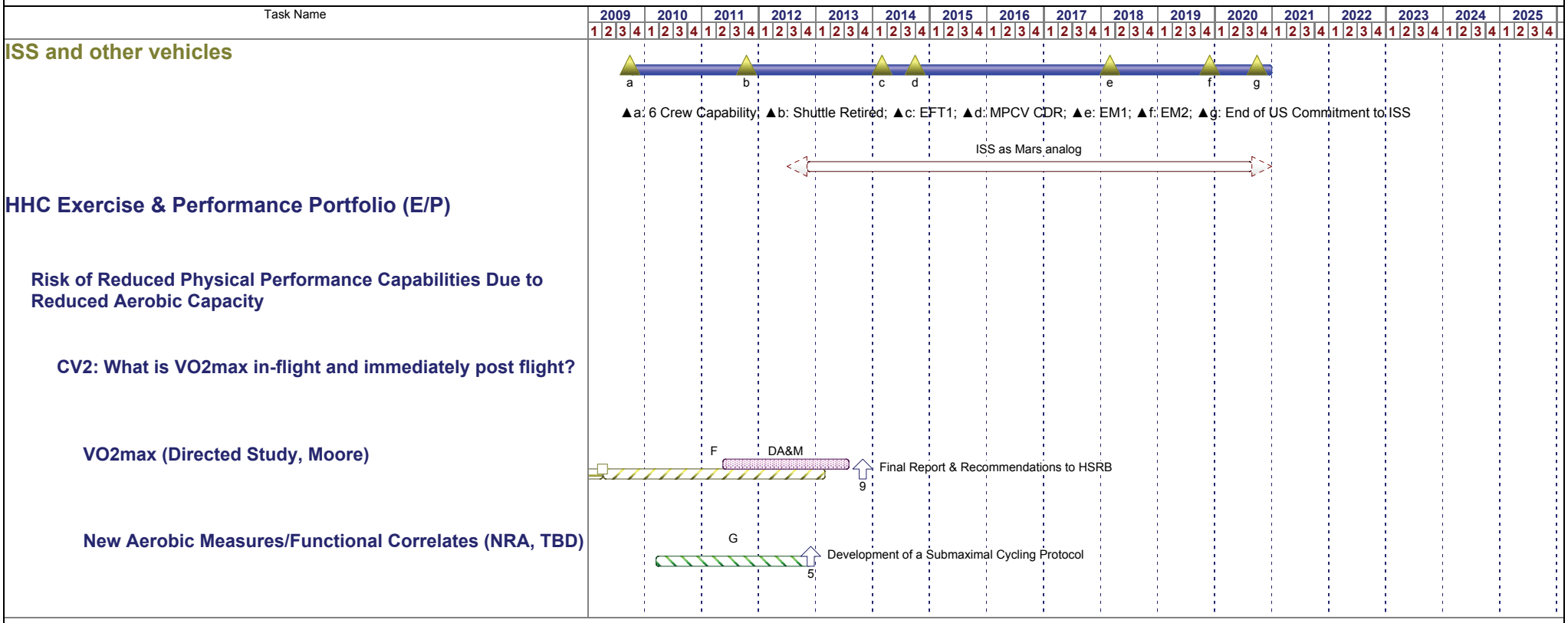
G: Ground Study		**Early Start**		**6) Technology**	
F: Flight Study		**Task To Be Determined After Decision Point**		**7) Countermeasure**	
L: Lunar		**Major Milestone/Event/Accomplishment**		**8) Information To/From other Elements**	
NSBRI		**1) Risk Characterization**		**9) Information to HSRB**	
DA&M: Data Analysis & Modeling		**2) Task↓↑Task**		**10) Requirements**	
FP: Flight Prep		**3) Standards - New**		**11) Study**	
AO: Add on to another study		**4) Standards - Update**		**Major Decision Point**	
Planned/unfunded		**5) Tools**		**Stop**	


Task Name
2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
ISS and other vehicles
a b c d e f g
▲a: 6 Crew Capability; ▲b: Shuttle Retired; ▲c: EFT1; ▲d: MPCV CDR; ▲e: EM1; ▲f: EM2; ▲g: End of US Commitment to ISS
ISS as Mars analog
HHC Exercise & Performance Portfolio (E/P)
Risk of Reduced Physical Performance Capabilities Due to Reduced Aerobic Capacity
CV2: What is VO2max in-flight and immediately post flight?
VO2max (Directed Study, Moore)
F
DA&M
Final Report & Recommendations to HSRB
9
New Aerobic Measures/Functional Correlates (NRA, TBD)
G
Development of a Submaximal Cycling Protocol
5

Task Name

2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025

ISS and other vehicles

a b c d e f g

▲a: 6 Crew Capability; ▲b: Shuttle Retired; ▲c: EFT1; ▲d: MPCV CDR; ▲e: EM1; ▲f: EM2; ▲g: End of US Commitment to ISS

ISS as Mars analog

HHC Exercise & Performance Portfolio (E/P)

Risk of Reduced Physical Performance Capabilities Due to Reduced Aerobic Capacity

Standardized "Pre-flight" Exercise Tests to Predict Performance during Extravehicular Activities in a Lunar Environment [Pre-flight Exercise Tests] (Barstow, NRA). See Muscle Risk/M3/M4/M6.

Adams NSBRI Grant - Integrated Endurance and Resistance Exercise Countermeasures Using a Gravity Independent Training Device - See Muscle Risk/M7-M9.

Integrated Resistance and Aerobic Exercise Training with Small Compact Exercise Equipment" [Exerise Training on Compact Equipment]- 2012 NSBRI/Ploutz-Snyder- See Muscle Risk/M7-9.

Development of New Exercise Hardware for Exploration Missions (GRC Advanced Exercise Concepts)- See Muscle Risk/M7-9.

Testosterone (NRA, Urban) - See Muscle Risk/M14

Exercise Plus Nutritional Supplements 1 (NRA, TBD) - See Muscle Risk/N9

Exercise Plus Nutritional Supplements 2 (NRA, TBD) - See Muscle Risk/N9

SPRINT (Ploutz-Snyder, Directed Study) - See Muscle Risk/M7-9.

Treadmill Kinematics (DeWitt, Directed) - See Muscle Risk/M7-9.

ARED Kinematics/BICE (2009 ILSRA: HRP Co-Is) - See Muscle Risk/M7-9

Suit Simulator (S3) for Partial Gravity EVA Experimentation and Training. See Muscle Risk/M3/M4/M6

Functional Task Test (FTT): (Bloomberg, Directed Study) - See Muscle Risk/SM7.

Extended Performance Tasks - See Muscle/SM7