your performance on a range of route lengths, bouldering and recovery between sessions. In particular a poor aerobic capacity will severely limit on-sight performances as the event duration is much longer.

### **Anaerobic Capacity - short strength endurance**

Your anaerobic capacity, is currently an area of relative strength within your climbing which is a result of your recent climbing habits. Typically for well-trained route climbers we see higher anaerobic capacities, around 30% for an elite red-pointers. At present your figure (27.1%) is what we would like to see when the complimentary aerobic capacity is also high. As this is not the case presently, your imbalance in energy supply will result in a restricted performance. This observation is further supported by your 10:3 hang score which would generally be classed as “in range” or even quite high. Due to the lack of development in the aforementioned aerobic capacity we can conclude that in order to help

long term development you can allow this figure to decrease as a result of training the aerobic systems.



### Aerobic Power & Aerobic Contribution

Your 7:3 testing (and calculated efficiency score of 166) shows your aerobic power to be reasonable for a boulderer, but very low in the range for a route climber. You would be able to improve this score by improving the aerobic efficiency of your system. This unfortunately is a short term solution and a trap that a lot of climbers fall into. To gain significant increases in your aerobic power you must first address the aerobic capacity. This will allow a much larger gain and consistent improvement in the future.

These findings are further supported by a low aerobic-anaerobic contribution score (14.5%). Long term training has not yet supported its development and your current metabolic/forearm function also doesn't support it in the short term. Working the base capacities over a longer period will allow a change in this area and make the use of energy more balanced and appropriate to your route climbing goals.

### Summary

Our findings show that your current forearm function is best designed for boulders of around 60-80 seconds in length. This matches your pre assessment and your recent performance history. You currently have good muscular strength and functionality in the upper body and may only need improvements in hip flexibility and core strength to allow more efficient movement whilst climbing and better control on steeper terrain. Finger

strength scores show that you have sufficient strength to complete your goals and should be maintained whilst focusing on other areas. Base capacity training is where you need to focus on most. Building a high aerobic capacity will help you dramatically as a route climber. This will allow you to improve aerobic power in the long term and create a better balance between the use of your aerobic and anaerobic systems. If this is not addressed you will only be able to further fine tune your energy system usage and not be able to progress to a much higher performance level long term.