

Journal Pre-proof



Use of the Healthy Living Medicine Platform to Minimize COVID-19 Vaccination: Dispelling this Myth Before it Takes Hold

Ross Arena PhD, PT, FAHA

PII: S0002-9343(23)00022-0
DOI: <https://doi.org/10.1016/j.amjmed.2022.12.035>
Reference: AJM 17021

To appear in: *The American Journal of Medicine*

Received date: 15 December 2022
Accepted date: 16 December 2022

Please cite this article as: Ross Arena PhD, PT, FAHA , Use of the Healthy Living Medicine Platform to Minimize COVID-19 Vaccination: Dispelling this Myth Before it Takes Hold, *The American Journal of Medicine* (2023), doi: <https://doi.org/10.1016/j.amjmed.2022.12.035>

This is a PDF file of an article that has undergone enhancements after acceptance, such as the addition of a cover page and metadata, and formatting for readability, but it is not yet the definitive version of record. This version will undergo additional copyediting, typesetting and review before it is published in its final form, but we are providing this version to give early visibility of the article. Please note that, during the production process, errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

© 2023 Published by Elsevier Inc.

Use of the Healthy Living Medicine Platform to Minimize COVID-19 Vaccination:

Dispelling this Myth Before it Takes Hold

Ross Arena, PhD, PT, FAHA¹⁻³

¹Department of Physical Therapy, College of Applied Science, University of Illinois Chicago, Chicago, IL

²Healthy Living for Pandemic Event Protection (HL – PIVOT) Network, Chicago, IL

³Biomedical Research Theme, School of Human Sciences, University of Derby, Derby, UK

Sole author is responsible for all content.

Key Words: Immunization, physical activity, hospitalization

CofI: None

Funding: None

Submission Type: Commentary

Address for correspondence:

Ross Arena, PhD, PT, FAHA, FESC, FRSM, FACSM
Professor and Head
Department of Physical Therapy
College of Applied Health Sciences
University of Illinois Chicago
1919 W. Taylor Street (MC 898)
Chicago, IL 60612
Office: (312) 355-3338
raarena@uic.edu

Word Count: Text = 1,225

The politicization of the coronavirus disease 2019 (COVID-19) pandemic is unprecedented. The resistance to vaccinations and public health measures to mitigate viral spread are based on falsehoods and misinterpretations of basic rights that have created unnecessary societal divisions. The fact that the Centers Disease Control now has a website dispelling COVID-19 vaccination myths¹ is a prime example of the unfortunate and inappropriate intermingling of politics and public health.

As a scientist committed to the promotion of healthy living medicine, I have enjoyed the ability to remain outside of the political fray. Much of my work has focused on the importance of healthy living medicine in the prevention and treatment of chronic diseases.^{2,3} The platform of moving more and sitting less, consuming a nutritious diet, not smoking, and maintaining a healthy body weight, have long been apolitical, noncontroversial truths.

The COVID-19 pandemic brought to light a new unhealthy lifestyle – chronic disease – COVID-19 syndemic⁴; individuals who had unhealthy lifestyle characteristics or one or more chronic health condition are at significantly higher risk for untoward events with COVID-19 infection⁴. The scientific evidence for this syndemic emerged prior to vaccination availability. As a healthy living medicine scientist, I began to write about this phenomenon, yet again highlighting the importance of healthy living medicine, to prevent and treat chronic disease as well as reduce the risk of poor outcomes with viral infection.^{4,5} Recently, as we passed one million deaths due to COVID-19 in the United States, our group demonstrated the highest prevalence for unhealthy lifestyle characteristics, cardiovascular disease mortality, and COVID-19 mortality were all in the same region of the country, making the point that healthy living medicine is an essential approach to improving health outcomes.⁴ Seeing an important opportunity to highlight the importance of healthy living medicine in the COVID-19 era, hoping

to promote change in our approach to health care, I founded the healthy living for pandemic event protection (HL-PIVOT) network, comprised of an international group of individuals from numerous sectors committed to this area.⁶ I naively assumed our work, primarily through peer-reviewed publications, would be apolitical and unifying.

Several weeks ago, I received an email complimenting my work on highlighting the importance of healthy living medicine during the COVID-19 pandemic, the focus of the email implied my work supported the premise that healthy living behaviors could be a replacement to vaccination – an assertion I have never made. I chose to delete the email as opposed to responding. I then found a news article citing my work, again asserting that healthy living medicine will get us out of the pandemic, minimizing the importance of vaccination. In both instances, my publications were being falsely interpreted to support a baseless, and, in my opinion, a dangerous message. As such, I felt compelled to craft this commentary and dispel these myths before they take hold any further.

As I have always done as a scientist, when faced with an opposing view, I look to available evidence to craft the basis of my response. Evidence overwhelmingly indicates COVID-19 vaccination is safe and highly effective in preventing COVID-19.⁷ As beneficial as healthy living medicine is, there is no credible evidence or hypothesis to support adoption of healthy living behaviors as a replacement for vaccination – this is a reckless viewpoint. Healthy living behaviors do, however, play an important role in the post-vaccination COVID-19 era. Firstly, exercise has been shown to enhance the immune response to vaccination.^{8,9} In a recent study published in the British Journal of Sports Medicine, including more than 190,000 individuals, Collie et al.¹⁰ found, in subjects who were vaccinated, those reporting moderate and high levels of physical activity (PA) had a 1.4 (95% CI 1.36 to 1.51) and 2.8 (95% CI 2.35 to

3.35) times lower risk of hospital admission due to COVID-19, respectively, compared to those who reported low levels of physical activity. The authors rightfully conclude the following: 1) Regular participation in physical activity reduces the risk of COVID-19 severity and poor outcomes (e.g., hospitalization, mechanical ventilation, etc.); and 2) Participation in regular physical activity should be encouraged to enhance vaccine efficacy and further reduce the risk of severe outcomes with COVID-19 infection. In summary, evidence indicates healthy living medicine, particularly physical activity, should be promoted to support vaccine efficacy as opposed to false, unfounded claims of being a replacement for vaccination.

For those who choose to promote unfounded claims that are harmful to society at large – please do not use my scholarly contributions, or others who have devoted their careers to promoting healthy living medicine, as a false justification for your views and propagation of such views. I feel compelled to state, for the record, I do not support the view that healthy living medicine is a replacement to COVID-19 vaccination. There is no scientific basis for this argument, in fact, the converse is true as I have described herein; healthy living medicine enhances vaccine efficacy and reduces the risk of poor outcomes in those who are vaccinated and suffer viral infection. Health living medicine should remain apolitical, everyone on the planet would benefit from any combination of moving more and sitting less, consuming a nutritious diet, not smoking, and striving towards a healthy body weight. I close by humbly requesting we all try to use healthy living medicine as a unifier as opposed to falsely using it as part of a divisive strategy.

References

1. CDC. Myths and Facts about COVID-19 Vaccines. https://www.cdc.gov/coronavirus/2019-ncov/vaccines/facts.html?s_cid=11760:covid%20vaccine%20facts:sem.ga.p:RG:GM:gen:PTN:FY22. 2022. Accessed 12/11/2022.
2. Sagner M, McNeil A, Puska P, Auffray C, Price ND, Hood L, Lavie CJ, Han ZG, Chen Z, Brahmachari SK, et al. The P4 Health Spectrum - A Predictive, Preventive, Personalized and Participatory Continuum for Promoting Healthspan. *Prog Cardiovasc Dis*. 2017;59:506-521. doi: 10.1016/j.pcad.2016.08.002
3. Arena R, Whitsel LP, Berra K, Lavie CJ, Kaminsky L, Williams M, Hivert MF, Franklin NC, Myers J, Dongel D, et al. Healthy Lifestyle Interventions to Combat Non-Communicable Disease: A Novel Non-Hierarchical Connectivity Model for Key Stakeholders: A Policy Statement from the AHA, ESC, EACPR and ACPM. *Mayo Clinic Proceedings*. 2015;90:1082-1103.
4. Arena R, Pronk NP, Laddu D, Whitsel LP, Sallis JF, Lavie CJ. Mapping One Million COVID-19 Deaths and Unhealthy Lifestyle Behaviors in the United States: Recognizing the Syndemic Pattern and Taking Action. *Am J Med*. 2022;135:1288-1295. doi: 10.1016/j.amjmed.2022.06.006
5. Arena R, Bond S, Calvo IR, Lebowicz L, Ozemek C, Severin R, Laddu D, Faghy MA, Lavie CJ, Carbone S. Shelter from the cytokine storm: Healthy living is a vital preventative strategy in the COVID-19 era. *Prog Cardiovasc Dis*. 2022;73:56-60. doi: 10.1016/j.pcad.2021.06.008
6. Arena R, Lavie CJ. The global path forward - Healthy Living for Pandemic Event Protection (HL - PIVOT). *Prog Cardiovasc Dis*. 2021;64:96-101. doi: 10.1016/j.pcad.2020.05.008
7. Polack FP, Thomas SJ, Kitchin N, Absalon J, Gurtman A, Lockhart S, Perez JL, Pérez Marc G, Moreira ED, Zerbini C, et al. Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine. *N Engl J Med*. 2020;383:2603-2615. doi: 10.1056/NEJMoa2034577
8. Hallam J, Jones T, Alley J, Kohut ML. Exercise after influenza or COVID-19 vaccination increases serum antibody without an increase in side effects. *Brain Behav Immun*. 2022;102:1-10. doi: 10.1016/j.bbi.2022.02.005

9. Dinas PC, Koutedakis Y, Ioannou LG, Metsios G, Kitas GD. Effects of Exercise and Physical Activity Levels on Vaccination Efficacy: A Systematic Review and Meta-Analysis. *Vaccines (Basel)*. 2022;10. doi: 10.3390/vaccines10050769

10. Collie S, Siggers RT, Bandini R, Steenkamp L, Champion J, Gray G, Bekker LG, Goga A, Garrett N, Patricios J. Association between regular physical activity and the protective effect of vaccination against SARS-CoV-2 in a South African case-control study. *Br J Sports Med*. 2022. doi: 10.1136/bjsports-2022-105734

Journal Pre-proof