Risk Management Sheet P19046		Owner: Kalie Lazarou, Karn Mishra		Rev. 6	
Category	**Risk Description**	**Severity**	**Likelihood**	**Importance**	**Mitigation Plan**
Technical	Device fails to throw ball far enough	3	0	0	Ensure equations prove capabilities during systems design.
	Device doesn't properly fasten to user mobility aid	9	0	0	Ensure mechanics are spec'ed out during systems design.
	Ball gets stuck in catching mechanism but doesn't transfer to throwing part	9	1	9	Ensure equations prove capabilities during systems design.
	Attach componenent gets lost	9	3	27	Ensure parts are easily replacable
	Launcher does not release the ball accurately	3	0	0	Ensure mechanics are spec'ed out during systems design.
	Launcher releases ball at a velocity much greater or much slower than intended	3	0	0	Ensure equations prove capabilities during systems design.
	Launcher lever falls off and user cannot use device as intended	9	0	0	Ensure parts are easily replacable
	Motor malfunctions and ceases to run	9	1	9	Determine contigency plan and plan to keep motor charged.
	Motor malfunctions due to water damage	9	3	27	Fully encase the motor and battery
	Motor starts to overheat	9	1	9	Keep area well ventilated, ensure design is such that nothing is within 1/8 inch of the motor, besides the connecting nut
Resource	IRB approval for human testing doesn't go through in time	9	0	0	Start process during Phase 1
	Team schedule conflicts with Mary Cariola for testing	3	0	0	Contact other organizations in Rochester for testing possibilities.
	Team goes over budget before final prototype is completed	9	0	0	Team can fundraise for prototyping
	University-imposed restrictions on user testing	9	0	0	Start understanding requirements during Phase 1
	Sample of user testing may not be true representation of actual user pool	9	1	9	Try to get a variety of users to test with
	Variability in abilities and limitations may make it difficult to find desirable sample pool	9	1	9	Contact other organizations in Rochester for testing possibilities.
	Working around already existing patents for mobile aid attachments	9	0	0	Begin patent research early in Phase 2 during benchmarking
	Prototype is not competed in a timely manner to allow for user testing	9	0	0	Hold team accountable for deadlines. Keep in contact with MC about prospective testing times and dates.
Safety	Device gets stuck and user cannot get out during episode	9	0	0	Ensure equations prove capabilities during systems design, proper user testing.
	Spring or launch mechanism snaps and flies back towards user	9	1	9	Ensure equations prove capabilities during systems design.
	Mechanism throws off wheelchair center of balance, tipping over chair	9	0	0	Ensure equations prove capabilities during systems design.
	Catch device may fail and the user gets injured trying to catch the ball	9	0	0	Ensure equations prove capabilities during systems design.
	Device could hurt user if the weight of it is too much and the attachment breaks down	9	0	0	Implement further safety designs early on.
	Throwing mechanism lever has a button for launching that could malfunction	9	1	9	Design decided on a push button for the throwing mechanism.
	Throwing mechanism lever has a pinch point if pushed the wrong way	9	0	0	Design decided on a push button for the throwing mechanism. If a lever is also incorporated for more able bodied individual, the design will have safety impleneted for any pinch points.
Societal	Able-bodied participants reject interaction with the device	3	1	3	Conduct surveys with children in target age range to determine likliehood
	User still may not be able to play sports with non-uses of the device despite the desire to do so	3	9	27	Delegate to customer, out of scope.
	May inspire too much confidence in that the user may feel empowered to try additional tasks/movements which are outside the scope of what this device allows them to do and therefore may cause significant harm to themselves	9	1	9	Delegate to customer, out of scope.
	Device is tall and does not allow for other children to see around the device causing possible accidents or misunderstandings.	9	1	9	Ensure mechanics are spec'ed out during systems design.
Environmental	Device breaks and needs to be thrown out or recycled	3	1	3	Conduct Environmental impacgt analysis and create instructions for disposal
	Device needs to be used on multiple terrains, gym floors, baseball fields, bowling alleys, grass.	3	0	0	Comply with FDA regulations to ensure same effects as using wheelchair, stander, or walker in these areas.
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