				0.7853981634						
component Type	Mass (kg)	Vertical Length [m]	Notes	Longitudinal Len (m)	Required Rated Torque [Nm]	Spec'd Motors	Rated Torque	Cost	Mass [Kg]	
Jpper Body Point Mass (CG)										
Hip Actuator 1	0.5	(Robstride 03	20Nm	250	0.88	
Hip Chassis	4.5	0.05715	NEEDS Light weighting	0.08082230509						
_eg Actuator 1	1.35	(49.38755394	Robstride 04 OR ENCOS A10020	40 or 50Nm	280	0 1.42	
Link Leg 1	0.4159442	0.095885	Femur	0.1356018674						
eg Actuator 2	0.25	C			41.63732961	Robstride 04	40Nm	280	0 1.42	
ink Leg 2	0	(Femur							
_eg Actuator 3	0.25	C			8.710316904	Robstride 04	20 Nm	250	0 1.42	
ink Leg 3+4	2.097047859	0.5348986	Femur							
Leg Actuator 4	0.5	C	Knee		84.23244231	Robstride 04	40Nm	280	0 1.42	
Belt Assembly	1.81437		Knee							
Link Leg 5	1.5081946	0.3849116	Tibia							
Ankle Actuator 5 and 6	0.5	C			0.5637043219	Robstride 02	6Nm	320	0.8	(2 of the
Foot and Hinge	1.5081946	0.0762	2							
-										
		ASSUME ONE Leg an	d HALF of HIP	3.92045868	kg/m					
Leg Actuator 1							One Leg	1410	0	
Link 1		Use Cases					Two Leg	2820	0	
Leg Actuator 2		Hip Swing : 90 degree	out				Legs and Hip	3070	0	
Leg Actuator 3		Knee Swing: Knee rais								
		Knee Squat: Knee squ								
Link 3										
Leg Actuator 4		Static Moments								
Link 4		Hip Roll								
Leg Actuator S										
Link 5										
Foot and Ankle										

				0.7853981634					
Component Type	Mass (kg)	Vertical Length [m]	Notes	Longitudinal Len (m)	Required Rated Torque [Nm]	Spec'd Motors	Rated Torque	Cost	Mass [Kg]
Leg Actuator 1 (Hip to Leg): Leg Raise	Qty	Units	Notes			Leg Actuator 2	Qty	Units	Notes
Mass: Link Leg 1,2,3,4,5, Foot	5.529381259	Kg				Mass: Link Leg 2,3,4,5,Foot	5.113437059	Kg	
Length: 1,2,3,4,5,Foot	1.0918952	Meter				Length: 2,3,4,5,Foot	0.9960102	Meter	
Center of Mass: Link 1,2,3,4,5, Foot	0.5459476	Meter				Center of Mass: Link 2,3,4,5,Foot	0.4980051	Meter	
Weight of Beam	54.24323015	N				Weight of Beam	50.16281755	N	
Length: Actuator 1 to 2	0.095885	Meter				Length: Actuator 2 to 3	0	Meter	
Weight: Actuator 2	2.4525	N				Weight: Acutuator 3	2.4525	N	
Length: Actuator 1 to 3	0.095885	Meter				Length: Actuator 2 to 4	0.5348986	Meter	
Weight: Actuator 3	2.4525	N				Weight: Actuator 4 + Belt Assem	22.7039697	N	
Length: Actuator 1 to 4	0.6307836	Meter				Length: Acutator 2 to 5	0.9198102	Meter	
Weight: Actuator 4 + Belt Assem	22.7039697	N				Weight: Actuator 5	4.905	N	
Length: Actuator 1 to 5	1.0156952	Meter				Moment: Beam (Link Leg 2,3,4,5,Foot)	24.98133897	Nm	
Weight: Actuator 5	4.905	N				Moment: Actuator 3	0	Nm	
Moment: Beam (Link leg 1,2,3,4,5,foot)	29.61396132	Nm				Moment: Actuator 4 + Belt Assem	12.14432161	Nm	
Moment: Actuator 2	0.2351579625	Nm				Moment: Actuator 5	4.511669031	Nm	
Moment: Actator 3	0.2351579625	Nm				Moment on Joint 2: Sum of Moments	41.63732961	Nm	
Moment: Acuator 4 and Belt Assem	14.32129174	Nm							
Moment: Acutator 5	4.981984956	Nm							
Moment on Joint 1: Sum of Moments	49.38755394	Nm							

				0.7853981634	1 <mark>634</mark>				
Component Type	Mass (kg)	Vertical Length [m]	Notes	Longitudinal Len (m)	Required Rated Torque [Nm]	Spec'd Motors	Rated Torque	Cost	Mass [Kg]
						Need to account for pushing off surface			
Leg Actuator 3	Qty	Units	Notes			Leg Actuator 5		Units	Notes
Mass: Link Leg 5 and Foot	3.0163892					Mass: Foot	1.5081946	Kg	
ength: Leg 5 and Foot	0.4611116	Meter				Length: Link 5 to Foot	0.0762	Meter	
Center of Mass: Leg 5 and Foot	0.2305558	Meter				Center of Mass: Foot	0.0381	Meter	
/eight of Beam	29.59077805	N				Weight of Foot	14.79538903	N	
ength: Knee to Actuator 5	0.3849116	Meter				Moment: Foot	0.5637043219	Nm	Link bars will result in change in torque conversi
Veight: Actuator 5	4.905	N							
Moment: Beam (Leg 5 and Foot)	6.822325506	Nm							
Moment: Actuator 5	1.887991398	Nm							
Moment on Joint 3: Sum of Moments	8.710316904								
eg Actuator 4: Knee Raise	Qty	Units	Notes						
Mass: Link Leg 5 and Foot	3.0163892	(Kg							
ength: Leg 5 and Foot	0.4611116	Meter							
Center of Mass: Leg 5 and Foot	0.2305558	Meter							
Veight of Beam	29.59077805	N							
ength: Knee to Actuator 5	0.3849116	Meter							
Veight: Actuator 5	4.905	N	1						
foment: Beam (Leg 5 and Foot)	6.822325506	Nm	1						
Moment: Actuator 5	1.887991398	Nm	1						
Moment on Joint 4: Sum of Moments	8.710316904		Lower bound torque						
on come in dum of woments	5.1.10010304								
eg Actuator 4: Squat	Qty	Units	Notes		1				
lass: Upper Body + hip	53								
ength: Link 1,2,3,4	0.6307836								
, ,,,,			Account for Squat Angle	e [ADJUST LENGTH for					
ength: Upper Body Moment Arm	0.1291769404	Meter	REDUCING LENGTH N						
Center of Mass: Link, 1,2,3,4,	0.2583538808	Meter	Account for Squat Angle	e					
ngle Of Squat from horizontal Plane	0.610865	Radians	35 degrees						
Veight Upper Body	519.93	N							
Mass: Link Leg 1,2,3,4	2.512992059	Kg							
Veight of Beam	24.6524521	N							
ength: Knee to Actuator 4	0.2190816774	Meter	Account for Squat Angle	e					
Veight: Acutator 4	4.905	N							
ength: Knee to Actuator 3	0.4381633548	Meter	Account for Squat Angle	•					
Veight: Actuator 3	2.4525	N							
ength: Knee to Actuator 2	0.4381633548	Meter	Account for Squat Angle	•					
Veight: Actuator 2	2.4525	N							
ength: Knee to Actuator 1	0.5167077616	Meter	Account for Squat Angle	•					
Veight: Acutator 1	13.2435	N							
Veight: Hip Acutator 1	4.905	N							
Noment: Upper Body + Hip	67.16296663	Nm	1						
loment: Beam (Leg Link 1,2,3,4)	6.369056672	Nm							
oment: Actuator 4	1.074595628	Nm							
Ioment: Acutator 3	1.074595628	Nm							
Noment: Actuator 2	1.074595628	Nm			1				
Moment: Actuator 1	6.843019241	Nm			1				
Moment: Hip Actuator 1	0.6336128927	Nm			1				
Moment on Joint 4: Sum of Moments	84.23244231	Nm	Upper Bound Rated Tor	que					
			1 - , , -: : : : : : : : : : : :	A	1				
Women on John 4. Guill of Womens									
Noment on count 4. Cum of Moments									