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### **The overlooked, understudied, and under-reported benefits of low doses of physical activity for mental health, and a reminder to not forget about sedentary behavior**

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The article by Chekroud and colleagues<sup>1</sup> adds to the extensive evidence on the relationships between physical activity (PA) and mental health. The authors identified a systematic non-linear pattern between what they operationalize as *exercise* characteristics and mental health burden in a large database with elaborate statistical modelling and analyses. First, the authors' classification strategy, measures, and coding strategies are more aligned with the operationalization of PA<sup>2</sup> that includes exercise as well as active transport, leisure and household activities. Two additional points need to be raised that are not specifically addressed in this article and that might have important implications: 1-the benefits of low doses of PA for mental health, and 2-the association between various PA characteristics and mental health are also dependent on the sedentary context.

Based on the visual interpretation of graphics, the authors emphasized specific 'doses' of self-reported PA sessions (i.e., 45 minutes) or frequency (i.e., 3 to 5 times per week) associated with the greatest benefits on mental health and that higher PA duration and frequency were related to increased mental health burden. However, from a public health perspective, it is important to highlight that low duration and frequency of PA were equally associated with a reduction of mental health burden. This note is important since inactive adults are more likely to engage in lower PA dose<sup>3</sup>. We suggest a more comprehensive interpretation of Chekroud's findings: for a better self-reported mental health, every movement (e.g., step, throw, lift, trimmed hedge, ride, etc.) counts until 45 minutes per session and 12 to 20 monthly sessions. We recently examined the cross-sectional associations between objectively measured PA, sedentary behavior and self-reported mental health in a representative national sample of adults<sup>4</sup>. Our findings are commensurate with Chekroud's results by showing non-linear patterns between daily minutes of moderate and vigorous PA, light PA and daily steps and mental health. However, our study provides evidence that the shapes and directions of associations varied as a function of time spent in daily sedentary activities. For instance, the lowest dose of light PA, combined with the lowest dose of sedentary time, were associated with better positive mental health.

Therefore, the evidence of optimal PA doses for better mental health should be interpreted with caution because sedentary behavior interplays with mental health. In the future, the "move more and sit less" strategy that is recommended for physical health<sup>5</sup> might be also be fostered for mental health.

## References

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**Declaration of interests**

The authors declare no competing interests.

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