

P17046	Team Name:	Overcomer - Lower Extremity
23-Feb-17	Doc Owner:	Christopher Fern, Jason Constant, Josh Chloasen
13	Approved:	

Item NO.	Item	Quantity Need	Quantity Order	Amount Order	Supplier	Description	Price	Count Per	Cost	Specs	Item#	Purchasing Status	Weight (oz.)	Total Weight (oz.)	Voltage&Current	Power Requirement	Total Power Requirement	
1	6061 Aluminum Tubes	2	2	2	McMaster-Carr	Part of Structural Design	\$25	Unit	\$50.42	3/4 Inch Outside Diameter x 12 Inch Long, Aluminum Round Tube 0.005 Inch Wall Thickness, Alloy 3003	89965064	not ordered	16 oz	~20oz	none	none	none	
2	#10 Split Lock Washers	10	1000	1	McMaster-Carr	To fasten the screws	\$9.67	per pack of 1000	\$9.67		911010011	not ordered	N/A					
3	Steel Phillips Rounded Head Screws	10	100	1	McMaster-Carr	To fasten the assembly	\$7.42	per pack of 100	\$7.42	10-24 Thread Size, 1-1/4" Long	90272A260	not ordered	N/A					
4	Black Oxide Stainless Steel #10 Washer	10	100	1	McMaster-Carr	To fasten the screws	\$4.09	per pack of 100	\$4.09	Black-Oxide 18-8 Stainless Steel Washer for Number 10 Screw Size, 0.203" ID, 0.438" OD	96765A125	not ordered	N/A					
5	Mil. Spec. Low-Strength Steel Hex Nuts	10	50	1	McMaster-Carr	To fasten the screws	\$11	per pack of 50	\$11.00	Mil. Spec. Low-Strength Steel Hex Nut, 10-24 Thread Size, MS-35449-002	91813A150	not ordered	N/A					
6	1/16 Inch Thick x 12 Inch Wide x 24 Inch Long, Aluminum Sheet	1	1	1	mcsdirect	To support and stabilize the tubes	\$29.16	Unit	\$29.16	Material Aluminum Thickness (Decimal Inch) 0.0630 Width (Inch) 12 Length (Inch) 24 Alloy Type 6061-T6	9495281	not ordered	N/A					
<b>Total</b>										<b>\$111.76</b>								
7	Zinc-Plated Alloy Steel Socket Head Screw	8	8	1	Home Depot	Fasteners	\$1.18	per pack of 8	\$1.18	#10-32 by 3/4" Long, Socket Head Screw	SKU 499201	Received	N/A					
8	316 Stainless Steel Split Lock Washer	8	30	1	Home Depot	Fasteners	\$1.18	per pack of 30	\$1.18	#6 Lock Washer	SKU 539212	Received	N/A					
9	Zinc-Aluminum-Coated Alloy Steel Socket Head Screw	8	8	1	Home Depot	Fasteners	\$1.18	per pack of 8	\$1.18	#6-32 by 3/4" Long, Socket Head Screw	SKU 528446	Received	N/A					
10	Low-Strength Steel Hex Nut	8	12	1	Home Depot	Fasteners	\$1.18	per pack of 12	\$1.18	#6-32 Hex Nut	SKU 345380	Received	N/A					
11	Zinc-Plated Steel Split Lock Washer	2	100	1	Home Depot	Fasteners	\$0.87	per pack of 100	\$0.87	#8 Lock Washer	SKU 635814	Received	N/A					
12	Grade 8 Steel Fully Threaded Rod	1	1	1	McMaster-Carr	Fasteners	\$0.93	Unit	\$0.93	#8-32 by 2" Long, Fully Threaded Rod	90322A625	Received	N/A					
13	Low-Strength Steel Hex Nut	4	100	1	Home Depot	Fasteners	\$1.60	per pack of 100	\$1.60	#8-32 Hex Nut	204794729	Received	N/A					
14	Zinc-Plated Steel Split Lock Washer	5	6	1	Home Depot	Fasteners	\$1.18	per pack of 6	\$1.18	1/4" Lock Washers	SKU 517275	Received	N/A					
15	18-8 Stainless Steel Washer	3	12	1	Home Depot	Fasteners	\$1.18	per pack of 12	\$1.18	1/4" Washer	SKU 2048825	Received	N/A					
16	Zinc-Plated Alloy Steel Socket Head Screw	3	4	1	Home Depot	Fasteners	\$1.18	per pack of 4	\$1.18	1/4" 20 by 1" Long, Socket Head Screw	SKU 530681	Received	N/A					
17	Type 316 Stainless Steel Cup Point Set Screw	1	3	1	Home Depot	Fasteners	\$0.87	per pack of 3	\$0.87	1/4" 20 by 3/16" Long, Self-Locking Socket Head Screw	SKU 393072	Received	N/A					
18	Black-Oxide Alloy Steel Socket Head Screw	2	3	1	Home Depot	Fasteners	\$1.18	per pack of 3	\$1.18	1/4" 20 by 1" Long, Socket Head Screw	SKU 530890	Received	N/A					
19	Low-Strength Steel Hex Nut	5	100	1	Home Depot	Fasteners	\$2.68	per pack of 100	\$2.68	1/4" 20 Hex Nut	204794625	Received	N/A					
20	316 Stainless Steel Split Lock Washer	18	25	1	Home Depot	Fasteners	\$3.82	per pack of 25	\$3.82	3/8" Lock Washer	SKU 632029	Received	N/A					
21	Low-Strength Steel Threaded Stud	1	6 ft	1	Home Depot	Fasteners	\$6.24	per 6ft length	\$6.24	3/8"-18 by 4" Long, Fully Threaded Stud	SKU 236325	Received	N/A					
22	Black-Oxide Alloy Steel Socket Head Screw	10	10	10	McMaster-Carr	Fasteners	\$2.90	Unit	\$29.00	3/8"-18 by 4-1/2" Long, Fully Threaded Socket Head Screw	90044A152	Received	N/A					
23	Zinc-Plated Alloy Steel Socket Head Screw	4	5	1	McMaster-Carr	Fasteners	\$5.06	per pack of 5	\$5.06	3/8"-18 by 4" Long, Socket Head Screw	90128A638	Received	N/A					
24	Low-Strength Steel Hex Nut	22	100	0	McMaster-Carr	Fasteners	\$5.58	per pack of 100	\$0.00	3/8"-18 Hex Nut	90471A011	Received	N/A					
25	Multipurpose 6061 Aluminum Tube	1	1	1	McMaster-Carr	Slotted Tube	\$16.29	Unit	\$16.29	3/4" OD, 600" ID, .060" Wall Thickness, 2ft	9056K71	Received	N/A					
25a	Multipurpose 6061 Aluminum Tube	1	1	1	McMaster-Carr	Slotted Tube	\$22.08	Unit	\$22.08	3/4" OD, 600" ID, .060" Wall Thickness	9056K71	Received	N/A					
26	Servomotor	2	2	2	servocity	capture the ball	\$30	Unit	\$60.00	Voltage Range 4.8V-6.0V Product Weight 1.94oz (55.2g), Current Drain - nominal 650mA	32645500	Received	3.88 oz.	25 oz.	(6.0 V) * (0.5A)	3 watts	62 watts	
27	1 in. Schedule 40 PVC 90-Degree Elbow	8	8	8	Home Depot	to attach the pvc pipes	\$0.98	Unit	\$0.00	Side inlet size 1" Product Height (in.) 2.65 in	187584	not ordered	N/A					
28	Gibraltar - 1/4-20 UNC, 3-7/16 Inch Long, Round U Bolt Clamp with No Mount Plate for 1 Inch Pipe	2	2	2	mcsdirect	attaching the frame to main frame	\$2.00	Unit	\$0.00	3-7/16 Inch Thread Length, 1-3/8 Inch Wide, Grade 8-1500 Steel, Zinc Plated	83866700	not ordered	N/A					
28	1-in x 10-ft 450-PSI Schedule 40 PVC Pipe	1	1	2	Home Depot	will serve as a ball holder/slotted cylinder	\$3.86	Unit	\$7.72	Size - Diameter 1 in Size - Length 10 ft Maximum PSI 450	193255	Received	N/A					
29	DC motor	1	1	1	servocity	control spring tension	\$28.00	Unit	\$28.00	Voltage (Nominal) 12V Speed (No Load) 144 rpm Current (No Load) 0.21A Current (Full) 0.48A Torque (Full) 347.2 oz-in (25 kg-cm)	638248	Received	3.55oz.		(12V)(4.9A)	58.8 watts		
30	Tension Spring	4	3	2	McMaster-Carr	control the slotted cylinder	\$6.84	Unit	\$13.68	Steel Extension Spring 6.50" Length, 7.50" OD, 0.98" Wire	96548335	Received	N/A					
31	Split Ring Clamping Hanger	4	4	4	McMaster-Carr	Fasteners	\$4.17	Unit	\$16.68	Zinc Plated Iron, 1-1/16" ID, 180 lb. Cap	303724	Received	N/A					
32	Ball Bearing	3	3	3	McMaster-Carr	part of assembly	\$9.40	Unit	\$28.20	Light Duty, Double Shielded, for 1/2" Shaft Diameter, 1.18" OD	6384661	Received	N/A					
33	Low-Carbon Steel Rod	1	1	1	McMaster-Carr	part of assembly	\$4.81	Unit	\$4.81	3/8" Diameter, 16	8920A175	Received	N/A					
34	Multipurpose 6061 Aluminum Rod	1	1	1	McMaster-Carr	part of assembly	\$3.15	Unit	\$3.15	9/16" Diameter, 16	8974846	Received	N/A					
35	Multipurpose 6061 Aluminum	47	1	0	McMaster-Carr	capture the ball	\$5.10	Unit	\$0.00	Rectangular Bar, 5/8" x 1/4", 8ft	9039K76	Received	N/A					
36	Multipurpose 6061 Aluminum	1	1	1	McMaster-Carr	part of assembly	\$55.33	Unit	\$55.33	3/8" Thick x 1/2" Width	8975A112	Received	N/A					
37	Metal Gear - 14-1/2 Degree Pressure Angle	1	1	0	McMaster-Carr	metal gear	\$75.74	Unit	\$0.00	Printed in Nylon, 18 Teeth, 48 Tooth	1987637	Printed	N/A					
38	Metal Gear - 14-1/2 Degree Pressure Angle	1	1	0	McMaster-Carr	metal gear	\$23.09	Unit	\$0.00	Printed in Nylon, 18 Teeth, 36 Tooth	1920613	Printed	N/A					
39	Metal Gear Rack - 14-1/2 Degree Pressure Angle	1	1	0	McMaster-Carr	metal gear rack	\$25.39	Unit	\$0.00	Without Mounting Holes, 3 Feet Length, 18 Teeth	1920614	Printed	N/A					
40	nylon unthreaded spacers	4	4	0	McMaster-Carr	spacers	\$8.91	per pack of 10	\$0.00	3/4" OD, 1.107" Length, for 3/8" Diameter Shaft	9113A308	Printed	N/A					
41	Metal Gear - 14-1/2 Degree Pressure Angle	1	1	0	McMaster-Carr	metal gear	\$39.13	Unit	\$0.00	Manufactured in China, 18 Teeth, 36 Tooth	1420K77	Printed	N/A					
42	Battery	1	1	1	amazon	to give power	\$25	Unit	\$25	Rechargeable 24V DC Lithium Ion Battery Pack, 3000mAh	PWR-12V-838	Received	0.3 oz.		N/A	N/A		
<b>Total</b>										<b>\$341.45</b>								
43	Soccer Ball	1	1	0	Amazon	Testing	\$9		\$9	N/A	N/A	Received						
44	1018 Cold FN Round Bar	1	1	0	mcsdirect	Magnetic Testing	\$28.36		\$28.36	1-3/4" dia x 12 in	3853561	Received	130.88 oz.	130.88 oz.				
<b>Total</b>										<b>\$37.36</b>								
45	Push Button Mom-Off	1	1	2	digkey	comp. of electronic assembly	\$1.76/unit		\$3.52	Pushbutton Switch SPST-NO Standard Panel Mount, Snap-In	EG4699-ND	Received	N/A	~ 5 oz.			128 watts	
46	Power Switch	1	1	1	digkey	comp. of electronic assembly	\$1.91/unit		\$1.91	Slide Switch SPST Panel Mount, Snap	SW931-ND	Received	N/A					
47	LED Bezel	3	1	5	digkey	comp. of electronic assembly	\$0.29/unit		\$1.45	HOLDER LED PANEL SMM BLACK NYLON	67-1332-ND	Received	N/A	N/A	N/A			
48	Fuse Holders	3	1	4	digkey	comp. of electronic assembly	\$0.98/unit		\$3.92	Lead free / RoHS Compliant, Fuse Block 30A 500V 1 Circuit Blade PCB	36-1552-2-ND	Received	N/A	N/A	N/A			
49	1A Fuse	2	1	2	digkey	comp. of electronic assembly	\$0.28/unit		\$0.56	FUSE AUTO 1A 32VDC BLADE	F4191-ND	Received	N/A	N/A	N/A			
50	2A Fuse	2	1	2	digkey	comp. of electronic assembly	\$0.28/unit		\$0.56	FUSE AUTO 2A 32VDC BLADE	F4192-ND	Received	N/A	N/A	N/A			
51	5A Fuse	2	1	2	digkey	comp. of electronic assembly	\$0.44/unit		\$0.88	FUSE AUTO 5A 32VDC BLADE	F6025-ND	Received	N/A	N/A	N/A			
52	Header Pins	2	1	2	digkey	comp. of electronic assembly	\$0.84/unit		\$1.68	40 Position Header, Unthreaded, Breakaway Connector 0.100" (2.54mm) Through Hole Gold	51211EC-40-ND	Received	N/A	N/A	N/A			
53	Female Pins	2	2	2	digkey	comp. of electronic assembly	\$0.89/unit		\$1.78	10 Position Socket Connector 0.100" (2.54mm) Through Hole Gold	1212-1195-ND	Received	N/A	N/A	N/A			

54	L293D H bride	1	1	0	digkey	comp. of electronic assembly	\$3.55/unit	\$0.00	Bipolar Motor Driver Bipolar Parallel 16-PIN	296-36098-5-ND	not ordered	N/A	N/A	N/A	
55	LED 5mm - Blue	1	1	2	digkey	comp. of electronic assembly	\$0.21/unit	\$0.42	Blue 470nm LED Indication - 5mm	C5038-BC-CV002664-ND	Received	N/A	3.2V *20mA	0.064 watts	
56	LED 5mm - Green	2	1	3	digkey	comp. of electronic assembly	\$0.24/unit	\$0.72	Green 527nm LED Indication - 5mm	C5038-GCN-CV002793-ND	Received	N/A	3.2V *20mA	0.064 watts	
57	Arduino Board	1	1	1	digkey	comp. of electronic assembly	\$21.50/unit	\$21.50	ATmega328P Arduino Uno AVR Board Metal Aluminum Unpopulated Cover Includes 5.4x7.4 x 1.515" W (82.51mm x 38.51mm) X 1.220" (30.93mm)	1050-1024-ND	Received	0.88 oz.			
58	Enclosure	1	1	1	digkey	comp. of electronic assembly	\$8.46/unit	\$8.46	Box Metal Aluminum Unpopulated Cover Includes 5.4x7.4 x 1.515" W (82.51mm x 38.51mm) X 1.220" (30.93mm)	HM150-ND	Received	2.8 oz.	N/A	N/A	
59	22 AWG Stranded 25' - Black	1	1	1	digkey	comp. of electronic assembly	\$2.95/unit	\$2.95	STRANDED COPPER WIRE SPOOL - 25FT	1528-1753-ND	Received	N/A	N/A	N/A	
60	23 AWG Stranded 25' - Violet	1	1	1	digkey	comp. of electronic assembly	\$2.95/unit	\$2.95	STRANDED COPPER WIRE SPOOL - 25FT	1528-1758-ND	Received	N/A	N/A	N/A	
61	24 AWG Stranded 25' - Gray	1	1	1	digkey	comp. of electronic assembly	\$2.95/unit	\$2.95	STRANDED COPPER WIRE SPOOL - 25FT	1528-1767-ND	Received	N/A	N/A	N/A	
62	25 AWG Stranded 25' - Green	1	1	1	digkey	comp. of electronic assembly	\$2.95/unit	\$2.95	STRANDED COPPER WIRE SPOOL - 25FT	1528-1756-ND	Received	N/A	N/A	N/A	
63	26 AWG Stranded 25' - Orange	1	1	1	digkey	comp. of electronic assembly	\$2.95/unit	\$2.95	STRANDED COPPER WIRE SPOOL - 25FT	1528-1755-ND	Received	N/A	N/A	N/A	
<b>Total</b>								<b>\$62.11</b>							

Total Spent	\$497.06	
Bowling Total (If Built, Not Expected)	\$113.76	* Possible Custom Metal Working Costs
Soccer Total	\$403.56	* Possible Custom Metal Working Costs

Shipping			
MSC Direct	1018 Cold FIN Round Bar	N/A	We got lucky for being charged with lower price than the anticipated price, therefore the shipping price is incalculable
Digikey	Misc. Item	\$6.88	
Amazon	Soccer Ball & Battery	\$12.32	
McMaster-Carr-Carr	Misc. Item	\$26.49	
ServoCity	Servo Motor and DC Motor	\$6.96	
HomeDept	Misc. Item	none	picked them up at the store
<b>Total Shipping Cost</b>		<b>\$52.45</b>	

**Total Cost Including Shipping \$493.37**