

# Physical Activity Counseling in Primary Care: Insights From Public Health and Behavioral Economics

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**ABSTRACT:** Physical inactivity has reached epidemic proportions in modern society. Abundant evidence points to a causal link between physical inactivity and increased risk for numerous noncommunicable diseases, such as some types of cancer and heart disease, as well as premature mortality. Yet, despite this overwhelming evidence, many individuals do not meet the recommended amount of physical activity required to achieve maximum health benefits. Because primary care physicians' advice is highly regarded, clinicians have the unique opportunity to play an important role in enabling patients to modify their behavior at the point of care with the goal of guiding patients to adopt and maintain an active lifestyle. In the current study, the authors evaluate pertinent literature from the fields of medicine/public health and economics/psychology to suggest a comprehensive approach to physical activity counseling at the primary care level. They first examine the public health approach to physical activity counseling, and then proceed to offer insights from behavioral economics, an emerging field that combines principles from psychology and economics. The application of key behavioral economics tools (eg, precommitment contracts, framing) to physical activity counseling in primary care is elaborated. *CA Cancer J Clin* 2017;00:000-000. © 2017 American Cancer Society.

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## Introduction

Evidence for the beneficial effects of a physically active lifestyle has been known since the 1950s and has been summarized into recommendations with the 1996 Surgeon General's Report on Physical Activity and Health, the 2008 Physical Activity Guidelines for Americans, the Surgeon General's Call for Action to Promote Walking and Walkable Communities (2015), and the National Physical Activity Plan.<sup>1-6</sup> Initial evidence was offered in a seminal study by Morris et al (1953) that found the incidence of coronary heart disease was markedly lower among active conductors on double-decker buses in London compared with the bus drivers, who had a sedentary occupation.<sup>7-9</sup> Since then, abundant evidence has accumulated linking physical inactivity to increased risk, not only for coronary heart disease but also for numerous other chronic conditions, such as some types of cancer, type 2 diabetes, metabolic syndrome, stroke, and depression.<sup>3,10,11</sup> In fact, Lee et al, in an analysis of burden of disease worldwide, estimated that insufficient physical activity increases the risk for coronary heart disease by 33%, for type 2 diabetes by 20%, and for breast and colon cancer by 33% and 32%, respectively.<sup>10</sup> In addition, Moore et al, examining prospective pooled data on 1.44 million adults, found that high levels of leisure time physical activity were associated with lower risk of incurring 13 types of cancer, such as 17% and 13% risk reductions for myeloma and rectal cancer, respectively.<sup>11</sup> Moreover, among cancer survivors, physical activity has been associated with improved survival and a positive impact on their physical function, fatigue, depression, and quality of life.<sup>12,13</sup>

Despite this evidence, physical inactivity has become nearly ubiquitous, with an estimated 31% of the world not meeting the recommended levels of physical activity.<sup>1</sup> In the United States, 51% of adults do not meet aerobic physical activity guidelines (based on self-report), and approximately 96.5% of adults ages 20 to 59 years do not meet guidelines based on objective measurement (ie, accelerometry).<sup>14,15</sup> Numerous strategies have been attempted to increase physical activity levels as a means of combating chronic disease; however, unlike the public health success of tobacco control in the United States,<sup>8</sup> physical activity rates have declined, particularly with regard to transportation, occupational, and household-related activity.<sup>1,16</sup> Leisure time physical activity, however, has remained relatively constant. To combat physical inactivity, an important avenue for research and practice has been physical activity promotion through primary care. Because primary care physicians' advice is highly regarded, they have the opportunity to motivate patients to change their behavior during physician-patient encounters, which are frequent.<sup>17,18</sup> Specifically, 83% of adults and 92.4% of children had contact with health care professionals in 2014,<sup>19</sup> yet numerous challenges affect clinicians' ability to provide physical activity counseling to their patients. Impediments include lack of training on the topic of physical activity counseling, lack of time during the clinical encounter, competing tasks and priorities, and insufficient organizational support and financial incentives to provide counseling.<sup>17,18,20</sup>

Although the field of public health offers several strategies and frameworks to facilitate lifestyle counseling for patients in primary care,<sup>21</sup> the primary focus is on cognitive behavioral approaches to changing behavior, following the belief that patients' decision making is guided by conscious factors. The field of behavioral economics (the integration of psychology and economics)<sup>22</sup> has the potential to complement the public health perspective by acknowledging that decision making is influenced by both conscious and unconscious factors that affect choices. Moreover, behavioral economics allows for a closer assessment of the decision-making process that underlies observed individual physical activity levels. This assessment could potentially lead to a clearer understanding of the barriers that impede the decision to become more physically active and, in many cases, gives rise to tools that may be used to help overcome those barriers.<sup>23</sup> It should be noted, however, that, although paradigms from public health have been used consistently to promote physical activity (with mixed success), the application of behavioral economics to the field of physical activity, although promising, is preliminary, and the evidence is accumulating.<sup>24-26</sup> Nonetheless, behavioral economics can offer insight not only into identifying barriers

in the decision-making process but also into leveraging a more in-depth understanding of this process to aid in promoting physical activity. In the current study, we summarize pertinent literature from the fields of medicine/public health and economics/psychology to bring an integrated approach to physical activity counseling in primary care. We first examine the public health approach to physical activity counseling, and then proceed to offer insights from behavioral economics relevant to modifying lifestyle behavior. We conclude by presenting a practical approach to physical activity counseling that integrates both approaches into the realities of primary care. This integrated approach warrants empirical examination in future research.

## Physical Activity and Public Health

The evidence on the detrimental health effects of insufficient physical activity has accumulated over the past several decades and has culminated in guidelines underlining the importance of adults engaging in at least 150 minutes of moderate intensity physical activity and/or 75 minutes of vigorous intensity activity per week, or an equivalent combination.<sup>3</sup> These guidelines also indicate that children and adolescents should engage in at least 60 minutes each day of moderate to vigorous intensity physical activity. Meeting physical activity guidelines is essential to promote health. Booth et al indicate that, from an evolutionary perspective, the human genome has been programmed to be physically active, and deviating from an active lifestyle has led to the rise of chronic diseases.<sup>27</sup> Although hunter-gatherers spent most of the day moving about just to provide food and shelter, in modern society, physical activity is not as necessary.<sup>27,28</sup> This stems from a modern society that has "engineered" physical activity out of our daily lives because of increased automation at home and on the job.<sup>29</sup> In fact, when individuals aim to reintegrate activity into their daily routines, they encounter impediments on multiple levels. That is, there are barriers on the individual (eg, lack of time), social (eg, social support), environmental (eg, exercise facilities), and policy levels (eg, land use policies).<sup>30</sup> Intervention programs aimed at increasing the adoption and maintenance of physical activity have traditionally focused on the individual level, with mixed success.<sup>31</sup> To this end, the Guide to Community Preventive Services also recommends interventions that focus on enhancing the physical environment (eg, connectivity of sidewalks) to be conducive to an active lifestyle.<sup>32</sup> Policy and legislative changes (eg, physical education requirements) have also been suggested as effective approaches to promote physical activity.<sup>33</sup>

## Physical Activity Counseling in Primary Care

The physician-patient encounter is an important opportunity for lifestyle counseling as a preventive medicine measure.<sup>17,34</sup> Several randomized controlled trials have examined the impact of primary care providers' lifestyle counseling on their patients' physical activity habits and health outcomes. For example, the PACE + (Patient-Centered Assessment and Counseling on Exercise plus Nutrition) study found that primary care-based physical activity counseling (either over the phone or by mail) is a feasible means for increasing self-reported physical activity over the short term (4-month period) among adults.<sup>35</sup> The Green Prescription Program, in which providers delivered physical activity counseling to their inactive patients during regular visits, found that leisure time physical activity increased by 9.7% among patients in the intervention group compared with the control group.<sup>36</sup> Although the intervention was efficacious over a 12-month period in increasing both reported physical activity and quality of life, it did not affect patients' blood pressure or cardiovascular risk. Other interventions were not as fruitful, such as a study by Hillsdon et al, which found that advice to increase physical activity did not significantly increase study participants' energy expenditure over the follow up period.<sup>37</sup>

In fact, the US Preventive Services Task Force (USPSTF) states that based on the current evidence, providing patients (without prevalent chronic diseases) with behavioral counseling pertaining to increased physical activity in primary care will only result in a small benefit resulting in an evidence level of "C."<sup>38</sup> However, there is a higher level of evidence (level "B") regarding the benefits of providing physical activity counseling (as well as dietary counseling) to patients with cardiovascular disease risk factors, obesity, and abnormal glucose levels.<sup>39,40</sup> It should be noted that, as of 2016, the Patient Protection and Affordable Care Act requires coverage of USPSTF A-rated and B-rated preventive services with no cost sharing for eligible patients in nongrandfathered private plans, marketplace (exchange) plans, and expanded Medicaid.<sup>41-43</sup> In addition, Medicare Part B covers obesity screening and counseling without cost sharing for patients with a body mass index of 30 kg/m<sup>2</sup> and above.<sup>44</sup>

Several organizations suggest incorporating physical activity counseling into primary care, irrespective of the existence of a chronic condition, because of the overwhelming evidence on the health benefits of physical activity, rather than the effectiveness of physical activity counseling by clinicians.<sup>3,20</sup> The American College of Sports Medicine, in collaboration with The American Medical Association, has initiated Exercise is Medicine,<sup>45</sup> emphasizing that physical inactivity should be considered a "vital sign" in

primary care; that is, physical activity should be assessed in the clinic alongside other clinical measures, such as blood pressure and weight status.<sup>45,46</sup> Hence, clinicians should routinely assess physical activity in primary care and prescribe physical activity to reduce the incidence of chronic disease and/or as a way to manage chronic conditions (eg, type 2 diabetes) and weight maintenance.<sup>45</sup> Similarly, in the United Kingdom, the National Institute for Health and Care Excellence (NICE), recommends that primary care providers identify patients who are not sufficiently active and subsequently provide physical activity counseling.<sup>47</sup> In addition, the Healthy People 2020 objectives include a goal of increasing the number of physician visits where physical activity counseling is provided to all patients and also to those who are diagnosed with a chronic condition (eg, diabetes).<sup>48</sup>

Moreover, there have been calls in leading medical journals (eg, JAMA) to incorporate physical activity counseling in primary care as a preventive medicine measure.<sup>49,50</sup> They suggest that, based on accumulating evidence, merely advising patients to engage in physical activity is not sufficient to facilitate behavior change.<sup>21,34</sup> The 5A framework (assess, advise, agree, assist, arrange) has been suggested as an effective way to encourage patients to adopt physical activity. Specifically, Estabrooks et al suggest that patients' levels of activity should be *assessed* in the waiting room by clinic staff.<sup>21</sup> This should be followed by the clinician *advising* the patient on the recommended amount, type, and intensity of the activity. Linking this physical activity advice to recent laboratory reports indicating the patients' risk for disease has been suggested, although this suggestion warrants further investigation.<sup>21</sup> Furthermore, the patients' readiness to change (eg, stages of change) should be determined and a plan should be tailored to this his/her stage of change.<sup>51</sup> After this stage, both patient and clinician should *agree* upon an action plan and set attainable activity goals tailored to the patient. The *assist* phase includes identifying impediments to adopting the activity plan and addressing barriers on the personal (eg, lack of time), social (eg, assisting with social support), and community levels (eg, community opportunities for physical activity).<sup>21,30</sup> The final stage of the 5A framework includes arranging follow-up visits and reminders with the ultimate goal of increasing adherence to the physical activity program.

The success of the Green Prescription program (previously described)<sup>36</sup> likely stems from the finding that many of the components of the 5A model were an integral part of the intervention.<sup>21</sup> For example, after the patients received the physical activity prescription, they discussed the plan with a primary care professional and jointly agreed on goals.<sup>36</sup> In addition, a copy of the activity plan was sent to a

local sports organization that followed up with patients to encourage them to adhere to their program.<sup>36</sup> However, when attempting to implement the 5A approach in the context of a busy clinical setting, clinicians encountered some challenges, such as lack of time.<sup>52</sup> More broadly, outside of the context of a clinical trial, physicians encounter numerous impediments when attempting to provide physical activity counseling. Barriers may include insufficient time during the patient-physician encounter, insufficient training in the field of physical activity, insufficient knowledge on how to counsel effectively, lack of perceived effectiveness of their counseling, organizational barriers, insufficient counseling protocols, and lack of reimbursement.<sup>18,20</sup> Furthermore, research from the communication and linguistics literature suggests that individuals tend to resist (even well intended) advice from the advice giver (eg, clinician), because it is deemed as asymmetrical and paternalistic in nature.<sup>53-55</sup> Finally, clinicians who are inactive themselves are less likely to provide physical activity counseling than their active counterparts.<sup>20</sup>

Indeed, national data from the United States and Canada indicate that clinicians are insufficiently providing physical activity counseling. In the United States, only 32.4% of patients seen by a clinician in 2010 received physical activity counseling that year.<sup>56</sup> The prevalence of physical activity counseling was higher for patients with chronic conditions or their risk factors. For example, 56.3% of diabetic patients received counseling, whereas 46.9% of obese patients were counseled on increasing activity.<sup>56</sup> In addition, a large Canadian study examined the physical activity counseling habits of over 13,000 physicians. Although they found that 85.2% of clinicians asked their patients about their physical activity habits, only 26.2% assessed their activity during a physical examination or fitness test, and a mere 10.9% referend their patients to others for additional assessments.<sup>34</sup> Thus although physical activity counseling is perceived to be important to clinicians,<sup>20</sup> few provide comprehensive counseling to their patients.

### Physical Activity and Behavioral Economics

Although the public health viewpoint focuses on identification of actions that should be taken to reduce morbidity and increase longevity, the economic perspective focuses on the allocation of scarce resources to maximize welfare, of which health is only one potential component.<sup>57</sup> From an economic perspective, the decision to engage in physical activity can be viewed as a decision involving an intertemporal trade-off between current costs (eg, time and energy expenditure) and future benefits (eg, improved health).<sup>58,59</sup> Physical activity can be regarded as an investment in health.

Thus physical activity is an important component of the production of health, which is consistent with Becker's seminal economic theory of investment in human capital and Grossman's adaptation of this model to health.<sup>57,59-62</sup> These early traditional economic models assumed that individuals were rational decision makers, that individuals had consistent preferences over time, and that they made decisions to maximize their utility while having high computational abilities and possessing complete information to facilitate decision making.<sup>22</sup> More recently, behavioral economists have expanded these early models by acknowledging that many of these assumptions are not always true. In particular, individuals frequently make inconsistent decisions overtime (eg, "New Year's resolutions"), and rationality is bounded, because humans have cognitive limitations and limited time to make decisions, which often leads to choices that are not always in their long-term self-interest.<sup>22,63-65</sup>

The intertemporal trade-off between the costs and benefits of physical activity is a primary area of focus for behavioral economists interested in understanding the decision to engage in physical activity. Individuals who are willing to "pay" the immediate costs of physical activity to obtain health in the future are regarded as having patient time preferences. Having patient time preferences, reflective of the ability to delay immediate gratification, has been associated in the literature with higher education and income, more financial savings for retirement, better preventive health behaviors (eg, exercising, healthful eating, and not smoking), and improved health outcomes (eg, normal weight status).<sup>58,65-67</sup> In general, most individuals possess impatient time preferences, but the degree of patience varies across individuals. It should be noted, that there is an inherent complexity when weighing the intertemporal costs and benefits associated with physical activity. Some immediate costs of physical activity are salient and certain (eg, "I will sweat and tire!"), but other costs occur with uncertain probability, such as the likelihood of exercise induced injury, which is often unknown. By comparison, the health benefits of physical activity are almost always probabilistic and documented in the literature (eg, improved mental health).<sup>3,68</sup> Furthermore, the decision to engage in physical activity has been associated with risk preferences.<sup>69</sup> As with time preferences, individuals vary in the degree to which they avoid (or seek out) risk, and their ability to accurately assess risk. Individuals who have a greater degree of tolerance for risk have been found to be more likely to engage in physical activity.<sup>69</sup>

In summary, behavioral economists have identified some predictable decision biases, which, once identified, may be leveraged to facilitate choices that will be beneficial instead of detrimental.<sup>70,71</sup>

TABLE 1. Physical Activity Counseling in Primary Care: 5As Framework by Decision Biases<sup>a</sup>

5A COMPONENT <sup>b</sup>	PRESENT TIME BIAS <sup>c</sup>	STATUS QUO BIAS <sup>c</sup>
Assess		
Assess physical activity levels at baseline and at each visit.	<ul style="list-style-type: none"> <li>Ask the patient about self-control problems; briefly explain this phenomenon, and emphasize how common it is; emphasize that strategies will be provided to help achieve activity goals.</li> </ul>	<ul style="list-style-type: none"> <li>Be aware that patients' perceptions of the status quo regarding physical activity could impact their reported activity.</li> </ul>
Advise		
Advise on increasing physical activity levels; relate patient's laboratory results/symptoms to physical inactivity.	<ul style="list-style-type: none"> <li>Increase patients' awareness of the link between physical activity levels and improved health; relating laboratory results to health behavior increases the saliency of the benefits of activity.</li> </ul>	<ul style="list-style-type: none"> <li>Use positive and simple language to deliver the public health message of physical activity; frame activity as fun.</li> <li>Mention success stories of individuals similar to your patient.</li> </ul>
Agree		
Agree on a physical activity plan that is tailored to the patient's interests and preferences; jointly set goals and milestones.	<ul style="list-style-type: none"> <li>Discuss the challenges often encountered when executing future plans.</li> </ul>	<ul style="list-style-type: none"> <li>Reinforce that physical activity is the social norm; identify specific elements of the plan that are commonly undertaken by others.</li> </ul>
Provide detailed counseling on the frequency, intensity, and type of activity.	<ul style="list-style-type: none"> <li>Agree with patients that the future health benefits of physical activity are real and valuable.</li> </ul>	
Assist		
Provide pertinent strategies to overcome impediments to meeting physical activity goals.	<ul style="list-style-type: none"> <li>Encourage the use of precommitment contracts (eg, predepositing money), and binding "contracts" with family/friends or personal trainer to engage in physical activity regularly.<sup>d</sup></li> <li>Suggest using temptation bundling: combine "want" behaviors (eg, TV viewing on iPad) with "should" behaviors (eg, walking on treadmill).</li> <li>Suggest the use of pedometers or other monitoring device (eg, Fitbit) and set to a specific goal (eg, 10,000 steps a d); this provides tangible feedback that may buffer the immediate gratification of "want" behaviors.</li> <li>Actively enroll patients in an activity of their choice (eg, walking club); this will reduce the "costs," eg, costs for the patient associated with registration.</li> </ul>	<ul style="list-style-type: none"> <li>Inquire about your patient's daily routine and help them identify common opportunities for increased activity as the default option, such as worksite wellness programs, stair usage, the use of sit-stand workstations, and joining a physical activity program (eg, "Walk with a Doc").</li> <li>Encourage lifestyle changes for the whole family; this will change the social norms and set the default as an active lifestyle.</li> <li>Set activity monitors to meet a goal, such as setting prompts on the Fitbit for standing up and moving about every 30 min during a day at the office. This will facilitate changing the status quo from sedentary to more active.</li> </ul>
Arrange		
Arrange follow-up visits and reminders.	<ul style="list-style-type: none"> <li>Arrange follow-up meetings pertaining to meeting physical activity goals before patients leave the clinic; this will precommit patients to come back.</li> <li>Draw salient connections between patients' behavioral changes and health outcomes (eg, weight maintenance) during the follow-up meetings.</li> </ul>	<ul style="list-style-type: none"> <li>Establish that physical activity should be the status quo, and maintain this "theme" throughout all follow-up visits.</li> <li>Arrange to have reminders sent to patients to engage in activities with others that are physically active to reinforce that physical activity is the status quo.</li> </ul>

<sup>a</sup>The 5As (assess, advise, agree, assist, arrange) is a framework used to provide physical activity counseling. <sup>b</sup>Based on Estabrooks PA, Glasgow RE, Dziewaltowski DA. Physical activity promotion through primary care. *JAMA*. 2003;289:2913-2916.<sup>21</sup> <sup>c</sup>Individuals deviating from their time-consistent plan are regarded as having *present time bias*, with self-control problems arising from temptations that result in immediate, gratifying behavior. *Status quo bias* is a decision error in which individuals tend to take the "path of least resistance"; that is, they are often unable to make decisions that deviate from what is the default option. <sup>d</sup>Precommitment contracts (or devices) consist of self-imposed, present day costs or restrictions that are aimed at increasing one's welfare in the future.

Next, we describe pertinent sources of decision biases associated with engaging in physical activity. Although a large set of cognitive biases has been discussed in the behavioral economics literature (eg, probability matching bias), we focus here on 2 biases that seem especially relevant to the health care context: present-time bias and status quo

bias. We discuss strategies suggested by behavioral economics as potential solutions to these biases. Both general and specific strategies are mentioned to facilitate effective physical activity counseling. Table 1 summarizes suggested strategies for each decision bias based on the 5A framework, as described above.<sup>21</sup> This suggested integrative

framework warrants examination in the context of the primary care setting in future research.

### Present Time Bias

Impatient time preferences result in individuals being overly focused on the here and now. In the case of physical activity, activity can be viewed as a trade-off between “should” behaviors (eg, “I should be physically active to improve my health”), and “want” behaviors (eg, “I want to sit on the couch and watch TV”).<sup>58,59,72</sup> Because the costs of physical activity are tangible at present (require time and energy expenditure) and the benefits are in the future and thus not salient, individuals, especially those with impatient time preferences, will tend not to be active.<sup>73</sup> Although time preferences could be consistent over time, they often are not, particularly with respect to decisions pertaining to health. For example, an individual will plan to engage in physical activity tomorrow, but, when tomorrow arrives, the immediate gratification provided by watching TV instead will interfere with his/her plan.<sup>23</sup> Individuals deviating from their time consistent plan are regarded as having present time bias with self-control problems arising from temptations leading to immediate gratifying behavior. Specifically, self-control problems can be described as an inner struggle between 2 selves residing in one human being: a myopic self in conflict with a farsighted self, with the myopic self who cares about immediate gratification having the upper hand.<sup>23,74</sup> This might happen daily, when the myopic self is able to overcome the farsighted self.

To explore self-control problems, Ariely and Wertenbroch examined students’ performance in an academic course based on exposure to internal or external restrictions.<sup>70,75</sup> Specifically, in various substudies, students were asked to submit class assignments in 3 distinct ways: 1) self-imposed deadlines, ie, students selected the deadlines for the assignments themselves and received a penalty if they did not meet the deadlines; 2) a “laissez-faire” condition, ie, students could submit assignments anytime they wanted until the last day of the semester; and 3) externally imposed deadlines, ie, the course instructor imposed the deadlines on students. Interestingly, the class with the externally imposed deadlines received the highest grades, followed by self-imposed deadlines, whereas the lowest grades were obtained by the group where no restrictions (either external or internal) were imposed.<sup>70</sup> Conclusions from this study are that external edicts from an authoritarian power (or figure) appear to be the most effective in solving self-control problem followed by the utilization of a precommitment tool to self-impose restriction to improve well-being, that is, grades in this case. When applying these findings to the physical activity realm, it appears that most of the population is in the “laissez-faire” condition; that is,

there are mostly no restrictions imposed on them. Therefore, increasing physical education and activity within schools and, for example, setting active transport as the default option has the potential to have the greatest impact on physical activity behavior. However, when setting physical activity as the default is not an option, precommitment devices to encourage physical activity have the potential to be a feasible and effective approach.

### Precommitment Contracts

Precommitment contracts (or devices) consist of self-imposed, present day costs or restrictions that are aimed at increasing one’s welfare in the future.<sup>76</sup> An early example of this concept is from Greek mythology, where Ulysses asked his crew to tie him to the mast of a sailing ship and pour wax in the crew’s ears to resist being tempted by singing Sirens who had lured sailors to their death.<sup>76-78</sup> A modern day application of this concept has been applied to monetary savings. For example, Ashraf et al, in a field experiment, examined how a commitment device aimed at restricting individuals’ access to saving funds impacted their overall savings.<sup>76</sup> The results indicated that participants who used the commitment device increased their savings by 81% compared with preintervention levels.<sup>76</sup> However, 28% of participants did not use the commitment device. Those willing to commit could be regarded as sophisticated (ie, cognizant) regarding their self-control problems; that is, at present, they are committing to help their future selves.<sup>76</sup> Thus it is important to increase the awareness of those who are naive about being present-biased to enable them to enhance their welfare through the opportunity of using precommitment devices. An additional example comes from the realm of monetary savings: Thaler and Benartzi’s saving program, Save More Tomorrow, in which participants committed in advance to saving future raises in their salary toward retirement.<sup>67</sup> Indeed, study findings indicated that those who joined the plan increased their saving rates from 3.5% to 12.6% over a 40-month time period.<sup>67</sup>

In addition, a precommitment contract could be applied by depositing a sum of money to a third party that would be lost or given to charity if predetermined goals are not met.<sup>73</sup> Because humans tend to be loss-averse,<sup>79</sup> that is, they are more sensitive to losses than the prospect of gains,<sup>22</sup> the thought of losing even a relatively small sum of money will encourage adherence to the goals they aim to accomplish. This approach has been used successfully in weight-loss interventions and smoking-cessation programs<sup>80,81</sup> and could be applied to encourage adherence to physical activity guidelines. For example, a study by Gine et al found that a voluntary commitment contract aimed at helping smokers quit increased the likelihood of smoking

cessation at both 6-month and 12-month follow-up as measured by a urine test for both nicotine and cotinine.<sup>82</sup> Similarly, Royer et al, in a large-scale field experiment at a Fortune-500 company, found that precommitment contracts offered at the end of a brief incentive program aimed at increasing gym attendance led to sustained behavior change.<sup>25</sup>

### Financial Incentives

Providing financial incentives can aid in overcoming present-time bias by increasing the saliency of the future benefits of present day behaviors.<sup>58</sup> That is, providing financial incentives now for a desired behavior (eg, physical activity) moves the benefits (eg, improved health) from the future into the present via monetary incentives.<sup>59</sup> A systematic review by Mitchell et al on the effects of financial incentives on physical activity found that incentives not only positively impact behavior during the intervention period but also remain after they subside.<sup>83</sup> Furthermore, Mitchell et al suggest that financial incentives are most successful when they are provided for objectively determined behavior, such as steps measured via pedometers or gym attendance measured electronically; that incentives should be guaranteed (vs lottery); and that incentives are most effective for previously inactive adults.<sup>83</sup> Charles and Gneezy similarly found that financial incentives significantly increased gym attendance for inactive adults; that is, incentives were helpful in habit formation, and, once incentives were withdrawn, individuals continued to exercise.<sup>24,84</sup> Loewenstein et al reported that short-run and very modest incentives provided to children significantly increased their fruit and vegetable consumption, even after the end of the intervention.<sup>85</sup> However, it should be noted that the above-mentioned incentives were provided as part of experiments. Although clinicians cannot be expected to provide financial incentives to patients on a regular basis, some employers offer incentives. In addition, it is feasible for clinicians to provide symbolic encouragement to be physically active at each visit or suggest that patients reward themselves. Clinicians can also mention to patients that they could potentially receive incentives from their employers for healthy behaviors leading to improved health outcomes.<sup>86,87</sup> Clinicians could also indicate to obese patients, for example, that they may be eligible for weight-loss counseling, including physical activity and dietary changes, with no cost sharing (no copayment, coinsurance, or deductible).<sup>88</sup>

### Strategies for Dealing With Present Time Bias in the Clinical Setting

Within the 5A model, when assessing patients' physical activity levels, clinicians could also inquire about patients' self-control problems (eg, "are you able to hold off on

eating a tempting chocolate cake laying right in front of you?") and later suggest strategies to overcome present time bias. For example, clinicians could suggest precommitment tools when jointly setting physical activity goals (ie, "agree" phase) and when providing strategies to overcome barriers ("assist" phase).<sup>21</sup> For example, Karlan et al developed a commercial application of precommitment contracts, StickK.com, with which individuals can enter into a contract and deposit money based on predetermined goals, such as exercising regularly.<sup>89</sup> Clinicians (or supporting staff) can help patients set up these tools in advance. A commitment contract can also be made between friends or colleagues at work in the form of a binding social agreement to engage in physical activity daily, such as going for a walk daily during lunch time. In addition, for some patients, the immediate gratification provided by high step counts from pedometers may offer a buffer against the immediate gratification offered by "want behaviors," such as the TV. These step counts can be acquired either through walking up the stairs (instead of using the elevator), walking to talk to a colleague (instead of e-mailing), walking meetings, or simply walking for leisure. In addition, Milkman et al suggested a method of "temptation bundling" to overcome self-control problems.<sup>90</sup> Specifically, in a field experiment, they found that individuals who used "low brow" audiobooks at the gym (ie, a source of immediate gratification) significantly increased their attendance at the fitness center compared with control group participants who did not use audiobooks.<sup>72,90</sup> Thus, this strategy could be suggested to patients to increase adherence to their physical activity plan.

In addition, some suggested ways of overcoming present time bias involve improving the saliency of future benefits and reducing present costs (for example, making patients aware of the direct link between sufficient physical activity and improved health outcomes through relating their laboratory results to physical activity habits during the patient-physician encounter);<sup>21</sup> this is important for making the benefits more salient. In addition, patients experiencing present time bias might intend to begin a physical activity program prescribed by their physician but struggle with execution and follow-up. In the clinical setting, after the clinician collaboratively develops a physical activity plan with the patient, it is important for designated support staff to enroll patients in an activity of their choice (eg, walking club, gym) rather than solely giving them instructions. This is likely to help patients in general and with present time bias in particular, because the costs associated with the time and energy required for registration fall under the purview of the clinic rather than the patient. Moreover, identifying opportunities for activity at home (eg, yardwork), in the neighborhood (eg, walking trails), or for active transport

(eg, cycling to work) based on the patient's preferences can increase the likelihood of adopting and maintaining this activity over time. In addition, identifying social support to regularly engage in the physical activity of choice is crucial, because this could serve as a binding agreement, thereby increasing the likelihood of engaging regularly in physical activity. Furthermore, follow-up appointments should be set before the patient has left the clinic so that they are pre-committed to engage in a follow-up discussion about the status of their physical activity plan. Finally, clinicians should draw salient connections between patients' behavioral changes and health outcomes during the follow-up meetings. For example, clinicians should point out weight maintenance, improved cholesterol levels, and better glyce-mic control when they are noted alongside increased physical activity rather than assuming patients will draw the cause-effect conclusions themselves.

### Status Quo Bias

A key decision error is based on status quo bias, in which individuals tend to take the "path of least resistance." Hence, individuals are often unable to make decisions that deviate from what they perceive as the status quo. This means that policies establishing default options are very influential in determining individual decisions, because they effectively set the status quo. Organ donations are a case in point, in which nations where the default option is to donate organs (with an opt-out option) have markedly higher donation rates than countries the default option is not to donate organs (with an opt-in option). Specifically, Johnson and Goldstein found that, in European countries that have the "opt-in" option for organ donation, the effective consent percentage is very low (eg, Denmark, 4.25%); whereas, in countries with the "opt-out" option, such as Sweden (85.9%), the rates are high.<sup>91</sup> Government educational campaigns could potentially persuade individuals who live in an "opt-in" country to donate organs; however, this strategy would likely yield less effective results than setting the default as donating organs while maintaining the "opt-out" option. This example is highly applicable to physical activity, because individuals often take cues for appropriate levels of activity from their family and peers. For example, in families where the norm is to be physically active, the entire family might engage in leisure time activity jointly (eg, cycling), whereas an inactive lifestyle might be the norm in other families.<sup>92</sup> In addition, in countries (or cities) with policies and design strategies that promote or facilitate active transport (eg, walking or cycling), transportation-related physical activity rates are markedly higher than in countries that do not have an infrastructure conducive for active transport.<sup>93,94</sup>

Similarly, school classrooms or office workstations that have standing desks will encourage children and adults (respectively) to stand up and move about more, thus leading to increased energy expenditure and decreased sitting time.<sup>29,95</sup> The evidence-based Guide to Community Preventive Services recommends community-scale and street-scale urban design and land-use policies and providing access to places for physical activity, combined with informational outreach, as strategies for increasing physical activity.<sup>96</sup> When policies and environments facilitate and encourage physical activity, people are more likely to be active. In contrast, where the path of least resistance is physical inactivity, which is the status quo in most communities, the population at large remains inactive, leading to numerous chronic diseases.<sup>3,15,30</sup>

### Asymmetric Paternalism

A policy approach suggested by behavioral economics to deal with self-harming behaviors is asymmetric paternalism.<sup>71</sup> Asymmetric paternalism refers to an approach where individuals have the opportunity to select one of several alternate options; however, one of the options (the one deemed beneficial) is made easier to choose than the others. This approach can help an individual achieve his/her own goals without limiting freedom to choose.<sup>71</sup> The asymmetric paternalistic approach suggests using choice architecture to facilitate healthy choices.<sup>97</sup> For example, placing healthy food items at eye level and unhealthy foods away from eyesight will encourage choosing healthier items.<sup>97</sup> Specifically, Wansink and Hanks observed that arranging healthier foods first at buffets can nudge individuals into selecting these items rather than unhealthy options placed further away.<sup>98</sup> With regard to physical activity, the asymmetric paternalistic approach is well suited to facilitate physical activity change. A pertinent example is encouraging the use of stairwells by making this option more visible and "attractive" to use (eg, via music or art work) instead of elevators or escalators. This can be conducted in a variety of settings, such as workplaces, hospitals, and malls. Signs placed near elevators (or even escalators) that nudge people to take the stairs instead of the unhealthy alternative (ie, using the elevator or escalator) are referred to as point-of-decision prompts. These prompts, along with making stairwells more inviting, significantly increase stair use.<sup>32,99</sup> Moreover, schools and workplaces that set the default option as using standing desks or integrating physical activity into the course of the day, such as through promoting walking meetings or physical activity breaks, will make standing and moving about the norm rather than sedentary behavior.<sup>29,100,101</sup>

## Framing and Anchoring

The framing of choices has been found to have a paramount impact on decision making, particularly when making the intertemporal trade-off between “should” and “want” behaviors.<sup>26,72</sup> Highlighting the positive attributes of the “should behaviors” (eg, physical activity) rather than the negative ones is an important factor that can change the current status quo.<sup>102</sup> Thus the public health message delivered to patients encouraging them to engage in physical activity should be positive and simple.<sup>102</sup> For example, First Lady Michelle Obama’s initiative to combat childhood obesity, “Let’s Move!,” was a good example of a positive and simple message.<sup>102,103</sup> In addition, physical activity should be framed as a fun activity (eg, “go out there, choose an activity you like, such as dancing or soccer, and have fun”) rather than an obligatory activity (eg, “you need to meet guidelines, because it’s important for improving your health”).<sup>26</sup> In addition, a recent study by Grinstein and Kronrod underscored the importance of not only what is said in the health message but also how the message is conveyed.<sup>104</sup> Specifically, when encouraging a desired behavior (eg, physical activity), praise can benefit from using an assertive tone, whereas scolding should be nonassertive. For example, when examining adherence to the physical activity plan in follow-up consultations, the clinician can encourage the patient by stating, “You are regularly active according to plan, excellent job!” However, if the patient is not meeting the agreed upon goals, the clinician could state, “You are not meeting the goals you set; you might want to consider increasing the frequency of your activity sessions.” An additional factor that should be taken into account when providing physical activity counseling is anchoring. Anchoring is a form of priming whereby exposure to a reference point impacts subsequent judgment and decision making, often without the individual being aware of this effect.<sup>105</sup> Social norms can serve as an anchor, where both the proximal (eg, close social network) and distal (eg, societal norms) influence behavior.<sup>26</sup> In the case of physical activity, changing the norms among friends and family toward a more active lifestyle is an important factor in behavior change. In addition, using recent developments in information technology to set a desirable anchor (eg, the entire family strives to exceed 10,000 steps daily) can encourage an active lifestyle.<sup>106</sup>

## Strategies for Dealing With Status Quo Bias in the Clinical Setting

Clinicians should be aware of status quo bias and its potential impact on all stages of the 5A process. For example, inactive patients who believe the status quo is to be active regularly may exaggerate the degree to which they are active. This could impact accurate assessment of activity. In

other stages of the 5As, clinicians may leverage status quo bias to encourage adherence to the physical activity plan by tailoring their advice. For example, rather than citing statistics about the degree to which the US population fails to adhere to physical activity guidelines, clinicians could mention success stories of individuals similar to them. Clinicians can also reinforce physical activity as a social norm when developing the physical activity plan by identifying specific elements of the plan that are commonly undertaken. For example, if a previously inactive individual is planning to begin exercising by gradually increasing the frequency and intensity of their sessions, then the clinician can reinforce this practice by emphasizing that it is done by many others. For example, the following can be stated: “Did you know that most of my patients begin exercising gradually? You’re in good company.” Furthermore, clinicians can assist patients in executing physical activity plans by inquiring about their daily routine and helping patients to identify common daily opportunities for increased activity, such as parks or fitness centers near their home, worksite wellness programs, stair usage, use of sit-stand workstations, or ways to integrate active transport into the daily routine. Finally, clinicians should be mindful to ensure that physical activity counseling is done routinely in their own practices. Having readily available physical activity prescriptions, relevant handout material, trained support staff, knowledge of physical activity opportunities around them, and connections to physical activity programs and resources in the community are all paramount to providing meaningful physical activity counseling. In fact, some physicians have begun to create physical activity opportunities for their patients with the “Walk with a Doc” initiative.<sup>107</sup> There are currently 250 chapters of “Walk with a Doc,” with 3000 clinicians and health professionals and approximately 200,000 members of the community who participate in these walking groups.

## Limitations

Although this study aims to summarize public health and behavioral economics approaches to promote physical activity in primary care, there are several limitations that should be acknowledged. Although taking a comprehensive approach to reviewing pertinent literature, the current study should not be interpreted as a systematic review. In addition, whereas constructs from public health have been applied extensively to physical activity promotion, less research is available examining the nexus of behavioral economics and physical activity. Therefore, the proposed framework linking the 5As with present time bias and status quo bias should be regarded as a suggestion that requires empirical examination in the primary care setting. Finally, although there are numerous cognitive biases

identified by behavioral economists, the current study focuses on the 2 (present time bias and status quo bias) we deem most relevant to physical activity promotion in primary care.

## Conclusions

Physical inactivity is prevalent in modern society. Because primary care physicians' advice is respected and physician-patient encounters are frequent, these meetings can be used to provide physical activity counseling. Consistent and comprehensive physical activity counseling may be an important vehicle for reducing the risk of chronic diseases and premature death. Physical activity should be assessed in every clinic visit, a detailed physical activity plan should be jointly designed with the patient, and goals should be set and monitored. In addition, specific strategies should be provided to patients to overcome impediments to activity. Although the 5A framework is a useful guide to providing effective counseling, behavioral economics might lead to a clearer understanding of impediments to physical activity,

because the decision to engage in physical activity is complex and is influenced by both conscious and unconscious determinants. Common decision errors (eg, present time bias, status quo bias) are highly relevant to physical activity, and pertinent strategies (eg, precommitment contracts, temptation bundling) could be used to overcome these errors. Future research should examine the efficacy and effectiveness of implementing these strategies in the context of the primary care setting. Although the primary care setting is an important avenue to pursue physical activity promotion, it is not the only one. Policies aimed at changing the environment to one that is conducive to an active lifestyle are necessary to bring along a sustainable change. ■

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