Exercise is Medicine®

Reference List of Exercise is Medicine®-Related Published Research

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ExeRxcise is Medicine®

AMERICAN COLLEGE of SPORTS MEDICINE®

Sections

Introduction to This Reference List

The American College of Sports Medicine® (ACSM) and Exercise is Medicine® (EIM) staff compiled this reference list to serve as a publicly available resource highlighting scholarly work to make physical activity assessment and promotion a standard in clinical care, connecting patients with evidence-based physical activity resources for people everywhere of all abilities. Specifically, this reference list aims to:

1. Provide one place for individuals seeking evidence-based information on promoting physical activity in health systems;
2. Inform individuals looking to integrate physical activity into their health systems or clinical practices and/or connect patients to community-based physical activity resources and;
3. Serve as a source of scholarly work for investigators developing manuscripts and grants on EIM-related topics.

To achieve these goals, this guide highlights scholarly work specifically related to the integration of physical activity into health care-related settings. Articles are listed in alphabetical order by first author — not chronologically. We have also included the direct object identifier (DOI), whenever available, or a website link for the article. Some, but not all, articles are freely available without subscription to the journals.

Due to the overwhelming evidence for the health-enhancing benefits of physical activity across a wide array of populations and health conditions, scholarly work on health benefits of physical activity are not included in this guide. We focused more broadly on work related to physical activity promotion in health care settings to keep the guide to a reasonable length. Thus, articles focusing on individual specialties or patient populations (e.g., patient preferences for physical activity support in young cancer survivors) may not be included.

Lastly, we are certain even more eligible articles exist for this list that were not identified in our literature searches. If you are aware of any work that should be included, please email a link to the article to mstoutenberg@acsm.org. We view this EIM Reference List as a living document that will continue to be updated as new EIM-related research is published.

We hope that you find the scholarly work highlighted in this guide beneficial in your research, educational, clinical and/or advocacy efforts to promote the EIM vision!

1. Implementation Science and Health Systems

This first section highlights published work from the field of implementation science to highlight work on the adoption and implementation of evidence-based interventions in health settings. While not all are specific to physical activity integration, these articles may be useful in examining contextual factors and identifying key strategies and policy considerations when implementing EIM-related interventions in health care settings.

1. Balasubramanian BA, Cohen DJ, Davis MM, et al. Learning evaluation: Blending quality improvement and implementation research methods to study healthcare innovations. Implement Sci. 2015;10(1):31. https://doi.org/10.1186/s13012-015-0219-z. PMID: 25889831.
2. Balasubramanian BA, Cohen DJ, Clark EC, et al. Practice-level approaches for behavioral counseling and patient health behaviors. Am J Prev Med. 2008;35(5 Suppl):S407-13. https://doi.org/10.1016/j.amepre.2008.08.004.
3. Chauhan BF, Jeyaraman MM, Mann AS, et al. Behavior change interventions and policies influencing primary healthcare professionals' practice: An overview of reviews. Implement Sci. 2017;12(1):3. https://doi.org/10.1186/s13012-016-0538-8. PMID: 28057024.
4. Cohen DJ, Balasubramanuan BA, Isaacson NF, et al. Coordination of health behavior counseling in primary care. Ann Fam Med. 2011; 9(5):406-15. https://doi.org/10.1370/afm.1245. PMID: 21911759.
5. Estabrooks PA, Harden SM, Almeida FA, et al. Using integrated research-practice partnerships to move evidence-based principles into practice. Exerc Sport Sci Rev. 2019: 47(3):176-87. https://doi.org/10.1249/JES.0000000000000194. PMID: 31008840.
6. Estabrooks PA, Glasgow RE. Translating effective clinic-based physical activity interventions into practice. Am J Prev Med. 2006;31(4 Suppl):S45-56. https://doi.org/10.1016/j.amepre.2006.06.019.
7. Estabrooks PA, Glasgow RE, Dzewaltowski DA. Physical activity promotion through primary care. JAMA. 2003;289(22):2913-6. https://doi.org/10.1001/jama.289.22.2913. PMID: 12799388.
8. Kennedy MA, Bayes S, Newton RU, et al. We have the program, what now? Development of an implementation plan to bridge the research-practice gap prevalent in exercise oncology. Int J Behav Nutr Phys Act. 2020;17(1):128. https://doi.org/10.1186/s12966-020-01032-4. PMID: 33036627.
9. Kennedy MA, Bayes S, Newton RU, et al. Implementation barriers to integrating exercise as medicine in oncology: An ecological scoping review. J Cancer Surviv. 2022 Aug;16(4):865-881. https://doi.org/10.1007/s11764-021-01080-0. PMID: 34510366.
10. Lau R, Stevenson F, Ong BN, et al. Achieving change in primary care — causes of the evidence to practice gap: Systematic reviews of reviews. Implement Sci. 2016;11:40. https://doi.org/10.1186/s13012-016-0396-4. PMID: 27001107.
11. Moullin JC, Sabater-Hernández D, Fernandez-Llimos F, et al. A systematic review of implementation frameworks of innovations in healthcare and resulting generic implementation framework. Health Res Policy Syst. 2015;13:16. https://doi.org/10.1186/s12961-015-0005-z. PMID: 25885055.
12. Nilsen P, Schildmeijer K, Ericsson C, et al. Implementation of change in health care in Sweden: A qualitative study of professionals' change responses. Implement Sci. 2019;14(1):51. https://doi.org/10.1186/s13012-019-0902-6. PMID: 31088483.

2. General EIM Articles

This section highlights published work that provides a general overview and justification for integrating physical activity into health settings. These articles include calls to action, commentaries, updates and opinion pieces that are often the most commonly referenced EIM-related articles.

1. Berra K, Rippe J, Manson JE. Making physical activity counseling a priority in clinical practice: The time for action is now. JAMA. 2015;314(24):2617-8. https://doi.org/10.1001/jama.2015.16244. PMID: 26662069.
2. Berryman JW. Exercise is medicine: A historical perspective. Curr Sports Med Rep. 2010; 9(4):195-201. https://doi.org/10.1249/JSR.0b013e3181e7d86d. PMID: 20622536.
3. Haseler C, Crooke R, Haseler T. Promoting physical activity to patients. BMJ. 2019;366:l5230. https://doi.org/10.1136/bmj.l5230. PMID: 31530549.
4. Jacobson DM, Strohecker L, Compton MT, et al. Physical activity counseling in the adult primary care setting: Position statement of the American College of Preventive Medicine. Am J Prev Med. 2005;29(2):158-162. https://doi.org/10.1016/j.amepre.2005.04.009. PMID: 16005814.
5. Kharmats AY, Pilla SJ, Sevick MA. USPSTF recommendations for behavioral counseling in adults with cardiovascular disease risk factors: Are we ready? JAMA New Open. 2020;3(11):e2026982. https://doi.org/10.1001/jamanetworkopen.2020.29682. PMID: 33231631.
6. Lobelo F, Stoutenberg M, Hutber A. The Exercise is Medicine Global Health Initiative: A 2014 update. Br J Sports Med. 2014;48(22):1627-33. https://doi.org/10.1136/bjsports-2013-093080. PMID: 24759911.
7. McPhail S, Schippers M. An evolving perspective on physical activity counselling by medical professionals. BMC Fam Pract. 2012;13:31. https://doi.org/10.1186/1471-2296-13-31. PMID: 22524484.

8. Patrick K, Pratt M, Sallis RE. The healthcare sector's role in the U.S. national physical activity plan. J Phys Act Health. 2009;6 Suppl 2:S211-9. https://pubmed.ncbi.nlm.nih.gov/20120130. PMID: 20120130.

9. Sallis R, Franklin B, Joy L, et al. Strategies for promoting physical activity in clinical practice. Prog Cardiovasc Dis. 2015;57(4):375-86. https://doi.org/10.1016/j.pcad.2014.10.003. PMID: 25459975.

10. Sawalla Guseh J, Lieberman D, Baggish A. The evidence for Exercise is Medicine — A new review series. NEJM Evid. 2022;1(3): https://doi.org/10.1056/EVIDra2100002.

11. Thompson PD, Eijsvogels TMH. New physical activity guidelines: A call to activity for clinicians and patients. JAMA. 2018 Nov;320(19):1983-4. https://doi.org/10.1001/jama.2018.16070. PMID: 30418469.

12. Thompson W, Sallis R, Joy E, et al. Exercise is Medicine. Am J Lifesyle Med. 2020;14(5):511-23. https://doi.org/10.1177/1559827620912192. PMID: 32922236.

13. Vuori IM, Lavie CJ, Blair SN. Physical activity promotion in the health care system. Mayo Clin Proc. 2013;88(12):1446-61. https://doi.org/10.1016/j.mayocp.2013.08.020. PMID: 24290119.

14. Whitsel LP, Bantham A, Jarrin R, et al. Physical activity assessment, prescription and referral in U.S. healthcare: How do we make this a standard of clinical practice? Prog Cardiovasc Dis. 2020;S0033-0620(20)30208-5. https://doi.org/10.1016/j.pcad.2020.12.006. PMID: 33383058.

3.Systematic Reviews and Meta-Analyses

This section includes systematic reviews and meta-analyses directly related to multiple aspects regarding integrating physical activity into health care settings. Several of these articles may also appear in other sections in this document to increase the ease of finding the appropriate article.

1. Arsenijevic J, Groot W. Physical activity on prescription schemes (PARS): Do programme characteristics influence effectiveness? Results of a systematic review and meta-analyses. BMJ Open. 2017;7(2):e012156. https://doi.org/10.1136/bmjopen-2016-012156. PMID: 28153931.

2. Campbell F, Holmes M, Everson-Hock E, et al. A systematic review and economic evaluation of exercise referral schemes in primary care: A short report. Health Technol Assess. 2015;19(60):1-110. https://doi.org/10.3310/hta19600. PMID: 26222987.

3. Golightly YM, Allen KD, Ambrose KR, et al. Physical activity as a vital sign: A systematic review. *Prev Chronic Dis*. 2017;14:E123. https://doi.org/10.5888/pcd14.170030. PMID: 29191260.

4. Grogg KA, Giacobbi PR, Blair EK, et al. Physical activity assessment and promotion in clinical settings in the United States: A scoping review. Am J Health Promot. 2022 May; 36(4):714-737. https://doi.org/10.1177/08901171211051840. PMID: 35224998.

5. Hall LH, Thorneloe R, Rodriguez-Lopez, R, Grice A, et al. Delivering brief physical activity interventions in primary care: A systematic review. Br J Gen Pract. 2022;72(716):e209-e216. https://doi.org/10.3399/BJGP.2021.0312. PMID: 34782318.

6. Hébert ET, Caughy MO, Shuval K. Primary care providers' perceptions of physical activity counselling in a clinical setting: A systematic review. Br J Sports Med. 2012;46(9):625-31. https://doi.org/10.1136/bjsports-2011-090734. PMID: 22711796.

7. Huijg JM, Gebhardt WA, Verheijden MW, et al. Factors influencing primary health care professionals' physical activity promotion behaviors: A systematic review. Int J Behav Med. 2015;22(1):32-50. https://doi.org/10.1007/s12529-014-9398-2. PMID: 24788314.

8. Kettle VE, Madigan CD, Coombe A, et al. Effectiveness of physical activity interventions delivered or prompted by health professionals in primary care settings: Systematic review and meta-analysis of randomized controlled trials. BMJ. 2022;376:e068465. https://doi.org/10.1136/bmj-2021-068465. PMID: 35197242.

9. Morgan F, Battersby A, Weightman AL, et al. Adherence to exercise referral schemes by participants — what do providers and commissioners need to know? A systematic review of barriers and facilitators. BMC Public Health. 2016 Mar;16:227. https://doi.org/10.1186/s12889-016-2882-7. PMID: 26944952.

10. O'Brien MW, Bray NW, Kivell MJ, et al. A scoping review of exercise referral schemes involving qualified exercise professionals in primary health care. Appl Physiol Nutr Metab. 2021;46(9):1007-18. https://doi.org/10.1139/apnm-2020-1070. PMID: 33872547.

11. Orrow G, Kinmonth AL, Sanderson S, et al. Republished research: Effectiveness of physical activity promotion based in primary care: systematic review and meta-analysis of randomised controlled trials. Br J Sports Med. 2013;47(1):27. https://doi.org/10.1136/bjsports-2012-e1389rep. PMID: 23243114.

12. Pavey T, Taylor A, Hillsdon M, et al. Levels and predictors of exercise referral scheme uptake and adherence: A systematic review. J Epidemiol Community Health. 2012;66(8):737-44. https://doi.org/10.1136/jech-2011-200354. PMID: 22493474.

13. Pavey TG, Anokye N, Taylor AH, et al. The clinical effectiveness and cost-effectiveness of exercise referral schemes: A systematic review and economic evaluation. Health Technol Assess. 2011;15(44):i-xii, 1-254. https://doi.org/10.3310/hta15440. PMID: 22182828.

14. Pavey TG, Taylor AH, Fox KR, et al. Effect of exercise referral schemes in primary care on physical activity and improving health outcomes: Systematic review and meta-analysis. BMJ. 2011;343:d6462. https://doi.org/10.1136/bmj.d6462. PMID: 22058134.

15. Sanchez A, Bully P, Martinez C, et al. Effectiveness of physical activity promotion interventions in primary care: A review of reviews. Prev Med. 2015;76 Suppl:S56-67. https://doi.org/10.1016/j.ypmed.2014.09.012. PMID: 25263343.

16. Shore CB, Hubbard G, Gorely T, et al. Insufficient reporting of factors associated with exercise referral scheme uptake, attendance, and adherence: A systematic review of reviews. J Phys Act Health. 2019;16(8):667-76. https://doi.org/10.1123/jpah.2018-0341. PMID: 31203705.

17. U.S. Preventive Services Task Force, Krist AH, Davidson KW, et al. Behavioral counseling interventions to promote a healthy diet and physical activity for cardiovascular disease prevention in adults with cardiovascular risk factors: U.S. Preventive Services Task Force Recommendation Statement. JAMA. 2020;324(20):2069-75. https://doi.org/10.1001/jama.2020.21749. PMID: 33231670.

18. Van der Wardt V, di Lorito C, Viniol A. Promoting physical activity in primary care: A systematic review and meta-analysis. Br J Gen Pract. 2021 Apr 29;71(706):e399-405. https://doi.org/10.3399/BJGP.2020.0817. PMID: 33824160.

4. Health Care Provider Physical Activity Counseling Rates

This section includes articles that provide information related to the rates of physical activity counseling conducted in health settings. Articles may use data from smaller, more local health settings or from larger, national datasets. Information in these articles may come from patient reporting of provider counseling levels or from direct observation/reporting from the providers themselves. Articles in this section include work completed in multiple countries from around the world.

1. Ahmed NU, Delgado M, Saxena A. Trends and disparities in the prevalence of physicians' counseling on exercise among the U.S. adult population, 2000-2010. Prev Med. 2017;99:1-6. https://doi.org/10.1016/j.ypmed.2017.01.015. PMID: 28161645.

2. Barnes PM, Schoenborn CA. Trends in adults receiving a recommendation for exercise or other physical activity from a physician or other health professional. NCHS Data Brief. 2012;(86):1-8. https://www.cdc.gov/nchs/data/databriefs/db86.pdf. PMID: 22617014.

3. Bock C, Diehm C, Schneider S. Physical activity promotion in primary health care: Results from a German physician survey. Eur J Gen Pract. 2012;18(2):86-91. https://doi.org/10.3109/13814788.2012.675504. PMID: 22548286.

4. Croteau K, Schofield G, McLean G. Physical activity advice in the primary care setting: Results of a population study in New Zealand. Aust N Z J Public Health. 2006;30(3):262-7. https://doi.org/10.1111/j.1467-842x.2006.tb00868.x. PMID: 16800204.

5. Cunningham C, O'Sullivan R. Health professionals promotion of physical activity with older adults: A survey of knowledge and routine practice. Int J Environ Res Public Health. 2021 Jun;18(11):6064. https://doi.org/10.3390/ijerph18116064. PMID: 34199893.

6. Florindo AA, Mielke GI, Gomes GA, et al. Physical activity counseling in primary health care in Brazil: A national study on prevalence and associated factors. BMC Public Health. 2013;13:794. https://doi.org/10.1186/1471-2458-13-794. PMID: 24005006.

7. Gabrys L, Jordan S, Schlaud M. Prevalence and temporal trends of physical activity counselling in primary health care in Germany from 1997-1999 to 2008-2011. *I*nt J Behav Nutr Phys Act.;12:136. https://doi.org/10.1186/s12966-015-0299-9. PMID: 26503585.

8. Glasgow RE, Eakin EG, Fisher EB, et al. Physician advice and support for physical activity: Results from a national survey. Am J Prev Med. 2001;21(3):189-96. https://doi.org/10.1016/s0749-3797(01)00350-6. PMID: 11567839.

9. Hinrichs T, Moschny A, Klaassen-Mielke R, et al. General practitioner advice on physical activity: Analyses in a cohort of older primary health care patients (getABI). BMC Fam Pract. 2011;12:26. https://doi.org/10.1186/1471-2296-12-26. PMID: 21569227.

10. Hootman JM, Murphy LB, Omura JD, et al. Health care provider counseling for physical activity or exercise among adults with arthritis — United States, 2002 and 2014. MMWR Morb Mortal Wkly Rep. 2018;66(51-52):1398-1401. https://doi.org/10.15585/mmwr.mm665152a2. PMID: 29300722.

11. Klumbiene J, Petkeviciene J, Vaisvalavicius V, et al. Advising overweight persons about diet and physical activity in primary health care: Lithuanian health behaviour monitoring study. BMC Public Health. 2006;6:30. https://doi.org/10.1186/1471-2458-6-30. PMID: 16478535.

12. Kriaucioniene V, Petkeviciene J, Raskiliene A. Nutrition and physical activity counselling by general practitioners in Lithuania, 2000-2014. BMC Fam Pract. 2019;20(1):125. https://doi.org/10.1186/s12875-019-1022-8. PMID: 31493793.

13. Lobelo F, Supapannachart KJ, Zhou T, et al. Exercise and diet counseling trends from 2002 to 2015L A serial cross-sectional study of U.S. adults with cardiovascular disease risk. Am J Prev Med. 2021;60(2):e59-67. https://doi.org/10.1016/j.amepre.2020.07.008. PMID: 33342670.

14. Loprinzi PD, Beets MW. Need for increased promotion of physical activity by health care professionals. Prev Med. 2014;69:75-9. https://doi.org/10.1016/j.ypmed.2014.09.002. PMID: 25230367.

15. O'Brien S, Prihodova L, Heffron M, et al. Physical activity counselling in Ireland: A survey of doctors' knowledge, attitudes and self-reported practice. BMJ Open Sport Exerc Med. 2019;5(1):e000572. https://doi.org/10.1136/bmjsem-2019-000572. PMID: 31423324.

16. Osinaike J, Hartley SE. Physical activity counselling among junior doctors in the UK: A qualitative study. Health Educ J. 2021;80(5):584-95. https://doi.org/10.1177/0017896921999074.

17. Petrella RJ, Lattanzio CN, Overend TJ. Physical activity counseling and prescription among Canadian primary care physicians. Arch Intern Med. 2007;167(16):1774-81. https://doi.org/10.1001/archinte.167.16.1774. PMID: 17846397.

18. Pojednic RM, Polak R, Arnstein F, et al. Practice patterns, counseling and promotion of physical activity by sports medicine physicians. J Sci Med Sport. 2017;20(2):123-7. https://doi.org/10.1016/j.jsams.2016.06.012. PMID: 27460911.

19. Short CE, Hayman M, Rebar AL, et al. Physical activity recommendations from general practitioners in Australia. Results from a national survey. Aust N Z J Public Health. 2016;40(1):83-90. https://doi.org/10.1111/1753-6405.12455. PMID: 26456595.

20. Smith AW, Borowski LA, Liu B, et al. U.S. primary care physicians' diet-, physical activity-, and weight-related care of adult patients. Am J Prev Med. 2011;41(1):33-42. https://doi.org/10.1016/j.amepre.2011.03.017. PMID: 21665061.

21. Sreedhara M, Silfee VJ, Rosal MC, et al. Does provider advice to increase physical activity differ by activity level among US adults with cardiovascular disease risk factors? Fam Pract. 2018;35(4):420-25. https://doi.org/10.1093/fampra/cmx140. PMID: 29390106.

5. Health Care Provider Attitudes and Barriers to PA Promotion

This section includes scholarly work that specifically focuses on the perceptions and attitudes of health care providers, as well as the different barriers they face when integrating physical activity into the clinic setting.

1. Crisford P, Winzenberg T, Venn A, et al. Factors associated with physical activity promotion by allied and other non-medical health professionals: A systematic review. Patient Educ Couns. 2018;101(10):1775-85. https://doi.org/10.1016/j.pec.2018.05.011. PMID: 29793786.

2. Douglas F, Torrance N, van Teijlingen E, et al. Primary care staff's views and experiences related to routinely advising patients about physical activity. A questionnaire survey. BMC Public Health. 2006;6:138. https://doi.org/10.1186/1471-2458-6-138. PMID: 16719900.

3. Hébert ET, Caughy MO, Shuval K. Primary care providers' perceptions of physical activity counselling in a clinical setting: A systematic review. Br J Sports Med. 2012;46(9):625-31. https://doi.org/10.1136/bjsports-2011-090734. PMID: 22711796.

4. Huijg JM, Gebhardt WA, Verheijden MW, et al. Factors influencing primary health care professionals' physical activity promotion behaviors: A systematic review. Int J Behav Med. 2015;22(1):32-50. https://doi.org/10.1007/s12529-014-9398-2. PMID: 24788314.

5. Lanhers C, Duclos M, Guttmann A, et al. General practitioners' barriers to prescribe physical activity: The dark side of the cluster effects on the physical activity of their type 2 diabetes patients. PLoS One. 2015;10(10):e0140429. https://doi.org/10.1371/journal.pone.0140429. PMID: 26468874.

6. McPhail S, Schippers M. An evolving perspective on physical activity counselling by medical professionals. BMC Fam Pract. 2012;13:31. https://doi.org/10.1186/1471-2296-13-31 PMID: 22524484.

7. O'Brien S, Prihodova L, Heffron M, et al. Physical activity counselling in Ireland: A survey of doctors' knowledge, attitudes and self-reported practice. BMJ Open Sport Exerc Med. 2019;5(1):e000572. https://doi.org/10.1136/bmjsem-2019-000572. PMID: 31423324.

8. Pang A, Lingham S, Zhao W, et al. Physician practice patterns and barriers to counselling on physical activity in solid organ transplant recipients. Ann Transplant. 2018;23:345-59. https://doi.org/10.12659/AOT.908629. PMID: 29784902

9. Pellerine LP, O'Brien MW, Shields CA, et al. Health care providers' perspectives on promoting physical activity and exercise in health care. Int J Environ Res Public Health. 2022;19(15), 9466. https://doi.org/10.3390/ijerph19159466. PMID: 35954823.

10. Silva CS, Mendes R, Godinho C, et al. Predictors of physical activity promotion in clinical practice: A cross-sectional study among medical doctors. BMC Med Educ. 2022 Aug 17;22(1):624. https://doi.org/10.1186/s12909-022-03686-z. PMID: 35978358.

6. Patient Preferences and Barriers

This section includes articles that focus on how patients prefer to receive physical activity advice from their health care provider, as well as barriers that patients face when trying to act upon this advice.

1. Camhi SM, Debordes-Jackson G, Andrews J, et al. Socioecological factors associated with an urban exercise prescription program for under-resourced women: A mixed methods community-engaged research project. Int J Environ Res Public Health. 2021; 18(16):8726. https://doi.org/10.3390/ijerph18168726. PMID: 34444473.

2. De Guzman KR, Pratt M, Hwang A, et al. Patient feedback and evaluation measures of a physical activity initiative: Exercise is Medicine program. Fam Pract. 2022; cmab178. https://doi.org/10.1093/fampra/cmab178. PMID: 35089313.

3. Johnson NA, Ewald B, Plotnikoff RC, et al. Predictors of adherence to a physical activity counseling intervention delivered by exercise physiologists: Secondary analysis of the NewCOACH trial data. Patient Prefer Adherence. 2018;12:2537-43. https://doi.org/10.2147/PPA.S183938. PMID: 30568432.

4. Meesters J, Conijn D, Vermeulen HM, et al. Physical activity during hospitalization: Activities and preferences of adults versus older adults. Physiother Theory Pract. 2019;35(10):975-85. https://doi.org/10.1080/09593985.2018.1460429. PMID: 29658797.

5. Plotnikoff RC, Stacey FG, Jansson AK, et al. Does patient preference for mode of intervention delivery impact intervention efficacy and attrition? Am J Health Promot. 2020;34(1):63-6. https://doi.org/10.1177/0890117119871002. PMID: 31470754.

6. Reddeman L, Bourgeois N, Angl EN, et al. How should family physicians provide physical activity advice? Qualitative study to inform the design of an e-health intervention. Can Fam Physician. 2019;65(9):e411-9. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6741803. PMID: 31515329.

7. Physical Activity Assessment in Clinic Settings

This section includes original research articles, consensus statements, calls to action and commentaries that focus on the assessment of physical activity in health settings.

1. Ball TJ, Joy EA, Gren LH, et al. Concurrent validity of a self-reported physical activity "vital sign" questionnaire with adult primary care patients [published correction appears in Prev Chronic Dis. 2016;13:E30]. Prev Chronic Dis. 2016;13:E16. https://doi.org/10.5888/pcd13.150228. PMID: 26851335.

2. Ball TJ, Joy EA, Gren LH, et al. Predictive validity of an adult physical activity "vital sign" recorded in electronic health records. J Phys Act Health. 2016;13(4):403-408. https://doi.org/10.1123/jpah.2015-0210. PMID: 26445164.

3. Ball TJ, Joy EA, Goh TL, et al. Validity of two brief primary care physical activity questionnaires with accelerometry in clinic staff. Prim Health Care Res Dev. 2015;16(1):100-8. https://doi.org/10.1017/S1463423613000479. PMID: 24472569.

4. Bowen PG, Mankowski RT, Harper SA, et al. Exercise is Medicine as a vital sign: Challenges and opportunities. Transl J Am Coll Sports Med. 2019;4(1):1-7. https://pubmed.ncbi.nlm.nih.gov/30828640. PMID: 30828640.

5. Clark RE, Milligan J, Ashe MC, et al. A patient-oriented approach to the development of a primary care physical activity screen for embedding into electronic medical records. Appl Physiol Nutr Metab. 2020 Nov. Online ahead of print. https://doi.org/10.1139/apnm-2020-0356. PMID: 33226847.

6. Coleman KJ, Ngor E, Reynolds K, et al. Initial validation of an exercise "vital sign" in electronic medical records. Med Sci Sports Exerc. 2012;44(11):2071-6. https://doi.org/10.1249/MSS.0b013e3182630ec1. PMID: 22688832.

7. Fitzgerald L, Ozemek C, Jarrett H, et al. Accelerometer validation of questionnaires used in clinical settings to assess MVPA. Med Sci Sports Exerc. 2015;47(7):1538-42. https://doi.org/10.1249/MSS.0000000000000565. PMID: 25380474.

8. Golightly YM, Allen KD, Ambrose KR, et al. Physical activity as a vital sign: A systematic review. Prev Chronic Dis. 2017;14:E123. https://doi.org/10.5888/pcd14.170030. PMID: 29191260.

9. Grant RW, Schmittdiel JA, Neugebauer RS, et al. Exercise as a vital sign: A quasi-experimental analysis of a health system intervention to collect patient-reported exercise levels. J Gen Intern Med. 2014;29(2):341-8. https://doi.org/10.1007/s11606-013-2693-9. PMID: 24309950.

10. Greenwood JL, Joy EA, Stanford JB. The physical activity vital sign: A primary care tool to guide counseling for obesity. J Phys Act Health. 2010;7(5):571-6. https://doi.org/10.1123/jpah.7.5.571. PMID: 20864751.

11. Grogg KA, Giacobbi PR, Blair EK, et al. Physical activity assessment and promotion in clinical settings in the United States: A scoping review. Am J Health Promot. 2022 May; 36(4):714-737. https://doi.org/10.1177/08901171211051840. PMID: 35224998.

12. Howitt S, Simpson K, Suderman D, et al. Exercise as a vital sign: A preliminary pilot study in a chiropractic setting. J Can Chiropr Assoc. 2017;61(3):231-8. PMID: 29430053.

13. Kaminsky LA, Brubaker PH, Guazzi M, et al. Assessing physical activity as a core component in cardiac rehabilitation: A position statement of the American Association of Cardiovascular and Pulmonary Rehabilitation. J Cardiopulm Rehabil Prev. 2016;36(4):217-29. https://doi.org/10.1097/HCR.0000000000000191. PMID: 27307067.

14. Kuntz JL, Young DR Saelens BE, et al. Validity of the Exercise Vital Sign tool to assess physical activity. Am J Prev Med. 2021; S0749-3797(21)00093-3. https://doi.org/10.1016/j.amepre.2021.01.012. PMID: 33781618.

15. Lin CY, Gentile NL, Bale L, et al. Implementation of a physical activity vital signs in primary care: Associations between physical activity, demographic characteristics, and chronic disease burden. Prev Chronic Dis. 2022; E33. https://doi.org/10.5888/pcd19.210457. PMID: 35749145.

16. Liu ILA, Moy M, Estrada E, et al. An "Exercise Vital Sign" is a valid proxy measure of physical activity in COPD in routine clinical care. Transl J ACSM. 2017;2(23):5. https://doi.org/10.1249/TJX.0000000000000049.

17. Lobelo F, Young DR, Sallis R, et al. Routine assessment and promotion of physical activity in healthcare settings — A scientific statement from the American Heart Association. Circulation. 2018; 137(18):e495-522. https://doi.org/10.1161/CIR.0000000000000559. PMID: 29618598.

18. Lobelo F, Muth ND, Hanson S, et al. Physical activity assessment and counseling in pediatric clinical settings. Pediatrics. 2020;145(3):e20193992. https://doi.org/10.1542/peds.2019-3992. PMID: 32094289.

19. McCarthy MM, Fletcher J, Heffron S, et al. Implementing the physical activity vital sign in an academic preventive cardiology clinic. Prev Med Rep. 2021;23:101435. https://doi.org/10.1016/j.pmedr.2021.101435. PMID: 34150483.

20. Nelson VR, Masocol RV, Asif IM. Associations between the physical activity vital sign and cardiometabolic risk factors in high-risk youth and adolescents. Sports Health. 2020;12(1):23-8. https://doi.org/10.1177/1941738119884083. PMID: 31710820.

21. Quiles NN, McCullough AK, Piao L. Validity and reliability of the Exercise Vital Sign questionnaire in an ethnically diverse group: A pilot study. J Prim Care Community Health. 2019. https://doi.org/10.1177/2150132719844062. PMID: 31044638.

22. Ross R, Blair SN, Arena R, et al. Importance of assessing cardiorespiratory fitness in clinical practice: A case for fitness as a clinical vital sign: A scientific statement from the American Heart Association. Circulation. 2016;134(24):e653-99. https://doi.org/10.1161/CIR.0000000000000461. PMID: 27881567.

23. Rozanski A, Sakul S, Narula J, et al. Assessment of lifestyle "vital signs" in healthcare settings. Prog Cardiovasc Dis. 2023 Feb 25:S0033-0620(23)00008-7. https://doi.org/10.1016/j.pcad.2023.02.002. PMID: 36848965.

24. Sallis RE, Matuszak JM, Baggish AL, et al. Call to action on making physical activity assessment and prescription a medical standard of care. Curr Sports Med Rep. 2016;15(3):207-14. https://doi.org/10.1249/JSR.0000000000000249. PMID: 27172086.

25. Sederberg M, Tarkhan A, Ray LS, et al. Physical activity in adults with an amputation as assessed with a self-report exercise vital sign. PM R. 2020;12(9):861-9. https://doi.org/10.1002/pmrj.12333. PMID: 31990141.

26. Shook RP, Halpin K, Carlson JA, et al. Adherence with multiple national healthy lifestyle recommendations in a large pediatric center electronic health record and reduced risk of obesity. Mayo Clin Proc. 2018;93(9):1247-55. https://doi.org/10.1016/j.mayocp.2018.04.020. PMID: 30060957.

27. Stoutenberg M, Shaya GE, Feldman DI, et al. Practical strategies for assessing patient physical activity levels in primary care. Mayo Clin Proc Innov Qual Outcomes. 2017;1(1):8-15. https://doi.org/10.1016/j.mayocpiqo.2017.04.006. PMID: 30225397.

28. Wald A, Garber CE. A review of current literature on vital sign assessment of physical activity in primary care: Vital sign assessment of physical activity. J Nurs Scholarsh. 2018;50(1):65-73. http://dx.doi.org/10.1111/jnu.12351. PMID: 29068556.

29. Young JA, Hand BN, Onate JA, et al. Clinical utility and validity of exercise vital sign in children. Curr Sports Med Rep. 2022; 21(1):28-33. https://doi.org/10.1249/JSR.0000000000000928. PMID: 35018896.

30. Young DR, Coleman KJ, Ngor E, et al. Associations between physical activity and cardiometabolic risk factors assessed in a Southern California health care system, 2010-2012. Prev Chronic Dis. 2014;11:E219. http://dx.doi.org/10.5888/pcd11.140196. PMID: 25523350.

8. Physical Activity Counseling/ Brief Advice

This section includes articles that report the results of studies examining physical activity counseling, such as brief advice, provided directly by physicians, nurses or other health care providers to patients. Several of these studies are classics and considered as the precursors to the EIM initiative.

1. Armit CM, Brown WJ, Marshall AL, et al. Randomized trial of three strategies to promote physical activity in general practice. Prev Med. 2009;48(2):156-63. https://doi.org/10.1016/j.ypmed.2008.11.009. PMID: 19100282.

2. Berra K, Rippe J, Manson JE. Making physical activity counseling a priority in clinical practice: The time for action is now. JAMA. 2015;314(24):2617-8. https://doi.org/10.1001/jama.2015.16244. PMID: 26662069.

3. Calfas KJ, Long BJ, Sallis JF, et al. A controlled trial of physician counseling to promote the adoption of physical activity. Prev Med. 1996;25(3):225-33. https://doi.org/10.1006/pmed.1996.0050. PMID: 8780999.

4. Cardinal BJ, Levy SS, John DH, et al. Counseling patients for physical activity. Am J Med Sports. 2002;4:364-71.

5. Carroll JK, Antognoli E, Flocke SA. Evaluation of physical activity counseling in primary care using direct observation of the 5As. Ann Fam Med. 2011;9(5):416-22. https://doi.org/10.1370/afm.1299. PMID: 21911760.

6. Carroll JK, Winters PC, Sanders MR, et al. Clinician-targeted intervention and patient-reported counseling on physical activity. Prev Chronic Dis. 2014;11:E89. https://doi.org/10.5888/pcd11.130302. PMID: 24874781.

7. Di Loreto C, Fanelli C, Lucidi P, et al. Validation of a counseling strategy to promote the adoption and the maintenance of physical activity by type 2 diabetic subjects. Diabetes Care. 2003;26(2):404-8. https://doi.org/10.2337/diacare.26.2.404. PMID: 12547870.

8. Galaviz KI, Estabrooks PA, Ulloa EJ, et al. Evaluating the effectiveness of physician counseling to promote physical activity in Mexico: An effectiveness-implementation hybrid study. Transl Behav Med. 2017;7(4):731-40. https://doi.org/10.1007/s13142-017-0524-y. PMID: 28936694.

9. Grandes G, Sanchez A, Montoya I, et al. Two-year longitudinal analysis of a cluster randomized trial of physical activity promotion by general practitioners. PLoS One. 2011;6(3):e18363. https://doi.org/10.1371/journal.pone.0018363. PMID: 21479243.

10. Grandes G, Sanchez A, Sanchez-Pinilla RO, et al. Effectiveness of physical activity advice and prescription by physicians in routine primary care: A cluster randomized trial. Arch Intern Med. 2009;169(7):694-701. https://doi.org/10.1001/archinternmed.2009.23. PMID: 19364999.

11. Goldstein MG, Pinto BM, Marcus BH, et al. Physician-based physical activity counseling for middle-aged and older adults: A randomized trial. Ann Behav Med. 1999;21(1):40-7. https://doi.org/10.1007/BF02895032. PMID: 18425653.

12. Harris T, Kerry SM, Victor CR, et al. A primary care nurse-delivered walking intervention in older adults: PACE (pedometer accelerometer consultation evaluation)-life cluster randomized controlled trial. PLoS Med. 2015;12(2):e1001783. https://doi.org/10.1371/journal.pmed.1001783. PMID: 25689364.

13. Hébert ET, Caughy MO, Shuval K. Primary care providers' perceptions of physical activity counselling in a clinical setting: A systematic review. Br J Sports Med. 2012;46(9):625-31. https://doi.org/10.1136/bjsports-2011-090734. PMID: 22711796.

14. Huijg JM, Gebhardt WA, Verheijden MW, et al. Factors influencing primary health care professionals' physical activity promotion behaviors: A systematic review. Int J Behav Med. 2015;22(1):32-50. https://doi.org/10.1007/s12529-014-9398-2. PMID: 24788314.

15. Lin JS, O'Connor E, Whitlock EP, et al. Behavioral counseling to promote physical activity and a healthful diet to prevent cardiovascular disease in adults: A systematic review for the U.S. Preventive Services Task Force. Ann Intern Med. 2010;153(11):736-50. https://doi.org/10.7326/0003-4819-153-11-201012070-00007. PMID: 21135297.

16. Lobelo F, Supapannachart KJ, Zhou T, Frediani JK. Exercise and diet counseling trends from 2002 to 2015: A serial cross-sectional study of U.S. adults with cardiovascular disease risk. Am J Prev Med. 2021;60(2):e59-67. https://doi.org/10.1016/j.amepre.2020.07.008. PMID: 33342670.

17. Margitić S, Sevick MA, Miller M, et al. Challenges faced in recruiting patients from primary care practices into a physical activity intervention trial. Activity Counseling Trial Research Group. Prev Med. 1999;29(4):277-86. https://doi.org/10.1006/pmed.1999.0543. PMID: 10547053.

18. Mitchell J, Hardeman W, Pears S, et al. Effectiveness and cost-effectiveness of a very brief physical activity intervention delivered in NHS Health Checks (VBI Trial): Study protocol for a randomised controlled trial. Trials. 2016;17(1):303. https://doi.org/10.1186/s13063-016-1413-2. PMID: 27350131.

19. Moyer VA; U.S. Preventive Services Task Force. Behavioral counseling interventions to promote a healthful diet and physical activity for cardiovascular disease prevention in adults: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2012 Sep 4;157(5):367-71. https://doi.org/10.7326/0003-4819-157-5-201209040-00486. PMID: 22733153.

20. Pinto BM, Goldstein MG, Ashba J, et al. Randomized controlled trial of physical activity counseling for older primary care patients. Am J Prev Med. 2005;29(4):247-55. https://doi.org/10.1016/j.amepre.2005.06.016. PMID: 16242586.

21. Pinto BM, Goldstein MG, DePue JD, et al. Acceptability and feasibility of physician-based activity counseling. The PAL project. Am J Prev Med. 1998;15(2):95-102. https://doi.org/10.1016/s0749-3797(98)00043-9. PMID: 9713664.

22. Pinto BM, Goldstein MG, Marcus BH. Activity counseling by primary care physicians. Prev Med. 1998;27(4):506-13. https://doi.org/10.1006/pmed.1998.0375. PMID: 9672943. https://www.sciencedirect.com/science/article/abs/pii/S0091743598903358?via%3Dihub

23. Reid H, Smith R, Williamson W, et al. Use of the behaviour change wheel to improve everyday person-centred conversations on physical activity across healthcare. BMC Public Health. 2022 Sept 20;22(1):1784. https://doi.org/10.1186/s12889-022-14178-6. PMID: 36127688.

24. Sabti Z, Handschin M, Kutlar Joss M, et al. Evaluation of a physical activity promotion program in primary care. Fam Pract. 2010;27(3):279-84. https://doi.org/10.1093/fampra/cmq010. PMID: 20332179.

25. Weidinger KA, Lovegreen SL, Elliott MB, et al. How to make exercise counseling more effective: Lessons from rural America. J Fam Pract. 2008;57(6):394-402. https://www.mdedge.com/familymedicine/article/63182/how-make-exercise-counseling-more-effective-lessons-rural-america. PMID: 18544323.

26. Writing Group for the Activity Counseling Trial Research Group. Effects of physical activity counseling in primary care: The Activity Counseling Trial: A randomized controlled trial. JAMA. 2001;286(6):677-87. https://doi.org/10.1001/jama.286.6.677. PMID: 11495617.

9. Physical Activity Prescription

This section includes articles in which health care professionals give patients a physical activity prescription. The definition of prescription is not standardly applied by investigators, resulting in several instances where the physical activity prescription may be more similar to a physical activity referral. Since they use the term "prescription," they are included in this section.

1. Besenyi GM, Hayashi EB, Christiana RW. Prescribing physical activity in parks and nature: Health care provider insights on park prescription programs. J Phys Act Health. 2020(10):958-67. https://doi.org/10.1123/jpah.2019-0479. PMID: 32866945.
2. Calonge-Pascual S, Fuentes-Jiménez F, Casajús Mallén JA. Design and validity of a choice-modeling questionnaire to analyze the feasibility of implementing physical activity on prescription at primary health-care settings. Int J Environ Res Public Health. 2020;17(18):6627. https://doi.org/10.3390/ijerph17186627. PMID: 32932923.
3. Elley CR, Kerse N, Arroll B, et al. Effectiveness of counselling patients on physical activity in general practice: Cluster randomised controlled trial. BMJ. 2003;326(7393):793. https://doi.org/10.1136/bmj.326.7393.793. PMID: 12689976.
4. Hamlin MJ, Yule E, Elliot CA, et al. Long-term effectiveness of the New Zealand Green Prescription primary health care exercise initiative. Public Health. 2016;140:102-8. https://doi.org/10.1016/j.puhe.2016.07.014. PMID: 27569778.
5. Hansen D, Ruiz GR, Doherty P, et al. Do clinicians prescribe exercise similarly in patients with different cardiovascular diseases? Findings from the EAPC EXPERT working group survey. Eur J Prev Cardiol. 2018;25(7):682-91. https://doi.org/10.1177/2047487318760888. PMID: 29486587.
6. James JJ, Christiana RW, Battista RA. A historical and critical analysis of park prescriptions. J Leis Res. 2019;50(4);311-29. https://doi.org/10.1080/00222216.2019.1617647.
7. Kallings LV, Leijon M, Hellénius ML, et al. Physical activity on prescription in primary health care: A follow-up of physical activity level and quality of life. Scand J Med Sci Sports. 2008;18(2):154-61. https://doi.org/10.1111/j.1600-0838.2007.00678.x. PMID: 17555539.
8. Krops LA, Bouma AJ, Van Nassau F, et al. Implementing individually tailored prescription of physical activity in routine clinical care: Protocol of the physician implement exercise = medicine (PIE=M). Development and Implementation Project. JMIR Res Protoc. 2020 Nov; 9(11): e19397. https://doi.org/10.2196/19397. PMID: 33136060.
9. Missud DC, Parot-Schinkel E, Connan L, et al. Physical activity prescription for general practice patients with cardiovascular risk factors-the PEPPER randomized controlled trial protocol. BMC Public Health. 2019;19(1):688. https://doi.org/10.1186/s12889-019-7048-y. PMID: 31159805.
10. Müller-Riemenschneider F, Petrunoff N, Sia A, et al. Prescribing physical activity in parks to improve health and wellbeing: Protocol of the park prescription randomized controlled trial. Int J Environ Res Public Health. 2018;15(6):1154. https://doi.org/10.3390/ijerph15061154. PMID: 30720784.
11. Omura JD, Watson KB, Loustalot F, et al. Types of physical activity recommended by primary care providers for patients at risk for cardiovascular disease. Prev Chronic Dis. 2021;18:200545. http://dx.doi.org/10.5888/pcd18.200545external icon. PMID: 33964123.
12. Onerup A, Arvidsson D, Blomqvist A, et al. Physical activity on prescription in accordance with the Swedish model increases physical activity: A systematic review. Br J Sports Med. 2019;53(6):383-8. https://doi.org/10.1136/bjsports-2018-099598. PMID: 30413421.
13. O'Rega A, Pollock M, D'Sa S, et al. ABC of prescribing exercise as medicine: A narrative review of the experiences of general practitioners and patients. BMJ Open Sport Exerc Med. 2021;7(2):e001050. https://doi.org/10.1136/bmjsem-2021-001050. PMID: 34150320.
14. Persson G, Brorsson A, Ekvall Hansson E, et al. Physical activity on prescription (PAP) from the general practitioner's perspective — A qualitative study. BMC Fam Pract. 2013;14:128. https://doi.org/10.1186/1471-2296-14-128. PMID: 23987804.
15. Pescatello LS, Wu Y, Panza GA, et al. Development of a novel clinical decision support system for exercise prescription among patients with multiple cardiovascular disease risk factors. Mayo Clin Proc Qual Out. 2020; https://doi.org/10.1016/j.mayocpiqo.2020.08.005. (In press).
16. Pescatello LS, Wu Y, Panza GA, et al. Development of a novel clinical decision support system for exercise prescription among patients with multiple cardiovascular disease risk factors. Mayo Clin Proc Qual Out. 2020;5(1):193-203. https://doi.org/10.1016/j.mayocpiqo.2020.08.005. PMID: 33718793.
17. Petrella RJ, Koval JJ, Cunningham DA, et al. Can primary care doctors prescribe exercise to improve fitness? The Step Test Exercise Prescription (STEP) project. Am J Prev Med. 2003;24(4):316-22. https://doi.org/10.1016/s0749-3797(03)00022-9. PMID: 12726869.
18. Smith BJ, Owen AJ, Liew D, et al. Prescription of physical activity in the management of high blood pressure in Australian general practices. J Hum Hypertens. 2019;33(1):50-6. https://doi.org/10.1038/s41371-018-0098-2. PMID: 30181658.

19. Soegtrop R, Douglas-Vail M, Bechamp T, et al. Physical activity prescription by Canadian emergency medicine physicians. Appl Physiol Nutr Metab. 2018;43(8):861-4. https://doi.org/10.1139/apnm-2017-0616. PMID: 29522690.

20. Swinburn BA, Walter LG, Arroll B, et al. The green prescription study: A randomized controlled trial of written exercise advice provided by general practitioners. Am J Public Health. 1998;88(2):288-91. https://doi.org/10.2105/ajph.88.2.288. PMID: 9491025

21. Thornton JS, Frémont P, Khan K, et al. Physical activity prescription: A critical opportunity to address a modifiable risk factor for the prevention and management of chronic disease: A position statement by the Canadian Academy of Sport and Exercise Medicine. Br J Sports Med. 2016;50(18):1109-14. https://doi.org/10.1136/bjsports-2016-096291. PMID: 27335208

10. Physical Activity Referral

This section includes published work involving the referral of patients to various physical activity programs and resources, most commonly in community settings. Some articles in this section use the term "prescription" synonymously with "referral" and are therefore included here. Many of these articles originate from Europe (e.g., the U.K. and Sweden) where referral of patients to physical activity programs is more commonplace.

1. Almeida FA, Smith-Ray R, Van Den Berg R, et al. Utilizing a simple stimulus control strategy to increase physician referrals for physical activity promotion. J Sport Exerc Psychol. 2005; 27(4), 505-14. https://doi.org/10.1123/jsep.27.4.505.

2. Andersen P, Holmberg S, Lendahls L, et al. Physical activity on prescription with counsellor support: A 4-year registry-based study in routine health care in Sweden. Healthcare (Basel). 2018;6(2):34. https://doi.org/10.3390/healthcare6020034. PMID: 29659546.

3. Andersen P, Lendahls L, Holmberg S, et al. Patients' experiences of physical activity on prescription with access to counsellors in routine care: A qualitative study in Sweden. BMC Public Health. 2019;19(1):210. https://doi.org/10.1186/s12889-019-6535-5. PMID: 30786907.

4. Arsenijevic J, Groot W. Physical activity on prescription schemes (PARS): Do programme characteristics influence effectiveness? Results of a systematic review and meta-analyses. BMJ Open. 2017;7(2):e012156. https://doi.org/10.1136/bmjopen-2016-012156. PMID: 28153931.

5. Bird EL, Biddle MSY, Powell JE. General practice referral of 'at risk' populations to community leisure services: Applying the RE-AIM framework to evaluate the impact of a community-based physical activity programme for inactive adults with long-term conditions. BMC Public Health. 2019;19(1):1308. https://doi.org/10.1186/s12889-019-7701-5. PMID: 31623584.

6. Buckley BJR, Finnie SJ, Murphy RC, et al. "You've Got to Pick Your Battles": A mixed-methods investigation of physical activity counselling and referral within general practice. Int J Environ Res Public Health. 2020;17(20):7428. https://doi.org/10.3390/ijerph17207428. PMID: 33053911.

7. Buckley BJR, Thijssen DHJ, Murphy RC, et al. Making a move in exercise referral: Co-development of a physical activity referral scheme. J Public Health (Oxf). 2018;40(4):e586-93. https://doi.org/10.1093/pubmed/fdy072. PMID: 29688551.

8. Campbell F, Holmes M, Everson-Hock E, et al. A systematic review and economic evaluation of exercise referral schemes in primary care: A short report. Health Technol Assess. 2015;19(60):1-110. https://doi.org/10.3310/hta19600. PMID: 26222987.

9. Din NU, Moore GF, Murphy S, et al. Health professionals' perspectives on exercise referral and physical activity promotion in primary care: Findings from a process evaluation of the National Exercise Referral Scheme in Wales. Health Educ J. 2015;74(6):743-757. https://doi.org/10.1177/0017896914559785. PMID: 26527835.

10. Fishleder S, Harris JR, Petrescu-Prahova M, et al. Development and feasibility testing of the clinical-community linkage self-assessment survey for community organizations. Front Public Health. 2022 May;10:797468. https://doi.org/10.3389/fpubh.2022.797468. PMID: 35669755.

11. Freburger JK, Khoja S, Carey TS. Primary care physician referral to physical therapy for musculoskeletal conditions, 2003-2014. J Gen Intern Med. 2018;33(6):801-3. https://doi.org/10.1007/s11606-018-4426-6. PMID: 29623513.

12. Galaviz K, Lévesque L, Kotecha J. Evaluating the effectiveness of a physical activity referral scheme among women. J Prim Care Community Health. 2013;4(3):167-71. https://doi.org/10.1177/2150131912463243. PMID: 23799702.

13. Gallegos-Carrillo K, García-Peña C, Salmerón J, et al. Brief counseling and exercise referral scheme: A pragmatic trial in Mexico. Am J Prev Med. 2017;52(2):249-59. https://doi.org/10.1016/j.amepre.2016.10.021. PMID: 27939238.

14. Gallegos-Carrillo K, García-Peña C, Salmerón J, et al. Exercise-referral scheme to promote physical activity among hypertensive patients: Design of a cluster randomized trial in the primary health care units of Mexico's social security system. BMC Public Health. 2014;14:706. https://doi.org/10.1186/1471-2458-14-706. PMID: 25011612.

15. Gallegos-Carrillo K, Reyes-Morales H, Pelcastre-Villafuerte B, et al. Understanding adherence of hypertensive patients in Mexico to an exercise-referral scheme for increasing physical activity. Health Promot Int. 2021;36(4):952-63. https://doi.org/10.1093/heapro/daaa110. PMID: 33270847.

16. Hanson CL, Oliver EJ, Dodd-Reynolds CJ, et al. How do participant experiences and characteristics influence engagement in exercise referral? A qualitative longitudinal study of a scheme in Northumberland, UK. BMJ Open. 2019;9(2):e024370. https://doi.org/10.1136/bmjopen-2018-024370. PMID: 30787087.

17. Hanson CL, Oliver EJ, Dodd-Reynolds CJ, et al. We are failing to improve the evidence base for 'exercise referral': How a physical activity referral scheme taxonomy can help. Br J Sports Med. 2020;54(12):696-7. https://doi.org/10.1136/bjsports-2019-101485. PMID: 31848153.

18. Henderson HE, Evans AB, Allen-Collinson J, et al. The 'wild and woolly' world of exercise referral schemes: Contested interpretations of an exercise as medicine programme. Qual Res Sport Exerc Health. 2018; 10:4, 505-23. https://doi.org/10.1080/2159676X.2017.1352018.

19. Isaacs AJ, Critchley JA, Tai SS, et al. Exercise Evaluation Randomised Trial (EXERT): A randomised trial comparing GP referral for leisure centre-based exercise, community-based walking and advice only. Health Technol Assess. 2007;11(10):1-165, iii-iv. https://doi.org/10.3310/hta11100. PMID: 17313906.

20. James EL, Ewald B, Johnson N, et al. Efficacy of GP referral of insufficiently active patients for expert physical activity counseling: Protocol for a pragmatic randomized trial (The NewCOACH trial). BMC Fam Pract. 2014;15:218. https://doi.org/10.1186/s12875-014-0218-1. PMID: 25543688.

21. James EL, Ewald BD, Johnson NA, et al. Referral for expert physical activity counseling: A pragmatic RCT. Am J Prev Med. 2017;53(4):490-9. https://doi.org/10.1016/j.amepre.2017.06.016. PMID: 28818417.

22. Leemrijse CJ, de Bakker DH, Ooms L, et al. Collaboration of general practitioners and exercise providers in promotion of physical activity a written survey among general practitioners. BMC Fam Pract. 2015;16:96. https://doi.org/10.1186/s12875-015-0316-8. PMID: 26245953.

23. Leenaars KEF, Smit E, Wagemakers A, et al. Facilitators and barriers in the collaboration between the primary care and the sport sector in order to promote physical activity: A systematic literature review. Prev Med. 2015;81:460-78. https://doi.org/10.1016/j.ypmed.2015.10.010. PMID: 26522091.

24. Leijon ME, Bendtsen P, Nilsen P, et al. Does a physical activity referral scheme improve the physical activity among routine primary health care patients? Scand J Med Sci Sports. 2009;19(5):627-36. https://doi.org/10.1111/j.1600-0838.2008.00820.x. PMID: 18627557.

25. Leijon ME, Faskunger J, Bendtsen P, et al. Who is not adhering to physical activity referrals, and why? Scand J Prim Health Care. 2011;29(4):234-40. https://doi.org/10.3109/02813432.2011.628238. PMID: 22126223.

26. Martín-Borràs C, Giné-Garriga M, Puig-Ribera A, et al. A new model of exercise referral scheme in primary care: Is the effect on adherence to physical activity sustainable in the long term? A 15-month randomised controlled trial. BMJ Open. 2018;8(3):e017211. https://doi.org/10.1136/bmjopen-2017-017211. PMID: 29502081.

27. Morgan F, Battersby A, Weightman AL, et al. Adherence to exercise referral schemes by participants - what do providers and commissioners need to know? A systematic review of barriers and facilitators. BMC Public Health. 2016;16:227. https://doi.org/10.1186/s12889-016-2882-7. PMID: 26944952.

28. Pavey T, Taylor A, Hillsdon M, et al. Levels and predictors of exercise referral scheme uptake and adherence: A systematic review. J Epidemiol Community Health. 2012;66(8):737-44. https://doi.org/10.1136/jech-2011-200354. PMID: 22493474.

29. Pavey TG, Anokye N, Taylor AH, et al. The clinical effectiveness and cost-effectiveness of exercise referral schemes: A systematic review and economic evaluation. Health Technol Assess. 2011;15(44):i-xii, 1-254. https://doi.org/10.3310/hta15440. PMID: 22182828.

30. Pavey TG, Taylor AH, Fox KR, et al. Effect of exercise referral schemes in primary care on physical activity and improving health outcomes: Systematic review and meta-analysis. BMJ. 2011;343:d6462. https://doi.org/10.1136/bmj.d6462. PMID: 22058134.

31. Petrescu-Prahova M, Kohn M, Leroux B, et al. Building community-clinical linkages to increase older adult physical activity: The PT-REFER trial protocol and participant baseline characteristics. Contemp Clin Trials Commun. 2019;15:100373. https://doi.org/10.1016/j.conctc.2019.100373. PMID: 31111115.

32. Petrescu-Prahova M, Harris JR, Leroux B, et al. Clinical-community linkages as a strategy for increasing evidence-based program reach: Results of the PT-REFER randomized controlled trial with older adults and YMCA associations. Contemp Clin Trials Commun. 2022 Jan;26:100888. https://doi.org/10.1016/j.conctc.2022.100888. PMID: 35106400.

33. Portacio FG, Corvalan D, Stoutenberg M. Implementation of a referral scheme to text messaging programs for physical activity and health eating in underserved Hispanics. Transl J ACSM. 2020; 6(1):e000144. https://doi.org/10.1249/TJX.0000000000000144.

34. Rödjer L, H Jonsdottir I, Börjesson M. Physical activity on prescription (PAP): Self-reported physical activity and quality of life in a Swedish primary care population, 2-year follow-up. Scand J Prim Health Care. 2016;34(4):443-52. https://doi.org/10.1080/02813432.2016.1253820. PMID: 27978781.

35. Rowley N, Mann S, Steele J, et al. The effects of exercise referral schemes in the United Kingdom in those with cardiovascular, mental health, and musculoskeletal disorders: A preliminary systematic review. BMC Public Health. 2018;18(1):949. https://doi.org/10.1186/s12889-018-5868-9. PMID: 30068338.

36. Rowley N, Steele J, Wade M, et al. Are exercise referral schemes associated with an increase in physical activity? Observational findings using individual patient data meta-analysis from the national referral database. J Phys Act Health. 2020;17(6):621-31. https://doi.org/10.1123/jpah.2019-0435. PMID: 32396867.

37. Rowley N, Steele J, Mann S, et al. Delivery approaches within exercise referral schemes: A survey of current practice in England. J Phys Act Health. 2021; 1-17. https://doi.org/10.1123/jpah.2020-0388. PMID: 33730692.

38. Shore CB, Hubbard G, Gorely T, et al. Insufficient reporting of factors associated with exercise referral scheme uptake, attendance, and adherence: A systematic review of reviews. J Phys Act Health. 2019;16(8):667-76. https://doi.org/10.1123/jpah.2018-0341. PMID: 31203705.

39. Wade M, Mann S, Copeland RJ, et al. Effect of exercise referral schemes upon health and well-being: Initial observational insights using individual patient data meta-analysis from the National Referral Database. J Epidemiol Community Health. 2020;74(1):32-41. https://doi.org/10.1136/jech-2019-212674. PMID: 31740446.

40. Waterman MR, Wiecha JM, Manne J, et al. Utilization of a free fitness center-based exercise referral program among women with chronic disease risk factors. J Community Health. 2014;39(6):1179-85. https://doi.org/10.1007/s10900-014-9874-2. PMID: 24752958.

11. Integration of Comprehensive Physical Activity Models into Health Systems

This section includes articles on completed work where the entire EIM model (assessment, prescription and referral) have all been integrated into a health system at the same time. While evidence in this area is still somewhat limited, we are hopeful to see more published reports on comprehensive EIM efforts in the near future.

1. Bowen PG, Opoku-Agyeman W, Clay OJ, et al. Promoting physical activity through policy at a single safety-net clinic: A pilot study. Translational J ACSM. 2021;6(2):e000160. https://doi.org/10.1249/TJX.0000000000000160.

2. Galaviz KI, Estabrooks PA, Ulloa EJ, et al. Evaluating the effectiveness of physician counseling to promote physical activity in Mexico: An effectiveness-implementation hybrid study. Transl Behav Med. 2017;7(4):731-40. https://doi.org/10.1007/s13142-017-0524-y. PMID: 28936694.

3. Linke SE, Kallenberg GR, Kronick R, et al. Integrating "Exercise Is Medicine" into primary care workflow: A study protocol. Transl Behav Med. 2021;11(4):921-9. https://doi.org/10.1093/tbm/ibaa088. PMID: 32945881.

4. Porter RR, McClelland P, Ewing A, et al. Design and implementation of a clinic-to-community, physical activity health promotion model for healthcare providers. Prev Med Reports. 2022;26:101697. https://doi.org/10.1016/j.pmedr.2022.101697. PMID: 35111567.

12. Economics of Physical Activity Promotion in Clinic Settings

This section includes articles that analyze the cost effectiveness of either physical activity (in general) or different components of the EIM model (more specifically).

1. Campbell F, Holmes M, Everson-Hock E, et al. A systematic review and economic evaluation of exercise referral schemes in primary care: A short report. Health Technol Assess. 2015;19(60):1-110. https://doi.org/10.3310/hta19600. PMID: 26222987.

2. Carlson SA, Fulton JE, Pratt M, et al. Inadequate physical activity and health care expenditures in the United States. Prog Cardiovasc Dis. 2015; 57(4):315-23. https://doi.org/10.1016/j.pcad.2014.08.002. PMID: 25559060.

3. Chenoweth D, Leutzinger J. The economic cost of physical inactivity and excess weight in American adults. J Phys Act Health. 2006;3(2):148-63. https://doi.org/10.1123/jpah.3.2.148. PMID: 28834464.

4. Costa Santos A, Willumsen J, Meheus F, et al. The cost of inaction on physical inactivity to public health-care systems: A population-attributable fraction analysis. Lancet Glob Health. 2023 Jan;11(1):e32-39. https://doi.org/10.1016/S2214-109X(22)00464-8. PMID: 36480931.

5. Ding D, Lawson KD, Kolbe-Alexander TL, et al. The economic burden of physical inactivity: A global analysis of major non-communicable diseases. Lancet. 2016;388(10051):1311-24. https://doi.org/10.1016/S0140-6736(16)30383-X. PMID: 27475266.

6. Elley R, Kerse N, Arroll B, et al. Cost-effectiveness of physical activity counselling in general practice. N Z Med J. 2004;117(1207):U1216. PMID: 15608809.

7. Garrett S, Elley CR, Rose SB, et al. Are physical activity interventions in primary care and the community cost-effective? A systematic review of the evidence. Br J Gen Pract. 2011;61(584):e125-33. https://doi.org/10.3399/bjgp11X561249. PMID: 21375895.

8. Lin CY, Ball TJ, Gentile NL, et al. Associations between Physical Activity Vital Sign in patients and health care utilization in a health care system, 2018-2020. J Phys Act Health. 2022 Dec 8;20(1):28-34. https://doi.org/10.1123/jpah.2022-0266. PMID: 36493760.

9. Ortolan S, Neunhaeuserer D, Quinto G, et al. Potential cost savings for the healthcare system by physical activity in different chronic diseases: A pilot study in the Veneto Region of Italy. Int J Environ Res Public Health. 2022 Jun 16;19(12):7375. https://doi.org/10.3390/ijerph19127375. PMID: 35742622.

10. Pavey TG, Anokye N, Taylor AH, et al. The clinical effectiveness and cost-effectiveness of exercise referral schemes: A systematic review and economic evaluation. Health Technol Assess. 2011;15(44):i-xii, 1-254. https://doi.org/10.3310/hta15440. PMID: 22182828.

11. Romé A, Persson U, Ekdahl C, et al. Physical activity on prescription (PAP): Costs and consequences of a randomized, controlled trial in primary healthcare. Scand J Prim Health Care. 2009;27(4):216-22. https://doi:10.3109/02813430903438734. PMID: 19929183.

12. Roux L, Pratt M, Tengs TO, et al. Cost effectiveness of community-based physical activity interventions. Am J Prev Med. 2008;35(6):578-88. https://doi.org/10.1016/j.amepre.2008.06.040. PMID: 19000846.

13. Sato M, Du J, Inoue Y, et al. Older adults' physical activity and healthcare costs, 2003-2014. Am J Prev Med. 2020;58(5):e141-8. https://doi.org/10.1016/j.amepre.2019.12.009. PMID: 32067872.

14. Wu S, Cohen D, Shi Y, et al. Economic analysis of physical activity interventions. Am J Prev Med. 2011;40(2):149-58. https://doi.org/10.1016/j.amepre.2010.10.029. PMID: 21238863.

13. Providing Training to Health Professionals and Students

This section includes articles related to providing physical activity education/training for different groups of health care providers. This includes efforts with current trainees (e.g., medical students and residents), as well as continuing education efforts with licensed professionals (e.g., physicians and nurses).

1. Antognoli EL, Seeholzer EL, Gullett H, et al. Primary care resident training for obesity, nutrition, and physical activity counseling: A mixed-methods study. Health Promot Pract. 2017;18(5):672-80. https://doi.org/10.1177/1524839916658025. PMID: 27402722.

2. Asif I, Thornton JS, Carek S, et al. Exercise medicine and physical activity promotion: core curricula for US medical schools, residencies and sports medicine fellowships: Developed by the American Medical Society for Sports Medicine and endorsed by the Canadian Academy of Sport and Exercise Medicine. Br J Sports Med. 2022; 56(7):369-75. https://doi.org/10.1136/bjsports-2021-104819. PMID: 35012931.

3. Brannan M, Bernardotto M, Clarke N, et al. Moving healthcare professionals — A whole system approach to embed physical activity in clinical practice. BMC Med Educ. 2019;19(1):84. https://doi.org/10.1186/s12909-019-1517-y. PMID: 30876426.

4. Cardinal BJ, Park EA, Kim M, et al. If exercise is medicine, where is exercise in medicine? Review of U.S. medical education curricula for physical activity-related content. J Phys Act Health. 2015;12(9):1336-43. https://doi.org/10.1123/jpah.2014-0316. PMID: 25459966.

5. Dacey ML, Kennedy MA, Polak R, et al. Physical activity counseling in medical school education: A systematic review. Med Educ Online. 2014;19:24325. https://doi.org/10.3402/meo.v19.24325. PMID: 25062944.

6. Dirks-Naylor AJ, Griffiths CL, Bush MA. Exercise is medicine: Student pharmacists' perceptions and knowledge of exercise prescription. Adv Physiol Educ. 2018;42(2):289-94. https://doi.org/10.1152/advan.00089.2017. PMID: 29676608.

7. Dunlop M, Murray AD. Major limitations in knowledge of physical activity guidelines among UK medical students revealed: Implications for the undergraduate medical curriculum. Br J Sports Med. 2013;47(11):718-20. https://doi.org/10.1136/bjsports-2012-091891. PMID: 23314886.

8. Falcon A, Vermeesch A, Stoutenberg M, Sampson E, Bender-Stephanski M, Webb W, Woo Y. Inclusion of physical activity in nurse practitioner programs: A national perspective. J Am Assoc Nurse Pract. 2022; 34(5):711-9. https://doi.org/10.1097/JXX.0000000000000699. PMID: 35312654.

9. Fowles JR, O'Brien MW, Solmundson K, et al. Exercise is Medicine Canada physical activity counselling and exercise prescription training improves counselling, prescription, and referral practices among physicians across Canada. Appl Physiol Nutr Metab. 2018;43(5):535-39. https://doi.org/10.1139/apnm-2017-0763. PMID: 29316409.

10. Frank E, Elon L, Hertzberg V. A quantitative assessment of a 4-year intervention that improved patient counseling through improving medical student health. MedGenMed. 2007;9(2):58. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1994883. PMID: 17955112.

11. Frank E, Tong E, Lobelo F, et al. Physical activity levels and counseling practices of U.S. medical students. Med Sci Sports Exerc. 2008;40(3):413-21. https://doi.org/10.1249/MSS.0b013e31815ff399. PMID: 18379201.

12. Garry JP, Diamond JJ, Whitley TW. Physical activity curricula in medical schools. Acad Med. 2002;77(8):818-20. https://doi.org/10.1097/00001888-200208000-00011. PMID: 12176695.

13. Gates AB. Making every contact count for physical activity — for tomorrow's patients: The launch of the interdisciplinary, undergraduate, resources on exercise medicine and health in the UK. Br J Sports Med. 2016;50(6):322-3. https://doi.org/10.1136/bjsports-2015-095489. PMID: 26483443.

14. Goff SL, Holboe ES, Concato J. Pediatricians and physical activity counseling: How does residency prepare them for this task? Teach Learn Med. 2010;22(2):107-11. https://doi.org/10.1080/10401331003656512. PMID: 20614375.

15. Guseman EH, Whipps J, Howe CA, et al. First-year osteopathic medical students' knowledge of and attitudes towards physical activity. J Am Osteopath Assoc. 2018; 118(6):389-95. https://doi.org/10.7556/jaoa.2018.083. PMID: 29809256.

16. Holtz KA, Kokotilo KJ, Fitzgerald BE, et al. Exercise behaviour and attitudes among fourth-year medical students at the University of British Columbia. Can Fam Physician. 2013;59(1):e26-32. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3555675. PMID: 23341676.

17. Kime N, Pringle A, Zwolinsky S, et al. How prepared are healthcare professionals for delivering physical activity guidance to those with diabetes? A formative evaluation. BMC Health Serv Res. 2020;20(1):8. https://doi.org/10.1186/s12913-019-4852-0. PMID: 31900136.

18. Kordi R, Moghadam N, Rostami M. Sports and exercise medicine in undergraduate medical curricula in developing countries: A long path ahead. Med Educ Online. 2011;16. https://doi.org/10.3402/meo.v16i0.5962. PMID: 21350601.

19. Kyei-Frimpong J, Blood-Siegfriend J, Wijetilaka R, et al. Exercise as medicine: Providing practitioner guidance on exercise prescription. Prev Med Rep. 2021;22:101323. https://doi.org/10.1016/j.pmedr.2021.101323. PMID: 33659155.

20. Lianov L, Johnson M. Physician competencies for prescribing lifestyle medicine. JAMA. 2010;304(2):202-3. https://doi.org/10.1001/jama.2010.903. PMID: 20628134.

21. Mealy RN, Richardson LA, Miller B, et al. Exercise is Medicine: Knowledge and awareness among exercise science and medical school students. Int J Exerc Sci. 2019; 12(3):505-14. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6413848. PMID: 30899348.

22. Netherway J, Smith B, Monforte J. Training healthcare professionals on how to promote physical activity in the UK: A scoping review of current trends and future opportunities. Int J Environ Res Public Health. 2021 Jul;18(13):6701. https://doi.org/10.3390/ijerph18136701. PMID: 34206335.

23. Ng V, Irwin JD. Prescriptive medicine: The importance of preparing Canadian medical students to counsel patients toward physical activity. J Phys Act Health. 2013;10(6):889-99. https://doi.org/10.1123/jpah.10.6.889. PMID: 23072743.

24. O'Brien MW, Shields CA, Oh PI, et al. Health care provider confidence and exercise prescription practices of Exercise is Medicine Canada workshop attendees. Appl Physiol Nutr Metab. 2017;42(4):384-390. https://doi.org/10.1139/apnm-2016-0413. PMID: 28177736.

25. O'Brien MW, Shields C, Crowell S, et al. The effects of previous educational training on physical activity counselling and exercise prescription practices among physicians across Nova Scotia: A cross-sectional study. Can Med Educ J. 2018;9(4):e35-45. PMID: 30498542.

26. O'Brien MW, Shields CA, Solmundson K, et al. Exercise is Medicine Canada workshop training improves physical activity practices of physicians across Canada, independent of initial confidence levels. Can Med Educ J. 2020 Sept;11(5):e5-e15. https://doi.org/10.36834/cmej.68376. PMID: 33062086.

27. O'Brien MW, Shields CA, Campbell KL, et al. Perceptions and practices of providing physical activity counselling and exercise prescriptions among physiotherapists in Nova Scotia. Physiotherapy Canada. 2020;72(3):230-8. https://doi.org/10.3138/ptc-2018-0098.

28. O'Donoghue G, Doody C, Cusack T. Physical activity and exercise promotion and prescription in undergraduate physiotherapy education: Content analysis of Irish curricula. Physiotherapy. 2011;97(2):145-53. https://doi.org/10.1016/j.physio.2010.06.006. PMID: 21497249.

29. Osborne SA, Adams JM, Fawkner S, et al. Tomorrow's doctors want more teaching and training on physical activity for health. Br J Sports Med. 2017;51(8):624-5. https://doi.org/10.1136/bjsports-2016-096807. PMID: 27797739.

30. Pojednic R, Stoutenberg M. Key steps to implementing physical activity into health professional training programs. Curr Sports Med Rep. 2020;19(10):396-8. https://doi.org/10.1249/JSR.0000000000000756. PMID: 33031203.

31. Recker AJ, Sugimoto SF, Halvorson EE, et al. Knowledge and habits of exercise in medical students. Am J Lifestyle Med. 2020; 15(3):214-9. https://doi.org/10.1177/1559827620963884. PMID: 34025308.

32. Stanford FC, Durkin MW, Stallworth JR, et al. Factors that influence physicians' and medical students' confidence in counseling patients about physical activity. J Prim Prev. 2014;35(3):193-201. https://doi.org/10.1007/s10935-014-0345-4. PMID: 24682887.

33. Stoutenberg M, Powell BJ, Busignani PJ, et al. Identifying key physical activity categories and topics to include in health professional training programs. Teach Learn Med. 2020;32(4):362-70. https://doi.org/10.1080/10401334.2020.1730183. PMID: 32107937.

34. Stoutenberg M, Stasi S, Stamatakis E, et al. Physical activity training in US medical schools: Preparing future physicians to engage in primary prevention. Phys Sportsmed. 2015;43(4):388-94. https://doi.org/10.1080/00913847.2015.1084868. PMID: 26365470.

35. Strong A, Stoutenberg M, Hobson-Powell A, et al. An evaluation of physical activity training in Australian medical school curricula. J Sci Med Sport. 2017;20(6):534-8. https://doi.org/10.1016/j.jsams.2016.10.011. PMID: 28209318.

36. The Bipartisan Policy Center, American College of Sports Medicine, Alliance for a Healthier Generation. Teaching nutrition and physical activity in medical school: Training doctors for prevention-oriented Care. Washington, DC: Bipartisan Policy Center Nutrition and Physical Activity Initiative; June 2014. https://bipartisanpolicy.org/wp-content/uploads/2019/03/Med_Ed_Report.pdf.

37. Thornton J, Khan K, Weiler R, et al. Are family medicine residents trained to counsel patients on physical activity? The Canadian experience and a call to action. Postgrad Med J. 2021. https://doi.org/10.1136/postgradmedj-2021-140829. PMID:34588292.

38. Tovar G, Ladino Marín EV. Physical activity and nutrition in medical education. Revista de Nutrición Clínica y Metabolismo. 2019;2(2):37-43. https://doi.org/10.35454/rncm.v2n2.005.

39. Tovar G, López G, Ibáñez M, et al. Institutionalized physical activity curriculum benefits of medical students in Colombia. Educ Health. 2016;29:203-9. https://doi.org/10.4103/1357-6283.204212. PMID: 28406104.

40. Trilk J, Nelson L, Briggs A, et al. Including lifestyle medicine in medical education: Rationale for American College of Preventive Medicine/American Medical Association Resolution 959. Am J Prev Med. 2019;56(5):e169-75. https://doi.org/10.1016/j.amepre.2018.10.034. Erratum in: Am J Prev Med. 2019 Jul;57(1):134. PMID: 31003604.

41. Trilk JL, Phillips EM. Incorporating 'Exercise is Medicine' into the University of South Carolina School of Medicine Greenville and Greenville Health System. Br J Sports Med. 2014;48(3):165-7. https://doi.org/10.1136/bjsports-2013-093157. PMID: 24311603.

42. Wattanapisit A, Petchuay P, Wattanapisit S, et al. Developing a training programme in physical activity counselling for undergraduate medical curricula: A nationwide Delphi study. BMJ Open. 2019;9(8):e030425. https://doi.org/10.1136/bmjopen-2019-030425. PMID: 31481372.

43. Wattanapisit A, Nongkhai MPN, Hemarachatanon P, et al. What elements of sport and exercise science should primary care physicians learn? An interdisciplinary discussion. Front Med (Lausanne). 2021;8:704403. https://doi.org/10.3389/fmed.2021.704403. PMID: 34422861.

44. Weiler R, Chew S, Coombs N, et al. Physical activity education in the undergraduate curricula of all UK medical schools: Are tomorrow's doctors equipped to follow clinical guidelines? Br J Sports Med. 2012;46(14):1024-6. https://doi.org/10.1136/bjsports-2012-091380. PMID: 22846233.

14. EIM On Campus

This section includes published work related to the implementation, barriers, adaptation and successes of different campuses that have chosen to adopt the EIM on Campus program.

1. Bachmeier EE, Garst B, Pingel MJ, et al. Effectiveness of an Exercise is Medicine-On Campus virtual program on perceived stress levels of faculty and staff. J Phys Act Res. 2021; 6(1):59-84.

2. Biber DD, Knoll C. Exercise is Medicine on Campus®: A pilot study. Recr Sports J. 2020; 44(2):149-57. https://doi.org/10.1177/1558866120964815.

3. Bopp M, Bopp CM, Duffey RG, et al. Implementation and evaluation of an Exercise is Medicine™ on Campus week. Eval Program Planning. 2015; 52:176-81. https://doi.org/10.1016/j.evalprogplan.2015.06.003. PMID: 26099563.

4. Lagally KM, Sherman J, Amorose AJ, et al. Exercise is Medicine on Campus programs: A descriptive study. Recreational Sports Journal. 2019; 43(2): 106-16. https://doi.org/10.1177/1558866119889898.

5. Leininger LJ, Morrissey JL, DeBeliso M, Adams KJ. Exercise is Medicine® on Campus: Effectiveness of an employee circuit training class. J Phys Act Res. 2020; 5(1):45-8. https://doi.org/10.12691/jpar-5-1-9.

6. Gastelum-Morales M, Leininger LJ, Morrissey JL et al. Evaluation of physical activity participation, self-efficacy and outcome expectancy for employees participating in Exercise Is Medicine® On Campus program. Am J Undergrad Res. 2021; 17(4), 41-8. https://doi.org/10.33697/ajur.2020.034.

7. Kratzke C, DeLeon O, Rao S. Practice-based teaching model for undergraduate public health students: Partnerships for Exercise is Medicine on Campus initiative. Pedagogy Health Promot. 2021; 7(3):242-248. https://doi.org/10.1177%2F2373379920935460.

8. McEachern BM, Jackson J, Yungblut S, et al. Barriers and facilitators to implementing Exercise is Medicine Canada On Campus groups. Health Promot Pract. 2019; 20(5), 751-9. https://doi.org/10.1177/1524839919830923. PMID: 30786774.

9. Melton B, Williamson JA, Bland H, et al. Using the Exercise is Medicine® on Campus platform to assess college students' practice of physical activity in a rural setting. J Ga Public Health Assoc. 2016; 5(4), 360-4. https://www.gapha.org/wp-content/uploads/2016/06/10-5.402-Using-the-Exercise-is-Medicine.pdf.

10. Stanford K, Pomeroy A, Bates LC, et al. Exercise is Medicine on Campus during COVID-19: Necessary adaptations and continuing importance. Trans J ACSM. 2020; 5(12). e000157. https://journals.lww.com/acsm-tj/Fulltext/2020/10150/Exercise_Is_Medicine__on_Campus_during_COVID_19_.7.aspx

11. Wilson OWA, Bhuiyan N, Papalia Z, et al. The implementation and outcomes of Exercise Is Medicine on Campus. Transl Journal ACSM. 2018; 3(20):158-68. https://doi.org/10.1249/TJX.0000000000000071.

12. Winters C, Sallis RE. Five steps to launching Exercise is Medicine® on your campus. ACSM's Health & Fitness Journal. 2015; 19(4):28-33. https://doi.org/10.1249/FIT.0000000000000135.