Physical Inactivity: Recommendation, Rationale, and Supplemental References

Recommendation

The Canadian Physical Activity Guidelines (Canadian Society for Exercise Physiology, 2011) provide information to both reduce the harms related to physical inactivity and raise awareness of the increasing health benefits associated with more physical activity. Alberta Health Services* promotes the adoption of these Guidelines as a resource to help promote physical activity.

*Canadian Physical Activity Guidelines***

1. Adults ages 18-64 should accumulate at least 150 minutes of moderate to vigorous-intensity aerobic physical activity per week, in increments of 10 minutes or more

2. To achieve health benefits and improve functional abilities adults aged 65 years and older should accumulate at least 150 minutes of moderate to vigorous intensity aerobic physical activity per week, in bouts of 10 minutes or more

3. It is beneficial to add muscle and bone strengthening activities using major muscle groups, at least two days per week

4. More physical activity provides greater health benefits.

5. For adults 65 years and older with poor mobility, perform physical activities to enhance balance and prevent falls.

* Access at: https://www.albertahealthservices.ca/info/Page15412.aspx
** Canadian Society for Exercise Physiology, 2011. Access at: http://www.nrcresearchpress.com/doi/pdfplus/10.1139/H11-009

Rationale for the Inclusion of Physical Inactivity in ASaP+

Impact of Physical Inactivity on Cancer and Other Chronic Diseases

- Physical inactivity is an important risk factor for the development of certain types of cancer (2018 Physical Activity Guidelines Advisory Committee, 2018; Patel, et al., 2019; World Cancer Research Fund network, 2018; Friedenreich, et al., 2019) (i.e., colon, breast, endometrial, kidney, bladder, esophageal, and stomach) and other chronic diseases (i.e., coronary heart disease, type 2 diabetes, osteoporosis and dementia) (2018 Physical Activity Guidelines Advisory Committee; Lee, et al., 2012; Livingston, et al., 2017)
- In 2015 in Alberta, 994 new cancer cases were due to a lack of physical activity (Brenner, et al., 2019; Poirier, et al., 2019)[1]
- Nine percent of new cancers diagnosed in Alberta in 2015 were due to a lack of physical activity (Brenner, et al., 2019; Poirier, et al., 2019)[1]
- Canadian Physical Activity Guidelines (Canadian Society for Exercise Physiology, 2011) are supported by scientific evidence (Warburton, et al., 2010) to reduce chronic diseases including cancer
- Leisure-time physical activity is associated with lower risks of many cancer types (Moore, et al., 2016); this finding has broad generalization across
- Some physical activity is better than no activity (Ekelund et al., 2019) and as little as 15 mins/day reduces mortality (Wen, et al., 2011)
- Recent evidence supports the importance of light physical activity in reducing the incidence of CVD in older women (LaCroix et al., 2019)
- High versus low adherence to established U.S. nutrition and physical activity cancer prevention guidelines (Kushi, et al., 2012) is consistently and significantly associated with decreases of 10-61% in overall cancer incidence and mortality (Kohler, et al., 2016).

Over the past decade new epidemiological data has strengthened the evidence of the significant role physical activity plays in cancer prevention (Patel, et al., 2019). At the 2008 American College of Sports Medicine Roundtable there was strong evidence of physical activity in preventing colon and breast cancers, and now there is strong evidence for 5 additional cancers (Table 1). Greater amounts of physical activity are associated with a lower risk of 7 cancers (Strong level of evidence).

[1] All data provided by the ComPARe Study (prevent.cancer.ca)

Table 1: 2008 versus 2018 level of evidence (LOE) linking physical activity with lower risk of cancer
(Physical Activity Guidelines for Americans Advisory Committee, as cited in Patel et al., 2019)

Cancer	2008 LOE	2018 LOE
Bladder	--	Strong
Colon	Strong	Strong
Breast	Strong	Strong
Endometrial	Limited	Strong
Kidney	--	Strong
Esophageal	--	Strong
Stomach	--	Strong
Lung	Limited	Moderate

Screening, Brief Intervention and Referral

- Evidence supports the recommendation to individualize the decision to offer or refer patients to behavioural counseling to promote a healthy diet and physical activity in adults without known CVD risk factors (Lobelo, et al., 2018; Patnode, et al., 2017) (Grade C Recommendation, US Preventive Services Task Force, 2017) (See Appendix A)
- Individuals who are interested and ready to make behavioural changes may be most likely to benefit from behavioural counseling (U.S. Preventive Services Task Force, 2017)
- Behavioural counseling interventions provide "consistent modest benefits across a variety of important intermediate health outcomes across 6 to 12 months, including blood pressure, low-density lipoprotein and total cholesterol levels, and adiposity with evidence of a dose-response effect" (U.S. Preventive Services Task Force, 2017)

Supplemental References

Several reviews and reports related to the health effects of physical inactivity have been developed by International bodies. The highlights below are provided as additional information.

1. National Institute for Health and Care Excellence (NICE). (2013, May 29). *Physical activity: brief advice for adults in primary care. Public health guideline [PH44].* Retrieved from National Institute for Health and Care Excellence (NICE): https://www.nice.org.uk/guidance/ph44/resources/physical-activity-brief-advice-for-adults-in-primary-care-1996357939909 (National Institute for Health and Care Excellence (NICE), 2013)

- Adults aged 19 and over should aim to be active daily
- Over a week, this should add up to at least 150 minutes of moderate intensity aerobic physical activity per week, in increments of 10 minutes or more
- To achieve health benefits, and improve functional abilities, adults aged 65 years and older should accumulate at least 150 minutes of moderate to vigorous intensity aerobic physical activity per week, in bouts of 10 minutes or more
- It is beneficial to add muscle and bone strengthening activities using major muscle groups, at least two days per week
- Adults should minimize the amount of time spent being sedentary (sitting) for extended periods
- Some activity is better than no activity

2. Kushi, L. H., Doyle, C., McCullough, M., Rock, C. L., Demark-Wahnefried, W., Bandera, E. V., . . . Gansler, T. (2012). American Cancer Society Guidelines on nutrition and physical activity for cancer prevention: reducing the risk of cancer with healthy food choices and physical activity. *CA: A Cancer Journal for Clinicians*, 30-67. Retrieved from https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention.html (Kushi, et al., 2012)
   - Adults should engage in at least 150 minutes of moderate intensity or 75 minutes of vigorous intensity activity each week, or an equivalent combination, preferably spread throughout the week
   - Limit sedentary behaviour such as sitting, lying down, watching television, or other forms of screen-based entertainment
   - Doing some physical activity above usual activities, no matter what one's level of activity, can have many health benefits

3. World Cancer Research Fund network. (2018). *Diet, nutrition, physical activity and cancer: A global perspective.* World Cancer Research Fund International. Retrieved from https://www.wcrf.org/dietandcancer/recommendations/be-physically-active (World Cancer Research Fund network, 2018)
   - Be moderately physically active, equivalent to brisk walking for at least 30 minutes every day
   - As fitness improves, aim for 60 minutes or more of moderate, or for 30 minutes or more of vigorous, physical activity every day
   - Limit sedentary habits such as watching television

4. U.S. Preventive Services Task Force. (2017). Behavioral Counseling to Promote a Healthful Diet and Physical Activity for Cardiovascular Disease Prevention in Adults Without Known Cardiovascular Disease Risk Factors. US Preventive Services Task Force Recommendation Statement. *JAMA*, 167-174. Retrieved from https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/healthful-diet-and-physical-activity-for-cardiovascular-disease-prevention-in-adults-without-known-risk-factors-behavioral-counseling (U.S. Preventive Services Task Force, 2017)

- Primary care professionals should individualize the offer or refer adults without obesity who do not have hypertension, dyslipidemia, abnormal blood glucose levels, or diabetes to behavioural counseling to promote a healthful diet and physical activity (Grade C Recommendation)
- Behavioural counseling interventions that target improved diet and increased physical activity for cardiovascular disease prevention result in improvements in healthful behaviours including increased fruit and vegetable consumption, total daily caloric intake, salt intake, and physical activity levels

5. Orrow, G., Kinmonth, A., Sanderson, S., & Sutton, S. (2011). Effectiveness of physical activity promotion based in primary care: systematic review and meta-analysis of randomized controlled trials. *British Medical Journal*, e1389. (Orrow, Kinmonth, Sanderson, & Sutton, 2011)
   - Several interventions for improving physical activity in sedentary adults have been shown to be effective in primary care:
     - Written materials and 2 or more sessions of physical activity advice or counselling, delivered face-to-face
     - Written exercise prescriptions and supplementary advice or counselling by telephone
     - Exercise prescription has demonstrated effectiveness; using pedometers as part of exercise may have additional benefits

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Appendix A: **US Preventive Services Task Force (USPSTF) Grades and Levels of Certainty**

The USPSTF is an independent panel of experts in primary care, prevention, and research methods that develops evidence-based recommendations about services offered in the primary care setting, including screening and behavioral counselling, to guide the delivery of clinical preventive services. The recommendations are based on a review and assessment of peer-reviewed evidence. Letter grades are assigned to each reocmmendation statement, and the grades are based on the strength of the evidence of the harms and benefits of a specific preventive service (U.S. Preventive Services Task Force, 2020).

https://www.uspreventiveservicestaskforce.org/Page/Name/current-processes-refining-evidence-based-recommendation-development

(U.S. Preventive Services Task Force, 2017)**.** Access at: https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/healthful-diet-and-physical-activity-for-cardiovascular-disease-prevention-in-adults-without-known-risk-factors-behavioral-counseling

What the USPSTF Grades Mean and Suggestions for Practice

Grade	Definition	Suggestions for Practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer or provide this service.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate, or there is moderate certainty that the net benefit is moderate to substantial.	Offer or provide this service.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer or provide this service for selected patients depending on individual circumstances.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.	Read the Clinical Considerations section of the USPSTF Recommendation Statement. If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

USPSTF Levels of Certainty Regarding Net Benefit

Level of Certainty	Description
High	The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies.
Moderate	The available evidence is sufficient to determine the effects of the preventive service on health outcomes, but confidence in the estimate is constrained by such factors as the number, size, or quality of individual studies. inconsistency of findings across individual studies. limited generalizability of findings to routine primary care practice. lack of coherence in the chain of evidence. As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion.
Low	The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of the limited number or size of studies. important flaws in study design or methods. inconsistency of findings across individual studies. gaps in the chain of evidence. findings not generalizable to routine primary care practice. lack of information on important health outcomes. More information may allow estimation of effects on health outcomes.
The USPSTF defines certainty as "likelihood that the USPSTF assessment of the net benefit of a preventive service is correct." The net benefit is defined as benefit minus harm of the preventive service as implemented in a general, primary care population. The USPSTF assigns a certainty level based on the nature of the overall evidence available to assess the net benefit of a preventive service.	