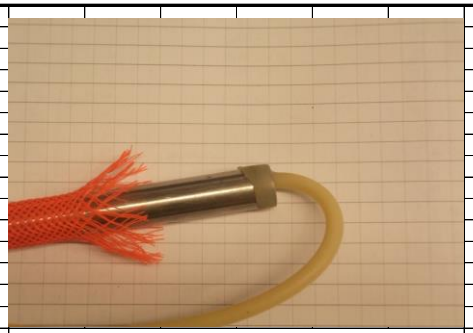
	Tank	ROBO									
	Presssure	3000	psi	weight	?	lbs					
	Volume	48	in^3	length x dia.	?	inches					
			The data collected showed that Americans, on average, took ***5,117*** *steps a day*								
	Avg Daily Steps	**5,200**	*http://well.blogs.nytimes.com/2010/10/19/the-pedometer-test-americans-take-fewer-steps/?_php=true&_type=blogs&_r=0*								
	Target Steps	3000	Assume 6000 steps per day/2 feet								
	Muscle										

		Δ (Outer - Inner) Diameter				**Weights:**	4.6255	lb			
		0.09375					4.586	lb			
							0.9265	lb			
							10.1	lb			

Results

Weight	Pressure	Initial Length	Deflection	I. dia. (deflated)	I. dia. (inflated)	V_T @ Press.	V_{Muscle}	V_T/V_{Muscle}	Actual	Difference
lb	psi	in	in	in	in	in^3	in^3	**steps**	**Steps**	**%**
10.1	60	7.03	1.28	0.125	0.38625	2400	2.69	**891**	**685**	**-30%**



Inner diameter dimensions were found by stretching latex tubing over a 1/2" pipe, covering with sleeving, and measuring the differrence in diameter.

	Question:		
	Is it feasible to operate our AFO for a full day using portable compressed air?		
#	**Assumptions:**	**Validity*:**	**Notes:**
1	Air can be modeled as an ideal gas	Unknown	The muscle did bounce up and down upon filling with air, this may have been due to compression, but may also have be caused by test rig
2	Constant temperature	Unknown	No indication of extream heat, although the paintball can was warm after the refill 5 days before testing
3	*Average american takes 6000 feet per day (3 miles)*	*Poor*	*This may be true for an average american,* ***but*** *stroke survivors may take much fewer steps*
4	Negligible leaks	Poor	Some small leaks were heard coming from the regulator occasionally during testing
5	The tank will not vary output pressure until exhauseted	Good	The pressure remained very constant during testing with +- 2 psig max
6	Optimized Muscle will be able to meet required force	Fair	This muscle lifted 10.1 lbs consistantly
7	No pressure losses	Fair	The inflation response time was very fast
		*poor validity indicates a potential source of error in the model	
	Results summary:		
	The unrefined model estimated 30% more steps that was actually recorded during testing		
	The model was refined by accounting for the residual air in the uncompressed musle		
	The refined model estimated 49% more steps than actually recorded		
	The test indicates a modest degree of model accuracy		
	Next Steps:		
	The refined model can be used in muslce optimization stage II		
	The refined model can be used to determine the benefits of a 4500psig tank		
	Confirm refined model in long term testing		