**Supplementary Figure 1.** **Differences in SCFA profiles based on meeting PA recommendations**. Isovalerate and the SCFA/BCFA ratio were significantly different between groups that met and did not meet weekly PA recommendations. Abbreviations: branched chain fatty acids (BCFA), short-chain fatty acids (SCFA).



**Supplementary Figure 2.** **Meet PA cluster DESeq2 comparison**. DESeq2 identified three taxa, *Ruminococcus* (family Lachnospiraceae), YS2, and *Haemophilus*, that were significantly different between groups that met or did not meet weekly PA recommendations. Relative abundance of taxa displayed as proportions.

Chart, box and whisker chart

Description automatically generated

**Supplementary Figure 3.** **K-means cluster PA comparison**. Clusters showed significant differences in percent of time spent in MVPA and ST.

Chart, box and whisker chart

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