

Creating a Public Health Infrastructure for Physical Activity Promotion

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Abstract

The essential role of physical activity both as an independent protective factor against numerous common chronic diseases and as a means to maintain a healthy weight is gaining increasing scientific recognition. Though the science of physical activity promotion is advancing rapidly, the practice of promoting physical activity at a population level is in its infancy. The virtual absence of a public health practice infrastructure for physical activity promotion at the local level presents a critical challenge to chronic disease, and particularly obesity, control policy.

Arresting the obesity epidemic will require systemic, multi-level and multi-sectoral intervention approaches to build individual capability and organizational capacity for behavior change, create new social norms, and institute physical environmental changes that support higher levels of energy expenditure across the population. This paper highlights societal changes contributing to inactivity; describes the evolution and current status of population-based public health physical activity promotion efforts in research and practice settings; suggests strategies for engaging decision-makers, stakeholders and the general public in building the necessary infrastructure to effectively promote physical activity; and identifies specific recommendations to spur the creation of a public health infrastructure for physical activity promotion, for academic institutions, local health departments and community-based organizations. The central focus of the recommendations is recruiting and cultivating a talented, socio-demographically diverse and multi-disciplinary pool of investigators, public health professionals, students, and policy advocates.

1 Physical Activity Promotion Constitutes a Critical Role in Public Health

2
3 Physical inactivity is an important contributor to the risk profiles for many chronic diseases.
4 Sedentariness is an independent primary risk factor for cardiovascular disease, similar to
5 smoking and hyperlipidemia in importance.¹ Sedentariness also contributes to the risk of
6 obesity,² Type 2 diabetes,^{3,4} osteoporosis,⁵ breast and colon cancer,^{6,7} and other chronic
7 conditions.^{8,9} In fact, many studies implicate reduction in energy expenditure, through
8 increasing occupational sedentariness and growing reliance on labor-saving devices, motorized
9 transportation, and sedentary entertainment, as key drivers of the chronic disease epidemic
10 during the past several decades.¹⁰⁻¹⁴ Leisure time physical activity levels, on the other hand,
11 have remained fairly constant during this period.¹⁴

12
13 The costs of the chronic disease epidemic are soaring, in dollars, health and premature deaths.¹⁵⁻
14 ¹⁷ Physical inactivity has become so commonplace^{13,18} that the costs imposed on society by
15 people with sedentary lifestyles may be greater than those imposed by smokers and heavy
16 drinkers, and are similar to and likely independent of those imposed by overweight and
17 obesity.¹⁹⁻²³ Regular activity, compared with sedentary status, even in late middle age, is linked
18 to substantially decreased health care costs,^{24,25} and may ameliorate the adverse health
19 consequences, of less severe levels of obesity.²⁶⁻²⁸

20

21 ***The Opportunity and Challenge of Physical Activity Promotion***

22 The cornerstone of health promotion, embodied in successful tobacco control policy efforts led
23 by public health, is making the healthy choices the *easy* choices²⁹⁻³¹ and the unhealthy choices

24 increasingly difficult. Consistent with its roots and Institute of Medicine-defined role of assuring
25 the conditions necessary for good health,³² public health is appropriately positioned to take the
26 lead in instigating the structural change necessary to restore adequate population levels of
27 physical activity. Urban blight, white flight, inexpensive suburban housing, and public policy
28 favoring motorized over non-motorized transport and private transportation over mass transit,
29 have created hazardous and unappealing residential areas.³³ Walking to school and playing
30 outdoors afterward are no longer the childhood norm.³⁴ Several conditions have, in fact, been
31 met that generally precipitate government intervention to change personal behavior: evidence of
32 a commercial “market failure,” e.g., lack of rationality (exploitative advertising to children), and
33 externalities—production or consumption/utilization of sedentary entertainment and
34 transportation imposes external costs on society, whereas internal costs borne by the
35 producers/consumer are proportionately less than the benefits they gain,³⁵ and inequities in
36 distribution of public goods and services, e.g., fewer recreational facilities, and poorer sidewalk
37 and park maintenance in medically underserved communities.³⁶⁻³⁹ Ethnic disparities in
38 sedentariness and chronic disease, linked to these adverse environmental conditions, provide
39 another compelling impetus for public health leadership in this arena.^{40, 41}

40
41 The preventive and therapeutic benefits of physical activity are well-established. Physical fitness
42 is an independent protective factor against all-cause and cardiovascular disease mortality,^{42, 43}
43 and the metabolic syndrome.^{44, 45} Recent evidence suggests that physical activity may also
44 protect mental⁴⁶ and physical agility;^{47, 48} improve sleep quality,^{49, 50} elevate mood,^{48, 51} improve
45 affect and energy^{52, 53} enhance sexual enjoyment⁵⁴ serve as a relative appetite suppressant,⁵⁵ and
46 decrease preference for highly sweetened beverages.^{56, 57} Physical activity is also important in

47 weight loss, especially for long-term maintenance,^{58, 59} and in the prevention of weight gain.⁶⁰⁻⁶⁵
48 Physical activity contributes substantively to cardiac and musculoskeletal injury rehabilitation^{66,}
49 ⁶⁷ and to long-term breast cancer and depression treatment.⁶⁸⁻⁷⁰

50

51 Thus, increasing physical activity is essential to advancing the public's health. There is
52 considerable opportunity for even small increases in average energy expenditure to have a large
53 positive population impact.^{71, 72}

54

55 While the role of individual choice in, and personal/familial responsibility for health-constructive
56 behavior change is undisputed, individual motivation and volition to be physically active are
57 increasingly difficult to sustain in a society characterized by a proliferation of step- and labor-
58 saving devices, along with fragmented public transportation and aggressive and pervasive
59 commercial marketing of seductive sedentary entertainment and transportation.^{73, 74} Decreasing
60 levels of fitness, accompanied by increasing rates of obesity, are associated with greater
61 perceived exertion at modest exercise intensities, further deterring energy expenditure.^{75, 76} In
62 addition, conserving energy is likely evolutionarily programmed, in that the high energy
63 expenditure levels necessary to escape predators and find food tilted energy imbalance toward
64 starvation for most of human history.^{4, 77, 78}

65

66 ***Inadequacy of current policy efforts to promote physical activity***

67 Current US tobacco control policy has been facilitated by hundreds of epidemiologic and
68 corroborative laboratory studies over more than four decades that have made a clear connection
69 between smoking and many cancers, heart diseases, and other health problems.^{79, 80} Unlike

70 nutrition or physical activity—necessary parts of daily life, tobacco is a non-essential, addictive
71 substance. Furthermore, most smokers were habituated when they were minors and, in theory,
72 legally barred from purchasing or using tobacco.⁸¹ In addition, smoking affected non-users by
73 subjecting them to second-hand smoke.^{82, 83} The harm and discomfort to non-smokers caused by
74 this involuntary exposure was strategically leveraged in enlisting public support and outrage.⁸⁴⁻⁸⁷

75
76 These conditions have not been met to the same degree for poor nutrition and sedentary lifestyle,
77 although the ultimate societal impact may be comparable to the now-well documented toll of
78 tobacco use. Attacks on tobacco, a product with no social value, garners a very different public
79 response than do attacks on the multiple industries that have arisen to address societal needs
80 (e.g., the movement of women into the workforce),¹⁴ produce goods and services used daily by
81 most of the population, and may readily modify their offerings to assist in achieving social
82 goals.⁸⁰ Unlike tobacco, there are no consensus biomarkers accurately capturing physical
83 activity participation, nor are policy solutions as politically or logistically straightforward.
84 Intervening to actively engage the majority in a protective behavior in a democratic and
85 individualistic society is considerably more complex than intervening to passively prohibit a
86 health-compromising behavior in a minority.

87
88 Thus, policy and environmental physical activity promotion strategies, while a burgeoning area
89 of interest to policymakers, are still in an early phase of development. Individual-level
90 intervention alone, e.g. one-to-one or group nutrition counseling or exercise instruction, has been
91 the target of most chronic disease control efforts to date, and its limitations are increasingly
92 apparent.⁸⁸⁻⁹¹ Changing environments by influencing organizational practice and legislation has

93 yet to permeate health policy in a way that is likely to engage the majority of Americans in
94 regular physical activity.^{71, 92-95}

95 Physical activity promotion policies, to date, have focused nearly exclusively on specifying
96 school physical education (PE) requirements.⁹⁶ As a primary approach, this is of questionable
97 value because PE requirements already exist in 48 states and D.C. However, they are rarely
98 enforced or sufficiently funded because of competition for students' time, as a result of
99 government priorities on academic achievement.⁹⁷ For example, in 1997, 29% of adolescents
100 participated in daily PE.⁹⁸

101 ***Promising avenues for population-based physical activity promotion***

102 Evidence that built environmental attributes influence physical activity and weight status is
103 mounting. Numerous studies have demonstrated that adults walk/cycle more for transportation,
104 and weigh less, in “walkable” communities, characterized by mixed land use, connected streets,
105 and higher density, than in sprawling suburbs.⁹⁹ Adults and youth who live near aesthetically
106 appealing recreational facilities engage in more physical activity.¹⁰⁰⁻¹⁰⁵ An evaluation of
107 programs to increase “pedestrian-friendliness” (e.g., sidewalk construction, traffic calming)
108 supported their positive influence on children’s active commuting.¹⁰⁶

109
110 “Active living” initiatives are under exploration by federal, state and local government.
111 Motivations include interest in reducing traffic congestion, preserving open space, enhancing
112 quality of life, and, sometimes, improving air quality and promoting physical activity. Initiatives
113 include developing parks, urban re-development and planning new development to promote
114 pedestrian and bicycling activity, and “smart growth” (e.g., “green space” and brownfield

115 development, density-promoting land use).¹⁰⁷ The most developed of the initiatives, Safe
116 Routes to Schools, included \$1 billion in the 2005 federal highway bill for distribution to states
117 to facilitate bicycle and pedestrian commuting.^{96, 107, 108}

118
119 However, the field of public health is missing opportunities to champion and accelerate such
120 efforts in the multiple sectors that influence physical activity at the population level. Physical
121 activity may be effectively fostered through community-scale urban design and government land
122 use regulations, policies and practices, e.g., zoning, building codes and fiscal incentives.¹⁰⁹ The
123 pace of development is rapid, often with little opposition to walkable community construction
124 and rising demand for and receptivity to such residential areas on the parts of urban planners and
125 consumers.¹¹⁰ School siting presents another development opportunity that may be more feasible
126 in underserved communities than most “smart growth.” These “windows of opportunity” for
127 coordination between public health and urban planning are fleeting. Once communities are built,
128 reconfiguring them is expensive.

129

130 ***Physical activity promotion policy advocacy considerations***

131 A number of policy analysts have proposed that lessons from the public health campaign against
132 the tobacco industry inform anti-obesity efforts.^{13, 80} One approach frames the battle against
133 obesity primarily as public health vs. the food industry.^{81, 111} The new focus on physical activity
134 promotion by food industry public relations efforts has created a competitive backlash by public
135 health nutrition advocacy groups. Many assert that these efforts are intended to deflect attention
136 from the industry’s role in the obesity epidemic’s genesis and deter policy solutions involving
137 increased regulation or taxation.¹¹² These groups argue that healthy eating is more important

138 than physical activity in stemming obesity, undermining (perhaps inadvertently) the importance
139 of physical activity.¹¹³ Demonizing the food industry as the cause of the obesity epidemic,
140 however, deflects attention from sedentary behavior-promoting commercial concerns that have
141 also contributed to the escalation of obesity, such as highway construction companies; oil, tire,
142 and automobile manufacturers/retailers; television/film industries; video game
143 manufacturers/distributors; and spectator sports franchises. However, aligning physical activity
144 promotion too closely with obesity control advocacy may also be a liability, risking
145 underappreciation of its full spectrum of benefits and ineffectiveness of weight loss as a
146 motivator of physical activity engagement in many sociodemographic groups.¹¹⁴

147
148 Organizing advocacy to promote physical activity is quite complex, however. Advocacy for
149 substance control organizes those with similar interests (health, safety) around preventing the use
150 of a discretionary product. Both convergent and competing agendas directed at policies that
151 create opportunities for physical activity, on the other hand, have been promoted at various times
152 by groups involved in health, transportation, sports, land use, economic development, recreation,
153 fitness, travel and leisure, and education. A “zero sum gain” attitude explains some of the
154 inertia: concessions to walkable community design increase development costs; investment in
155 fitness staff/equipment channels funds away from behavioral interventions; PE investments may
156 be seen as a diversion of resources from academic missions; personal expenditures of time and
157 money in health club memberships or lunchtime exercise (necessary to translate workplace
158 incentives into activity) compete with health/beauty treatments and other self-care services, with
159 more immediate gratification for the latter. Consequently, efforts to focus diverse interests on a
160 unifying agenda to advance population physical activity have been difficult and slow to evolve.

161 Even the National Coalition for Promoting Physical Activity focuses more on appeals for
162 individual behavior change than on building a base for advocacy to improve environmental
163 support for physical activity. Because large-scale expansion of opportunities (e.g., bike
164 paths/lanes, parks, playgrounds) will require substantial (public) funding, broad-based policy
165 advocacy efforts are critical to establishing a sustainable base of support. Public health
166 departments and their constituents typically have limited experience in mounting or joining
167 advocacy campaigns in arenas outside of health.

168
169 Building advocacy for public investment in physical activity will likely require multiple leverage
170 points, using such tools as social marketing¹¹⁵ and opportunism. The greatest traction (public
171 opinion supporting community vs. individual solutions), paralleling second-hand smoke
172 exposure, is in addressing childhood obesity. Hence, one promising strategy advanced by
173 advocates is targeting educators, parent groups and policymakers to highlight the growing
174 evidence that physical education can improve test scores.¹¹⁶ Another advocacy tool used in
175 successfully driving passage of aggressive school nutrition policy in California was aggregating
176 student fitness data by assembly district to engage legislators.¹¹⁶ As organizational leadership is
177 critical in driving change—one decision by an “early adopter” may influence the environments
178 of thousands—advocates may also target employers, documenting the health care and
179 productivity savings from investments in workplace physical activity integration.^{25, 117} Leaders
180 at the forefront of change in this arena often have a personal stake in health promotion,
181 including: the Los Angeles school superintendent helping to pass a district-wide soda ban in
182 2002, after being diagnosed with type 2 diabetes;¹¹⁸ President Clinton’s partnering with the
183 American Heart Association after his myocardial infarction to engage the beverage industry in

184 voluntarily withdrawing sodas from schools;¹¹⁹ and the Arkansas governor's substantial weight
185 loss after his diabetes diagnosis, and the Arkansas House Speaker's myocardial infarction,
186 precipitating their shepherding legislation to create healthy school environments.¹²⁰ Last,
187 exposing inequities in distribution of public recreation "goods" may galvanize grassroots
188 advocacy in low-income communities, as has supermarket and fast food franchise
189 maldistribution.

190

191

192 Existing Physical Activity Promotion Infrastructure

193

194 Currently, the public health infrastructure needed to translate, support and disseminate research
195 findings, and to design, organize and deliver services, especially at the local level, is much less
196 developed than the research infrastructure.

197

198 *Existing public health practice infrastructure*

199 Public health priorities at the state and local level are usually driven by categorical funding

200 through the CDC or by regulatory requirements for health protection. Physical activity

201 promotion did not explicitly appear among the core functions of public health until the

202 introduction of the Health Security Act of 1993, as one of a number of health risks about which

203 educate the public.¹²¹ Federal attention to physical activity promotion through organized public

204 health at the national level was primarily channeled through the President's Council on Physical

205 Fitness and the 1995 Surgeon General's Physical Activity and Health recommendation,¹²² which

206 couched physical activity as an issue of individual responsibility. The establishment of a

207 physical activity unit at the CDC in 1996 marked an elevation in priority, helping both to
208 legitimize parallel structural foci at state and local health departments and to broaden the debate
209 to include aspects of the physical and social environments.

210
211 As demand has grown, physical activity promotion has often been relegated by default to
212 nutrition, tobacco control, or health education staff in public health departments and community
213 organizations, with few additional resources and highly variable levels of interest or training.
214 These staff sometimes view physical activity promotion as competition for scarce resources. In
215 addition, the cultures of nutrition and physical activity promotion are very different, with values
216 that sometimes conflict, e.g., the contrasting attitudes toward competitive sports and
217 vegetarianism in the historically female-dominated nutrition field vs. the male-dominated athletic
218 and exercise science domains. For example, an advertisement for the Los Angeles ESPN radio
219 station asserted, “We’re the prime rib on a dial full of tofu!” (710 FM, April 4, 2006).

220
221 CDC-funded physical activity promotion programs, at varying stages of development, exist in at
222 least 28 state health departments.¹²³ The California Department of Health Services, for example,
223 has only five dedicated positions (two filled, none state-funded) to assist in addressing the
224 physical activity needs of the state’s 35 million residents (Susan Foerster, California Department
225 of Health Services, personal communication, April 3, 2006). Very few dedicated positions exist
226 in local health departments. No professional standards have been developed for recruitment or
227 training purposes for these positions. For example, in a 1999 local public health agency
228 infrastructure survey, respondents did not identify an occupational classification for exercise
229 scientists or physical activity promotion specialists, while means of 3-5 FTEs were reported for

230 related positions in nutrition, occupational safety and health, policy analysis and health
231 education. Strikingly, one in five agencies indicated that their largest challenge was developing
232 programs for such public health threats as diabetes.

233

234 ***Existing public health education infrastructure***

235 In public health master's degree programs (in medical schools or university health sciences
236 departments) and schools of public health, few public health physical activity promotion course
237 offerings exist and almost none are mandatory. Those in existence are generally electives taught
238 by the small number of faculty with related research interests. Of the 35 accredited schools of
239 public health,¹²⁴ only two identify exercise science as a program area or department, compared
240 with 13 identifying nutrition as a program area.

241

242 ***Evolution of physical activity promotion field***

243 Physical activity promotion research is dominated by scientists trained in fields related to, but
244 outside of public health, with different traditional missions and foci, e.g., exercise physiology
245 and kinesiology (optimizing athletic performance), physical therapy (rehabilitation of injured
246 patients), psychology (changing individual behavior), physical education (increasing sports
247 knowledge and skills) and sports medicine (treatment of injured athletes or elderly patients).
248 Scientists who are runners have often preferentially studied and established the benefits of
249 aerobic activity at the expense of attention to resistance training or flexibility enhancement.

250 Physicians have tended to “medicalize” physical activity promotion with disease risk
251 admonitions and non-interactive/prescriptive exercise counseling. Approaches developed by
252 athletes and physical educators have assumed a higher level of motivation than typically exists in

253 populations faced with competing demands and priorities, physical and sociocultural
254 environmental barriers, limited interest, and seductive sedentary alternatives. For example, the
255 1975 “vigorous exercise” recommendation from the American College of Sports Medicine was
256 overgeneralized to become a public health message, and little population-level change resulted.⁸

257

258 However, change is evident as public health professionals become more engaged in physical
259 activity research and practice. The 1995 “moderate physical activity” recommendations were
260 designed to be more relevant to public health.¹²² New collaborators have brought additional
261 perspectives—urban planners, transportation professionals, recreation and leisure researchers,
262 and a variety of behavioral scientists have created the broader concept of “active living” that
263 promotes physical activity for multiple purposes.^{125, 126} Very recently, the National Society of
264 Physical Activity Practitioners in Public Health was formed to further coalescence around
265 effective population physical activity promotion.

266

267

268 Physical Activity Promotion Research Is Advancing Rapidly

269

270 The science of population-based physical activity promotion is early in its development, but
271 advancing rapidly.^{60, 127, 128} A systematic review of community interventions to increase physical
272 activity¹²⁹ recommended six: two informational approaches (community-wide campaigns and
273 point-of-decision prompts to encourage use of stairs); three behavioral and social approaches
274 (school-based physical education, social support interventions in community settings, and
275 individually adapted health behavior change programs); and one environmental/policy approach

276 (creation of or enhanced access to places for physical activity, combined with informational
277 outreach). However, the evidence base for population approaches from the public health
278 literature is limited by the predominantly individual-level interventions and affluent white
279 participants of most funded research published to date. Emerging areas of observational and
280 intervention research investigation include:

- 281 • Identifying physical or built environmental attributes associated with active and sedentary
282 behavior and designing and evaluating changes which might increase activity;^{125, 130-133}
- 283 • Identifying physical activity facilitators and barriers within the school environment and
284 intervening,¹³⁴⁻¹³⁷ primarily through PE and other structurally-integrated physical activity
285 participation;¹³⁸⁻¹⁴¹
- 286 • Changing the workplace to incorporate and support physical activity,¹⁴²⁻¹⁴⁵ particularly to
287 influence the professional and personal behaviors of health professionals;¹⁴⁶⁻¹⁴⁸
- 288 • Integrating physical activity into the structure of a broader range of community-based
289 organizations;^{18, 149-151}
- 290 • Examining media influences on physical activity and policy implications of these
291 findings;^{73, 152, 153}
- 292 • Identifying barriers to and facilitators of physical activity promotion within the health
293 care environment, and designing appropriate interventions;¹⁵⁴⁻¹⁵⁷
- 294 • Implementing and evaluating state and local community-level policy and environmental
295 change initiatives to increase physical activity levels population-wide, including
296 cultivating “active living” leadership in the public sector;^{115, 125, 128, 158-162} and
- 297 • Crafting, shaping and evaluating the influence of expert recommendations, reports and
298 guidelines, e.g., infusing the concepts of energy balance, energy expenditure and fitness

299 promotion into the nutrition dialogue in the USDA Dietary Guidelines,¹⁶³ developing the
300 Institute of Medicine’s childhood obesity report,² and commissioning a scientific review
301 of the diffusion of obesity control approaches.¹²⁰

302

303

304 Creating a Robust Infrastructure for Physical Activity Promotion

305

306 A public health infrastructure sufficiently robust to anchor and sustain effective physical activity
307 promotion intervention must be developed. Public health resources are typically constrained,
308 with further constriction evident in recent cuts in the federal block grants that have been used to
309 support physical activity programs. Thus, sufficient decision-/policymaker prioritization to
310 reallocate existing resources, as well as identify new funding streams, will be necessary. The
311 following recommendations, by sector, are aimed at strategic prioritization and sequencing to
312 catalyze change and galvanize political will.

313

314 *Educational*

315 (1) Federal and private funders should support the design and implementation of educational
316 curricula, courses, and degree programs in schools of public health to prepare practitioners and
317 researchers to develop and appropriately utilize the evidence needed to increase population
318 physical activity. The CDC-funded “Physical Activity and Public Health” course offered
319 annually for recruitment, training and continuing education may serve as a model.¹⁶⁴ The
320 development of undergraduate and graduate courses related to physical activity should also be
321 underwritten for dissemination to and promotion within the wide variety of fields relevant to

322 physical activity policy and systems, e.g., communications, organizational development and
323 management, education, public policy, law, youth development, exercise science, urban
324 planning, architecture, and public administration. Finally, these funding agencies should create
325 scholarships and other financial support mechanisms for targeted recruitment of students and
326 professionals from sociodemographic groups experiencing low prevalence of physical activity
327 and high prevalence of sedentary behavior, such as from ethnic minority, low income, Southern
328 regional, and rural backgrounds.

329 (2) Public health accrediting bodies and professional organizations should develop professional
330 standards and certification requirements for physical activity promotion specialists, including
331 core competencies in health promotion, exercise science, policy analysis, organizational change
332 management, injury prevention and urban design.

333

334 ***Organizational and Workforce***

335 (1) Federal and state public health agencies should institutionalize physical activity promotion
336 within local health departments, preferably as a separate program area from nutrition.
337 Dissemination and evaluation of policy and environmental “push” strategies integrating “hard-to-
338 avoid” physical activity experiences in high-exposure settings (worksites, schools, day care
339 centers) should be prioritized, e.g., elevator restrictions with enhanced stair access, near-parking
340 restrictions, incorporation of exercise breaks into organizational routine on non-discretionary
341 time, hosting walking meetings. Both internal and external leverage should be used in this effort,
342 paralleling funding agency-mandated smoke-free workplaces (Table 1). The resulting
343 improvements, albeit modest, in aerobic conditioning, movement skills and self-efficacy,
344 enjoyment, and mood/energy at the individual level, and in employee retention, medical costs,

345 and productivity at the organizational level, may assist in generating demand and resources for
346 active living goods and services in the near term, and political will for aggressive policy change
347 in the long term.

348 (2) Schools of public health should develop and market physical activity promotion certification
349 programs for video game designers, urban planners, educators, human resources managers and
350 other outside professionals, modeling public health fellowship programs for journalists.

351

352 ***Community***

353 (1) State and local health departments should cultivate “boisterous” grassroots leadership in
354 advocacy, engaging tobacco and alcohol control, neighborhood safety and improvement,
355 immigrants’ and civil rights organizations,^{80, 81, 165, 166} e.g., to lobby for student fitness monitoring
356 through evaluation and reporting requirements comparable to math and reading.

357 (2) Federal food and nutrition agencies should provide resources for physical activity promotion,
358 e.g., USDA funding of local policy development and program implementation through WIC,
359 Food Stamps and school nutrition programs, consistent with their current obesity control
360 mission.

361

362 **Conclusions**

363

364 Physical activity promotion constitutes a critical role for public health practice, given the
365 increasing prevalence of sedentary behavior, the substantial protection against obesity and
366 chronic disease conferred by regular physical activity participation, and the major contribution of

367 sedentariness and obesity to health disparities. The physical activity promotion infrastructure,
368 however, is strikingly inadequate and underdeveloped. This may be attributed, in part, to the
369 undermining of and underinvestment in traditional sources of exercise instruction and active
370 leisure, such as physical education and recess periods in public schools, and public recreational
371 programs and facilities. Another substantive contributor, however, is the failure, to date, of the
372 public health infrastructure to create the capacity to capture, understand and address the dramatic
373 decreases in obligatory or incidental physical activity characterizing the populations of most
374 developed nations. The fact that few private resources to offset these public health infrastructure
375 deficiencies exist in underserved communities contributes substantively to ethnic disparities in
376 chronic disease risk and burden.

377
378 Rapid advances are now occurring in physical activity surveillance and physical activity
379 promotion research, and state legislatures are beginning to grapple with the physical
380 environmental changes necessary to support active living. However, the voices and perspectives
381 of capable physical activity proponents among researchers, clinicians and public health
382 practitioners are absent from much of the current health policy debate, limiting the effectiveness
383 of the resulting policies, both in their formulation and in their implementation. This dearth of
384 capacity to advance energy expenditure-side obesity control policy in a competitive and rapidly
385 expanding field presents both a challenge and an opportunity.¹⁶⁷

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Table 1. Individual solutions vs. environmental approaches*

	Tobacco	Auto Crashes	Guns/Violence	Alcohol	Nutrition	Physical Activity (PA)
Individual solutions	Cessation programs Public education School-based programs	Educate drivers & encourage defensive driving	Educate gun users School-based education Alternative youth programs	Educate drinkers & future drinkers Designated driver programs	Public education School-based programs	<i>Public education</i> <i>School-based programs</i> <i>Fitness center-/community center-based (including faith-based) programs</i>
Env. solutions	Excise taxes Smoking bans Enforce access laws Marketing restrictions/regulation Liability <i>Federal funding agency mandates for smoke-free workplaces</i>	Redesign cars Redesign roads liability	Reduce access to guns Restrict types of guns that can be manufactured Liability "Smart" personalized guns (bio-recognition of owner)	Reduce access to alcohol, especially to minors Restrict marketing Excise taxes liability	Nutrition labeling Zoning restrictions Marketing restrictions Excise taxes on junk food ("external costs") Restricted vending in schools Portion control Access to healthy food in all communities Liability <i>Federal funding agency mandates for healthy/fit workplaces</i>	<i>Sedentary product labeling</i> <i>Activity prompts using various media, e.g., posters, signs, broadcast voice-mail, e-mail including streaming video, stair riser banners, mounted or web-posted walking route maps</i> <i>Land use policy & planning</i> <i>Marketing restrictions, e.g., limits on advertising sedentary video games during children's TV programming</i> <i>Excise taxes on sedentary entertainment & transportation</i> <i>Restricted gaming (i.e. decreasing the ratio of sedentary to physical gaming such as Dance Dance Revolution and Sony Eye Toy) in schools & businesses, e.g., video arcades, movie theaters</i> <i>Physical education policy mandates</i> <i>Environmental redesign to make obligatory PA, e.g., near-parking and elevator restrictions</i> <i>Access to active leisure opportunities in all communities</i> <i>Partial liability protection ("Good Samaritan" laws) for PA provision; litigation targeting sedentary entertainment & transportation industries, or municipalities for inequitable distrib. of public goods</i> <i>Federal funding agency mandates for healthy/fit workplaces, e.g., required adoption of such policies as providing non-discretionary time for short walking or exercise breaks, stair prompts and improved access</i>

*Adapted from Dorfman L, Wilbur P, Lingas EO, Woodruff K, Wallack L. Accelerating Policy on Nutrition: lessons from tobacco, alcohol, firearms, and traffic safety. Berkeley, CA: Berkeley Media Studies Group of the Public Health Institute, 2005. Available at: www.bsmg.org. (Added bullets are in italics.)