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| Fiscal Year: | FY 2009 | Task Last Updated: | FY 03/23/2010 |
| PI Name: | Smith, Scott M Ph.D. | | |
| Project Title: | Vitamin D Supplementation in an Antarctic Ground Analog of Space Flight: Study of Supplementation Protocol and Relationship to Immune System Function | | |
| Division Name: | Human Research | | |
| Program/Discipline: | HUMAN RESEARCH | | |
| Program/Discipline--Element/Subdiscipline: | HUMAN RESEARCH--Biomedical countermeasures | | |
| Joint Agency Name: | TechPort: | No | |
| Human Research Program Elements: | (1) HHC: Human Health Countermeasures | | |
| Human Research Program Risks: | (1) Nutrition: Risk of Inadequate Nutrition | | |
| Space Biology Element: | None | | |
| Space Biology Cross-Element Discipline: | None | | |
| Space Biology Special Category: | None | | |
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| Zip Code: | 77058-3607 | Congressional District: | 36 |
| Comments: | | | |
| Project Type: | GROUND | Solicitation / Funding Source: | Directed Research |
| Start Date: | 10/01/2006 | End Date: | 09/30/2010 |
| No. of Post Docs: | | No. of PhD Degrees: | |
| No. of PhD Candidates: | | No. of Master' Degrees: | |
| No. of Master's Candidates: | | No. of Bachelor's Degrees: | |
| No. of Bachelor's Candidates: | | Monitoring Center: | NASA JSC |
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| Flight Program: | | | |
| Flight Assignment: | | | |
| Key Personnel Changes/Previous PI: | | | |
| COI Name (Institution): | Zwart, Sara (USRA/NASA Johnson Space Center) Locke, Jim (NASA Johnson Space Center) Pierson, Duane (NASA Johnson Space Center) Mehta, Satish (NASA Johnson Space Center) Bourbeau, YaVonne (Wyle/NASA Johnson Space Center) | | |
| Grant/Contract No.: | | | |
| Performance Goal No.: | | | |
| Performance Goal Text: | | | |

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| Task Description: | We recently completed a ground-based investigation evaluating the efficacy of vitamin D supplementation during the winter months in Antarctica, when UV-B radiation levels are zero. A supplement dose of 2,000 IU/d raised serum 25-hydroxyvitamin D to acceptable levels, but compliance was an issue that needs to be overcome. In this study, we will investigate whether a weekly dose of 10,000 IU vitamin D could be substituted for this daily 2,000-IU dose during the winter months in Antarctica at McMurdo Station. A secondary goal of this study is to investigate the effects of vitamin D supplementation and status on immune function in an environment known to suppress immune function. This ground analog study will enable us to provide long-duration space flight crewmembers with evidence-based recommendations for using a vitamin D supplement to achieve optimal vitamin D status before, during, and after flight. |
| Rationale for HRP Directed Research: | |
| Research Impact/Earth Benefits: | Altered vitamin D status before and during space flight is an issue that needs to be addressed, both for ISS missions and for exploration-class missions. Our experience with doing studies in Antarctica has shown that ground-based models of insufficient sun exposure are a valuable asset to clearly determine the optimal dose of vitamin D required to maintain circulating 25 hydroxyvitamin D at optimal levels. This study will clearly determine whether a 10000 IU weekly vitamin D supplement could be used instead of a daily dose for crewmembers during space flight. This study will also determine whether vitamin D status is related to immune function in an environment known to suppress immune function in ways similar to those observed during space flight. This will have implications for astronauts on ISS and exploration missions, as well the medical and scientific communities, and the general population. |
| Task Progress: | The study data/sample collection was initiated in February 2009, and was completed in September 2009. Sample and data analysis have been initiated, and will be completed in 2010. |
| Bibliography Type: | Description: (Last Updated: 03/19/2022) |