

No.	Risk	Cause	Possible Consequences	Probability of Risk (1-9)	Severity of Risk (1-9)	Overall Risk (Probability * Severity)	Prevention Plan	Contingency Plan
1	Team member cannot complete tasks/attend meetings	Illness, injury, schedule conflicts	Project gets behind schedule	5	8	40	Make sure everything posted to ED every day before Good scheduling communication	Work from home Communicate w group
2	Lock out mechanism has stop	Tolerances not tight enough and/or excess part	Patient is unstable when in lock position	4	8	32	Adequate testing and correct generation of lock mechanism	Provide instructions for replacement
3	Bike is uncomfortable/difficult to provide enough	Adjustability does not accommodate patient	Patient will not ride or is forced into difficult riding position	3	9	27	Sufficient rider testing will be performed. Dimensional benchmarking exercises	Modify existing parts for greater adjustability
4	Tilt axis is at incorrect angle		Bike will not tilt	2	9	18	Testing and concept generation	
5	Data sensor knocked off	Person/Object knocked off bike sensor off bike	Objective data will be inaccurate	4	7	28	Design guard around sensor and/or mount sensor so they are firmly attached	Provide reattachment instructions refer to concept selection matrix for more design
6	Custom parts not ready in time	Lead times	Project delayed or incomplete	4	7	28	Investigate part options	
7	Display knocked off during use	Handlebars/person/object impacts display	Display will be no longer be visible	3	8	24	Mount Display so that it is clear of moving parts and visible to patient	Provide reattachment instructions
8	Tilt Mechanism Failure	Bungees fail, bearings fail	Patient falls and is hurt	2	8	16	Proper part selections for lifetime of bike	Implement fail safe system to prevent patient falling in the future
9	Sensor wire interfered with	Tilt mechanism, outside objects, or pedal with wire	Objective data inaccurate or not present	3	7	21	Run wires so other parts will not interfere	Provide wiring diagram re-wiring purpose
10	Structural Failure (frame or cracks)	Improper calculations and/or material selection OR bike user	Bike becomes unsafe to ride	1	9	9	Correct calculations and material selection	Balance Training Bike Iteration #3
11	Equipment Too Complex to Use	Design too complex and not intuitive	Physical therapist does not use it is too complicated	2	7	14	Design for easy use and easy to follow instructions	Training on bike operation
12	Audio Feedback Cannot be Heard	Speakers not producing enough volume	Patient is frustrated because there is no audio feedback	4	5	20	Design so decibel level of audio feedback is high enough to be heard	N/A
13	Visual Feedback Cannot be Seen	Something obstructs display OR display fails	Patient is frustrated because there is no visual feedback	3	5	15	Design so range of patient's sight line is clear	Provide reordering information for feedback
14	Brake Mechanism becomes disconnected	Friction Pad interfered with flywheel	Flywheel cannot be stopped when necessary	2	6	12	Careful component selection/design and guard for flywheel	Reattachment and maintenance instructions
15	Flywheel has too much inertia	Improper calculations patient pedal to flywheel weight	Causes an unsafe situation for the patient	2	6	12	Calculate inertia correctly verify any assumptions	Design an emergency stop for the bike to the physics
16	Seat adjustment becomes loose during use	Adjustment screw not secured properly	Patient may lose balance/fall	1	6	6	Incorporate easy to use safe seat adjustment mechanism	Re-adjust and replace if necessary
17	Displays for Objective data burn out	Displays over-used or limit for acceptance	Objective data will not be present	2	5	10	Select parts that have a long lifetime	Provide reordering instructions for parts
18	Bike has no electrical power	Power cord disconnected improperly or power malfunctions	Break the connection and will not power to circuit	2	4	8	Have mounted in a recessed manner	Provide reordering instructions for parts
19	Speaker broken	Patient/PT/other person interferes with speaker	Audible feedback no longer present	5	5	5	Design a cover for the speaker that allows for sound to be heard, while protecting the speaker	N/A
20	Footprint Too Large for Clinic	Improper design of frame	Bicycle can not be used in Clinic because it takes up too much space	1	4	4	Design close to footprint Balance Bicycle (Customer Limitations)	Modify frame without compromising structural integrity
21	Equipment is Too Heavy to Move	Improper design and/or improper materials	Balance bike interferes with daily practice in clinic because it is too heavy	2	2	4	Design to government standards for single lifting a piece	Attach more wheels with locks for easier movement
22	Dial display becomes infeasible	Dial too expensive to produce and too complex	Display of tilt not present	3	4	12	Properly research and test potential dials	Use LED design
23	Bike Lifts off ground when patient tilts	Bike not heavy enough offset force of patient	Bike becomes unstable and/or unusable	7	7	49	Select correct materials and sizes for bike to ensure sufficient weight	Add weights to bike frame
24	Bike twists when tilting when lifted off ground	Bike's structural integrity high enough torsion	Bike becomes unstable and/or breaks	5	5	25	Calculate torsional force design bike frame materials	
25	Toe cage clip hits ground use	Not enough clearance pedals/toe clip	Patient injured	4	6	24	Calculate clearances so clips clear the ground	Remove toe clip
26	Patient caught in bike mechanisms	Bike operated without guards	Patient injured	3	8	24	Make guards difficult to remove and have guards	Institute lock out mechanism for guards