

	Design Validation Matrix			Stage In Progress		
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	Date Created: 10/14/2020	Date Last Modified: 12/2/2020				
	Requirement	Test	Method	Performance	Rating	Response/Action
	Ensure Device can transfer appropriate force from client to mannequin	On Prototype II	With Team	Exhausting but feasible all team members passed a compression only CPR Exam	Acceptable	Test with client
			With Client	Force was transferred but ergonomically poor	poor	Create new Prototype
		Wooden Prototype III	With Client	"Difficult to produce force"	Acceptable	Implement use of both hands for force input
		Aluminum Dual Tri-Pin	With Team	Easy for Teammates to complete compressions	Excellent	Test with Client
			With client	Complete compressions were achieved	Acceptable	Ensure other design criteria are met.
	Requirement	Test	Method	Performance	Rating	Response/Action
	Ensure clean stable and steady movements throughout the device apparatus during repeated compressions	Wooden prototype w/out upper arm	With Team	Easy to pass CPR Test	Excellent	Test with client
			With Client	Ergonomics incorrect, client cannot reach device	Poor	Re-Design with upper arm so client can manipulate device
		Wooden Prototype III with upper arm	With Client	Ergonomics better, force is not stable, but full compressions possible	Good	Re-Design with more stability (add second hinge) and horizontal bracings
		80/20 Apparatus with two hinges and horizontal bracing	With Team	Ergonomics are good teammates able to deliver consistent clean and stable forces from the input arm to the output arm	Excellent	Test with client

			With Client	The transferred force from the client is also consistent, clean, and stable!	Acceptable	Make any necessary further refinements
	Requirement	Test	Method	Performance	Rating	Response/Action
	Connection between wheelchair and Q-Strait Device must be tight and free of play/slop and acceptable ground clearance.	With initial welded on brackets	Test fit Q'Strait to wheelchair	The upper "Hooks" were too long and interfered with the bracing under the wheelchair	Unacceptable	Shorten "Hooks" and test fit again
		With shortened brackets	Test fit to clients chair	The device latches into place but there is some unwanted play/slop. Also ground clearance is poor	Poor	Shore up connection (introduce more bracing and modify locking mechanism)
		With more braces/brackets and modified locking mechanism	Test fit to clients chair	The device mounts well to the chair but there is still some play when compression are being done completely independently	Poor	Test with shim under q strait
		Q-Strait modified with plywood as shim (sitting underneath the wheelchaid and the Q-Strait to eliminate play	Test fit to clients chair and perform compressions with device	The device completes compressions with the wooden shim and teammates standing on the lowermost lateral bars	Good	Explore more shoring up of the device to reduce play.
		Q-Strait modified with integrated shims to eliminate the need for wooden shim				
	Requirement	Test	Method	Performance	Rating	Response/Action
	Docking System which can be engaged and disengaged autonomously	Autonomous device engagement	With Team	Q-Strait engaged well while being "Stopped" by team members	Excellent	Create docking system to "stop" the device from moving forward.

		Docking system to "stop" the device from moving forward.	With Team			
			With Client	Q-Straint engaged well while being "Stopped" by team members	Excellent	Ensure above docking mechanism works for client as well
		Autonomous Device Disengagement	With Team	Q-Straint disengaged properly from the faux wheelchair baseplate	Excellent	Ensure mechanism works with client
			With Client	Q-Straint disengaged properly with assistance from team holding the device	Good	Construct docking mechanism to enable complete independence for client