



Changes in Health Habits of First Year Medical Students Upon Entering Medical School



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Background

On average, US medical students spend 10 hours daily on educational activities (studying, attending class, etc.) while the average full-time undergraduate student spends 3.5 hours per day. [1,2]

Previous studies have demonstrated changes in medical student health from the first year to graduation, reporting increased diastolic blood pressure and HDL-cholesterol levels, reduced physical activity as well as a variety of diet changes. [3]

A study of a single Saudi medical school found that 92% (233/253) of students had inadequate vitamin D levels (< 20 ng/mL) [4]

This study sought to identify changes in the health habits of medical students upon entering medical school compared to their pre-medical school habits.

Methods

- This study was a prospective cohort study consisting of entering Brody School of Medicine students (n=18) and current ECU undergraduate students (n=7).
- Participants completed both a health habits questionnaire and provided a blood sample at the beginning and two months into the semester.

- REDCap Questionnaire for self-reported daily health habits
 - BMI
 - Weekday and Weekend Sun Exposure and Sunscreen Usage
 - Physical Activity (converted to METS)
 - Time spent Sitting or Reclining
 - Hours Slept
 - Vitamin D Consumption (based on vitamin D containing food and converted to IUs)

- Serum 25(OH) Vitamin D quantified by Enzo Life Sciences 25(OH) Vitamin D ELISA Kit
- Corrected Sun Exposure was calculated based on weekday and weekend sun exposure adjusted for % of body exposed to the sun, % of body covered in sunscreen, % of time wearing sunscreen, and amount of UV protection provided by reported sunscreen SPF.
- Data analyzed by IBM SPSS Statistics 25

Initial Data Collection

- Medical Student samples were collected after completion of their first week of medical school
- Undergraduate Student samples were collected after completion of their second week of new undergraduate semester
- Questionnaire and blood draw for reporting habits and 25(OH) Vitamin D PRIOR to starting medical school or a new undergraduate semester

Final Data Collection

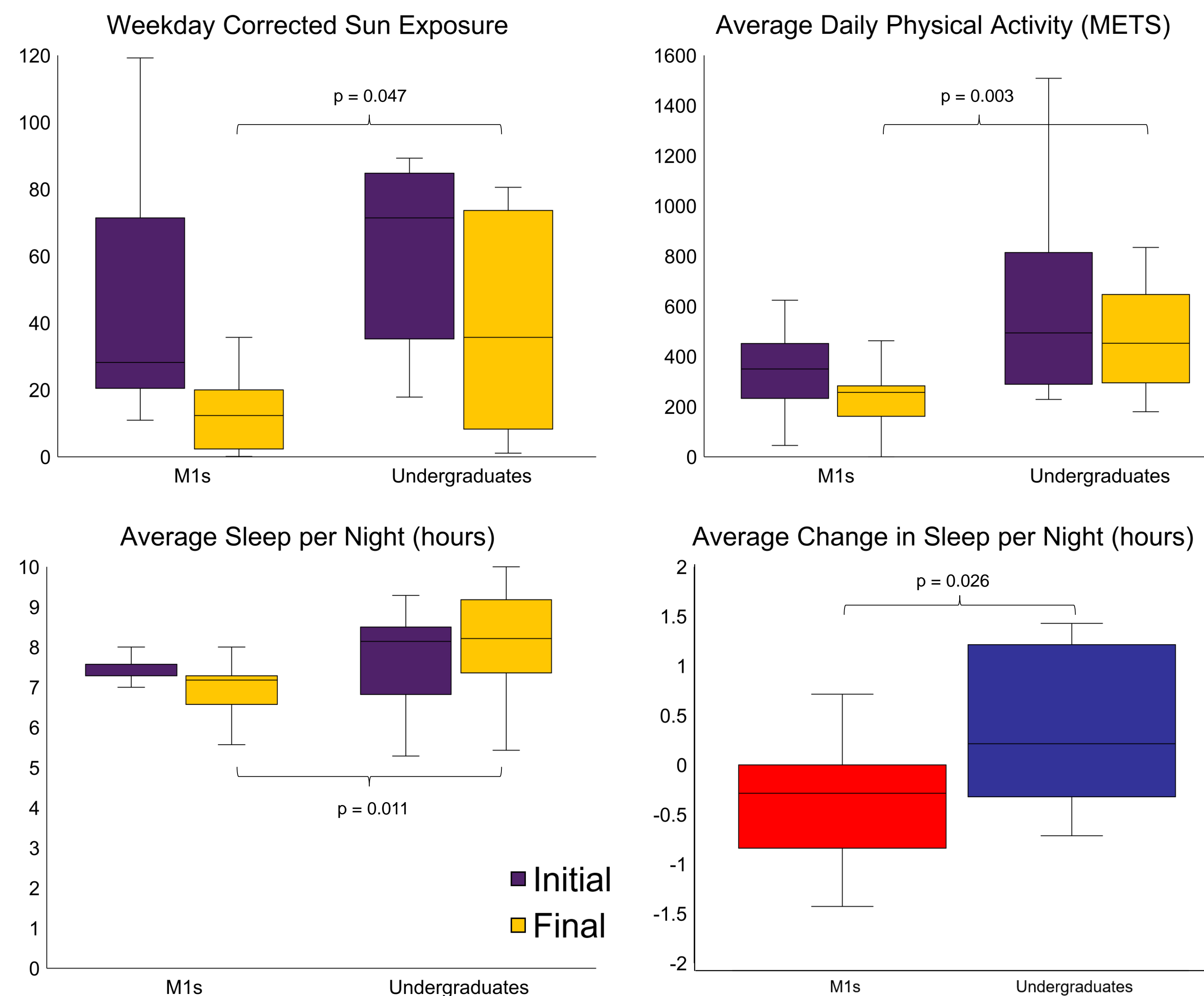
- Questionnaire and blood draw for reporting habits and 25(OH) Vitamin D AFTER being established in medical school or an undergraduate semester

Entering medical school significantly altered medical students' health habits

	Initial Mean	Initial Std. Dev.	Final Mean	Final Std. Dev.	Initial v Final p-value	Change from Initial	Change Std. Dev.
Daily Activity (METS)	348.48	145.16	231.40	125.31	0.000	-117.08	105.67
Weekend Sunscreen (% time)	30.56	35.56	1.11	4.71	0.003	-29.44	36.21
Avg Corr. Sun per Day (min)	61.22	55.04	16.33	15.13	0.007	-44.89	61.52
Time Sitting or Reclining (min/day)	252.38	130.64	447.30	204.62	0.007	194.92	271.66
Weekend Sun (min/day)	152.78	125.31	69.72	51.26	0.007	-83.06	116.12
Hour/Day Sleep	7.38	0.48	7.00	0.59	0.009	-0.38	0.55
Weekend Corr. Sun (min/day)	65.05	69.07	19.96	16.32	0.013	-45.09	68.99
Avg Sun per Day (min)	143.65	108.61	65.36	59.07	0.018	-78.29	126.82
Weekday Corr. Sun (min/day)	59.69	67.55	14.88	16.93	0.019	-44.81	73.25
Weekday Sun (min/day)	140.00	127.59	63.61	76.44	0.043	-76.39	148.51
Vitamin D Consumed (IU/day)	303.52	245.37	206.58	210.66	0.055	-96.94	199.49
Weekday Sunscreen (% time)	21.11	33.94	12.22	28.19	0.138	-8.89	24.23
BMI	24.50	4.51	24.46	4.58	0.773	-0.04	0.64

Compared to their habits prior to beginning medical school, students saw a statistically significant decrease in their amount of daily activity, sleep, and sun exposure. There was a significant increase in the amount of time students spent sitting or reclining per day by an average of over 3 hours. (Paired T-Test. Green= $p < 0.01$; Yellow= $p < 0.05$)

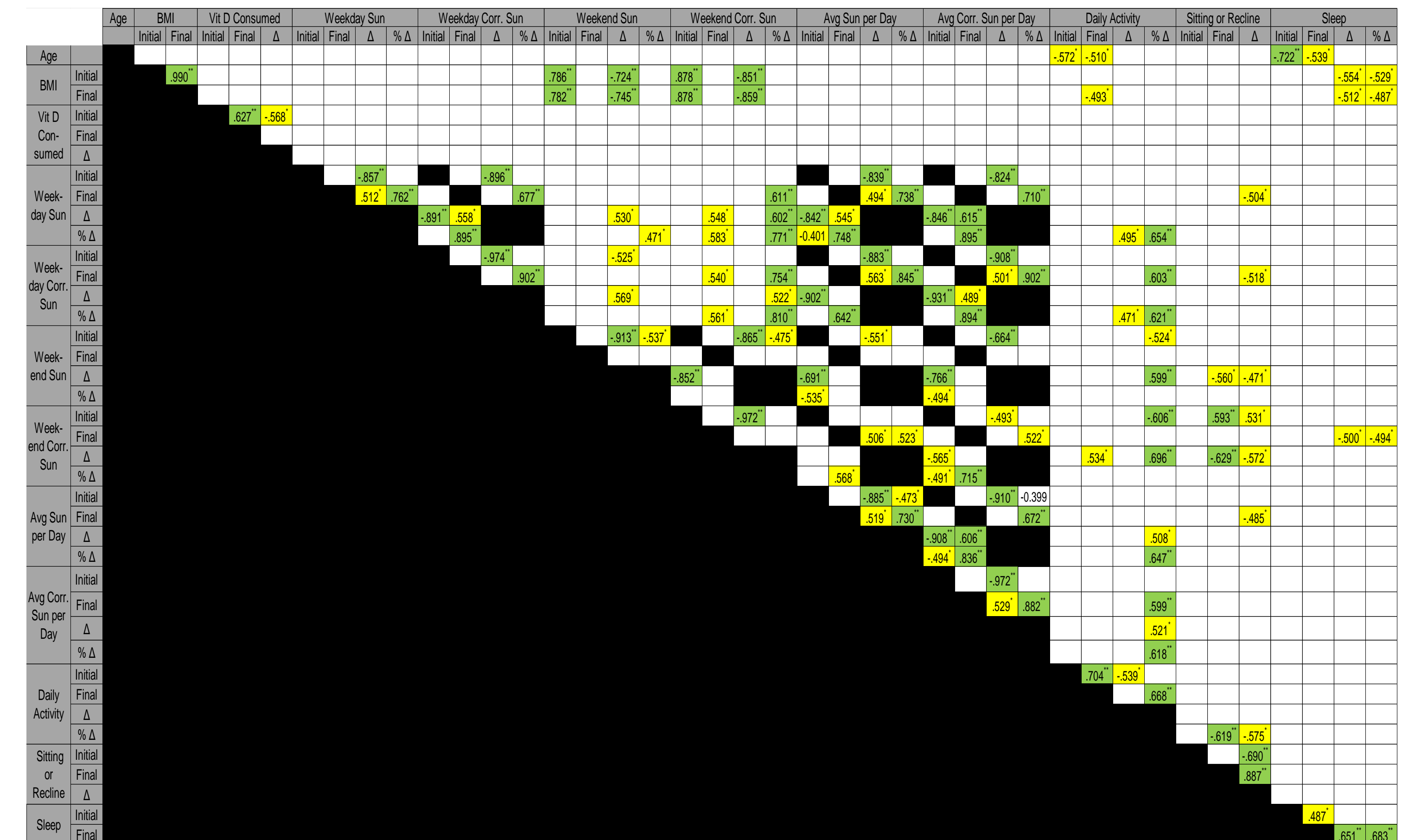
Medical students differed in health habits compared to undergraduate students during the semester



Charts: Statistically significant ($p < 0.05$) Mann Whitney Tests comparing medical students' health habits and changes in health habits to undergraduate students' at both time points.

Medical students were found to sleep less, have less weekday sun exposure, less daily physical activity, and a larger overall change in sleep after beginning the academic semester. Non-statistically significant differences were seen in other factors including time sitting or reclining, initial daily activity, and weekly corrected sun.

Medical student health habits correlated with habits prior to entering medical school



Correlation Table: Pearson Correlation coefficients for initial, final, change, and percent change of the measured medical student health habits. Green indicates $p < 0.01$ and Yellow indicates $p < 0.05$

Notable correlations for the medical students were present between initial vs final daily activity and initial v final Vitamin D consumption indicating a higher likelihood of increased physical exercise and Vitamin D consumption if the student began medical school with higher numbers. An increase in the time sitting or reclining after beginning medical school is correlated with a larger decrease in daily physical activity performed by the student.

Conclusions

Beginning medical school is associated with significant reductions in various health habits often to a larger extent than those seen in undergraduate students.

Providing information or guidance to medical students prior to entering medical school would allow students to establish improved health habits before the semester which is correlated with better health habits during the semester.

Data from this student could be furthered studied to see the relationship of changes in health habits with student stress, health outcomes, or student performance.

Acknowledgements and Citations

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- [1] Medical School Year Two Questionnaire. Assoc. of American Medical Colleges (2017)
- [2] American Time Usage Survey. U.S. Bureau of Labor Statistics (2015)
- [3] Brehm, BJ et. al (2016). *Ann Med Health Sci Res*; 6:341-347
- [4] BinSaeed, AA et. al (2015). *Euro Jour Clin Nutri*; 69:1151-1155