REVIEW

Getting started—a review of physical activity adoption studies

Andrea L Dunn

The naming of physical inactivity as a major risk factor for cardiovascular disease¹ combined with the high prevalence of physical inactivity in industrialised nations is spurring development of research efforts that examine how to increase physical activity. Experts have conceptualised becoming physically active as a process consisting of four phases: adoption, maintenance, relapse, and resumption.² The first phase, adoption, or getting people started, is the focus of this review.

Systematic research of why people begin a programme of exercise or regular physical activity is becoming increasingly important as we learn of the increased risks of inactivity and as we shift our thinking from treatment of disease to disease prevention. Since Dishman's early review of exercise adherence,³ there is an increasing appreciation that exercise and physical activity behaviours are complex, with multiple determinants.² Many excellent reviews are available that summarise and criticise existing exercise adherence research,^{2,4,5} clinical and community interventions to increase physical activity,⁵ and most recently environmental and policy approaches to intervention.⁶ These reviews document important multilevel research efforts and indicate that we are beginning to develop the tools and strategies necessary to intervene in the high risk behaviour of physical inactivity. They provide the conceptual scheme of this review because they delineate the phases of exercise behaviour, provide a framework for examining multiple approaches, and illustrate how we have broadened our programmes and research efforts from more rigidly defined exercise behaviours in supervised gym based programmes to include many types of moderate intensity physical activities in more naturalistic settings.

In 1989, Winett *et al*⁷ proposed a multilevel, multidisciplinary approach emphasising the need to combine behavioural science, exercise science, and public health expertise to develop effective intervention strategies aimed at individuals and small groups, organisations and environments, and even social policy. This approach provides a coherent framework for identifying the focus of past research, the strategies found to be effective, and goals for

future research. I shall adopt that framework for this present review on how to get sedentary adults to be physically active. I shall summarise representative observational, quasi-experimental, and experimental studies that have contributed to our understanding of how to get sedentary adults to adopt a physically active way of life.

The selection of observational studies is based on the following criteria: (1) being specifically focused on getting sedentary adults to adopt a programme of exercise or physical activity; and (2) using reliable and valid measures to assess exercise adoption—that is, valid measures of physical activity. Selection of quasi-experimental and experimental studies is based on criterion 1 above, being representative of important trends in getting sedentary adults to adopt an exercise or physical activity programme, having a complete description of methods and strategies used, and demonstrated effectiveness. Effectiveness is broadly defined as a statistically significant increase in physical activity or physical fitness over a period of one to six months.

Methods

Several computerised searches were conducted on Medline for studies published between 1966 and 1996. Combinations of the following key words were used to develop a comprehensive list. These included exercise, physical activity, primary prevention, intervention, adherence, compliance, leisure activity, evaluation, effectiveness, behaviour, psychology, public health, health promotion, and epidemiology. The search was limited to studies in adults. The rationale for limiting the review to adults is based on evidence that determinants of physical activity differ between children and adults² and on my belief that adoption of physical activity by children should be a topic for a separate review.

Other studies were identified from these references and from existing reviews on determinants of exercise or physical activity. Studies were classified as being either observational studies of populations, examining the question of adoption of physical activity or exercise, or

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quasiexperimental or experimental studies. Quasi-experimental and experimental studies were subdivided into the multilevel framework of Winett *et al.*⁷ The majority of these were categorised as personal level interventions. The personal level intervention studies were further divided into studies that examined some aspect of physical activity or exercise or some aspect of behaviour, for example theories of exercise adoption, comparison of behavioural techniques. Representative studies were then selected for inclusion based on the criteria listed earlier.

Results

OBSERVATIONAL STUDIES

Over 200 studies have examined barriers to physical activity adoption or have studied dropping out of exercise. These have been summarised by Dishman *et al.*⁸ and by King *et al.*⁹ A major criticism is that these studies may not be applicable to the majority of the population because they have mostly studied self selected physically active volunteers in specific exercise programmes.¹⁰ In other words, we have accumulated data for what keeps people from starting a programme and what makes them stop; however, we know very little about what makes them start. Only two prospective studies^{10,11} were found that addressed the factors that were important to adopting vigorous physical activity in adults. In their earliest study Sallis *et al.*¹¹ found that there were different predictors for adoption and maintenance of vigorous physical activity. Further, there were some shared similarities between men and women in predictors for adopting exercise but there also were some significant differences. Their second study¹⁰ extends these findings and was more complete due to an expanded multivariate approach.

This study of 1719 mostly non-Hispanic white residents in San Diego, California, used a multivariate approach to predict adoption of physical activity, based on Bandura's social cognitive theory¹² and principles of operant learning.¹³ Social cognitive theory takes into account that behaviour has multiple determinants that include biological variables (for example, gender, obesity, age), psychological variables (for example, intentions, beliefs), and external social and environmental variables (for example, weather, access to facilities and programmes). At baseline and follow up two years later, 25 indices of physiological, psychological, social, and environmental variables were assessed in addition to demographic, historical, and contemporary policy variables and self report measures of physical activity. Change measures were calculated for two groups of women and men: those between the ages of 18 and 49 and those of 50 years or older. This study confirmed the previous findings that predictors of change in vigorous physical activity are different for adoption and maintenance and that there are differences between men and women. More predictors were found for adoption than for maintenance. Specifically, self efficacy or exercise confidence

and physical activity history were significant predictors for both men and women. For men, exercise adoption was predicted by age and neighbourhood environment. For women, adoption of vigorous exercise was predicted by years of education and by family and friend support.

These findings have important implications for physical activity interventions. First, it is possible that interventions may need to be different for men and women, particularly for older men and less educated women. Second, interventions that emphasise social support may be more successful for women, and interventions that target the physical environment may lead to greater success for men.

These findings also are important because of similarities and differences with cross sectional studies.¹⁴ In both cross sectional and prospective analyses, associations were found between self efficacy, age, education, social variables, and some environmental variables. However, relations were not found in the prospective analysis between physical activity and body mass index (BMI), exercise knowledge, smoking behaviour, alcohol use, dietary behaviour, and perceived barriers.

These results suggest several recommendations. First, more intervention studies are needed to test the gender differences and more prospective observational research could help clarify the discrepancies between prospective and cross sectional studies. Further, the paucity of data of this type underscores the need to conduct similar studies in populations that are associated with a higher rates of physical inactivity such as those who have less education, older adults, and nonwhite populations. Another recommendation concerns the type of physical activity. These studies examined vigorous physical activity. Cross sectional studies that have examined correlates of moderate intensity activity indicate that predictors for adopting moderate intensity activity may differ from those for adopting vigorous activity.¹⁵ Longitudinal studies that identify predictors for adopting moderate intensity activity are also needed.

PERSONAL LEVEL INTERVENTIONS—ASPECTS OF PHYSICAL ACTIVITY

Personal level interventions also show how various aspects of physical activity influence whether individuals begin a programme. Exercise guidelines developed by the American College of Sports Medicine prescribe large muscle aerobic exercise based on frequency, intensity, and duration.¹⁶ Although understudied, there is some evidence that there may be different determinants of each of these components. Courneya and McAuley¹⁷ examined this question in undergraduate volunteers at three time points by assessing self efficacy, attitude, intention, and affect based on modifications of the theory of planned behaviour.¹⁸ Hierarchical regression analyses showed that self efficacy was the most important determinant for each of the three components and that it was a unique contributor to frequency and intensity

Table 1 Studies representing important trends in personal level behavioural interventions

Study	Representation	Intervention
Wysocki <i>et al</i> , 1979 ⁵⁶	One of earliest studies to use a behaviour change strategy	Contracts based on expectation. Attendance earned back deposited items.
Epstein <i>et al</i> , 1980 ⁵⁷	Example of comparison of behaviour change strategies	Compared contracting and lottery procedures with no-treatment control. Higher attendance with both behaviour change strategies.
King and Frederiksen, 1984 ⁵⁸	Example of comparison of behavioural and cognitive strategies	Compared social support and relapse prevention in a 2 × 2 design. Found either social support alone or relapse prevention alone predicted significant increases in jogging.
Noland, 1989 ⁵⁹	Example of behaviour change strategies	Compared self monitoring and reinforcement with unsupervised exercise. Both groups who received behavioral interventions increased fitness compared with the control group.
King <i>et al</i> , 1988 ⁶⁰	Example of one of first home based interventions to determine the influence of social support strategies that were necessary for adoption of physical activity and increases in fitness.	Compared two groups who both received relapse prevention strategies, daily self monitoring, adherence tips. One group received staff contact by telephone. Both groups increased the number of sessions and duration; however, only the group which received staff support by telephone increased fitness by 12 months.
McAuley, 1992 ⁶¹	What is the role of self efficacy? Test of different types of self efficacy in adoption and maintenance of physical activity.	General self efficacy and exercise self efficacy were found to play different roles in adoption and maintenance phase. Exercise self efficacy was most important in the adoption phase.
McAuley <i>et al</i> , 1994 ²⁸	What is the role of self efficacy? Examined effects of self efficacy based treatment on exercise adherence and self efficacy.	Treatment was based on providing efficacy information from mastery accomplishments, social modelling, social persuasion, and interpretation of physiological states. These were compared with attention control. Found intervention had a direct effect on exercise adherence. The treatment was not found to have a direction effect on efficacy as a mediator.
Courneya and McAuley, 1993 ⁶²	What is the role of self efficacy? Examined the role of exercise intentions on physical activity participation.	Compared short range and longer range intentions to predict participation in physical activity. Shorter range intention is a better predictor than longer range intention.
Valois <i>et al</i> , 1988 ⁶³	Comparison of psychological theories	Compared theory of reasoned action ⁶⁴ with Triandis model on exercise intention and behaviour. Support was found for both theories. Concluded exercise never becomes "automatic"; intention is associated with attitude, therefore it is important that any type of programme be positive and enjoyable.
Marcus <i>et al</i> , 1992 ²⁷	Use of concept of motivational readiness to adopt physical activity, "stages of change"	Examined the relation between stage of readiness to exercise and self reported physical activity and the relation between stage of readiness and self efficacy. Those in higher stages had higher self reported physical activity and higher self efficacy.
Calfas <i>et al</i> , 1996 ³⁶	One of first physician counselling interventions to promote adoption of physical activity.	This was an efficacy study to test the effects of the Physician based Assessment and Counseling for Exercise (PACE) protocol. PACE patients reported significantly more walking than control patients. Physician counselling can produce increases in physical activity in sedentary patients.
Cardinal and Sachs, 1995 ³⁵	Example of mail mediated intervention using stages of change.	Examined three types of mail mediated exercise packets: lifestyle, structured, and fitness feedback. Regardless of group, participants in earlier stages improved their stage.

but not duration. Intention was a stronger predictor of duration than of frequency and intensity. Attitude was a unique contributor to frequency and duration and positive affect was a unique contributor to intensity. These different predictors are likely to be important in moving individuals along the path of starting a programme of regular exercise. However, they may only be important to individuals who are already intending to start an exercise programme. Other aspects of activity might also be important and might have wider applicability to those not intending to start a programme of regular exercise. These include the types of activity and the format of those activities.

For example, King *et al*¹⁹ compared higher intensity group based training, higher intensity home based training, and lower intensity home based training with controls. For all intensities of activity, improvements in physical fitness were equivalent. However, participants in both of the home based conditions had significantly higher adherence rates for every month of the 12 month programme than participants in the higher intensity, group based programme. The advantage of home based programmes include greater convenience and flexibility compared to group based programmes. A more convenient format could enable a larger number of individuals to begin a programme of regular physical activity.

Recently, the Centers for Disease Control and Prevention and the American College of Sports Medicine issued public health recom-

mendations for physical activity, stating that individuals need to accumulate 30 minutes or more of moderate intensity activity on most, preferably all, days of the week.²⁰ The scientific foundation for this recommendation is based on consistent epidemiological findings that the greatest decrease in mortality risk comes by moving from the no activity category into the moderate activity category and observations that the prevalence of those engaging in vigorous activity has not increased since the fitness boom of the 1980s. One idea that has emerged from these recommendations is that individuals can engage in moderate intensity activities like brisk walking in several shorter bouts, for example 10 minutes, several times over the course of the day. The hope is that by increasing the convenience and flexibility that more sedentary individuals will participate in activity.^{21, 22} While the impact of these recommendations has not been evaluated, the concept of using short bouts to increase participation has been tested in a recent study in overweight women.²³ In this study, participants were randomised to either a long bout or a short bout exercise group. The long bout group was instructed to progress from 20 to 40 minutes per day five days per week, and the short bout group was instructed to perform multiple 10 minute bouts to accumulate 20 to 40 minutes per day, five days per week. The length of the intervention was 20 weeks. The short bout group had significantly greater physical activity participation (35 minutes more per week),

equivalent increases in physical fitness, and slightly greater weight loss than the long bout group.

These studies provide evidence that there are different determinants of the components of exercise prescription and that the types and formats of physical activity programmes do influence participation. The convenience and flexibility of home based programmes and use of shorter bouts are likely to play an important role in adoption of physical activity, but no published studies have specifically addressed this question in relation to exercise adoption. More studies need to be conducted on how different aspects of physical activity might influence adoption in sedentary populations.

PERSONAL LEVEL INTERVENTIONS—COGNITIVE AND BEHAVIOURAL ASPECTS

The discussion on the types and formats of activities shows there has been an evolution in thinking about what kinds of activity are necessary to produce health benefits. Similarly there has been an evolution in our thinking about what is necessary to get people to adopt a physically active way of life. Few exercise scientists now believe that education alone will increase the proportion of individuals who engage in a programme of either moderate or vigorous physical activity. Since the 1980s, the percentage of individuals who engage in regular physical activity of a sufficient intensity has plateaued.²⁴ This has spurred the development of behavioural interventions to increase physical activity that is directed at the personal level. These interventions have evolved from a theoretical, supervised, gym based interventions to theoretically driven, home and lifestyle interventions delivered through a variety of channels. In this section, I shall trace examples of this evolution and pinpoint important trends that have led to improvements in our understanding of how to get individuals to adopt a programme of regular physical activity.

One can see in the table that personal level interventions have moved from comparison of behavioural skill building techniques to theoretically driven interventions that employ operationally defined valid behavioural measures, derived from theoretical constructs. For example, various paper and pencil assessments of self efficacy have been developed for physical activity.²⁵⁻²⁷ Furthermore, as the table shows, several interventions use the concept of self efficacy to develop intervention strategies, for example McAuley's use of social modelling,²⁸ and mastery accomplishments. The use of more sophisticated behavioural theories and models is one important trend.

In addition to the trend of moving from comparison of behavioural skills to theory driven interventions, another important trend has been comparison of various theories and use of regression analyses and path analysis techniques to determine what constructs predict adoption of physical activity. For example, Godin²⁹ examined the role of intention to exercise or participate in regular physical activity and showed that attitude-behaviour theories³⁰

predict 25-59% of the variance for participating in physical activity.³¹ This work on theoretical models will enable us to develop better models of physical activity behaviour. This in turn will help us develop more effective interventions.

This concept of intention has become more fully developed in the work of Marcus and colleagues²⁷ who have adapted the transtheoretical model³² to physical activity behaviour. This model includes many of the concepts from Bandura's social learning theory but also categorises individuals in terms of their motivational readiness to change. In the case of physical activity, individuals are classified as being in: *precontemplation*—not intending to change; *contemplation*—intending to change; *preparation*—doing some physical activity but not on a regular basis; *action*—accumulating 30 minutes of moderate intensity activity on most days of the week; or *maintenance*—having been in action for at least six months. This categorisation is an innovation for those who are interested in getting sedentary adults to be physically active because it changes our idea of exercise adoption from being an all or none phenomenon to being a continuous process. Knowing a person's stage of change allows those who are developing interventions to target sedentary populations more effectively and perhaps establish more realistic expectations of themselves and the population they are targeting. Marcus *et al* have demonstrated the efficacy of this model in both worksite³³ and community interventions³⁴ and it is my belief that this is a third important trend.

Use of the transtheoretical model is rapidly expanding. It was the basis for a mail mediated intervention conducted by Cardinal and Sachs³⁵ and the PACE intervention.³⁶ We are currently conducting a randomised clinical trial, Project Active, that is comparing a two year traditional structured exercise intervention with a lifestyle intervention. Our six month results indicate that both types of intervention were able to move nearly 80% of the sedentary adults originally in contemplation into action. Furthermore, both of these groups had significant increases in fitness and physical activity at six months, and similar significant decreases in cardiovascular risk factors.^{37, 38}

The intervention described by Cardinal and Sachs³⁵ and by Calfas and colleagues³⁶ is also indicative of a fourth important trend in personal level interventions, that is the use of different channels for intervention, for example mail mediated interventions and interventions by primary care physicians. Use of these different channels has not been well studied in the past, but new technologies, combined with theoretically driven interventions, will allow us to expand interventions in ways that have not been used in the past.

To summarise, this section has identified four important trends in behavioural approaches to personal level interventions. These are: (1) increasing use of theories to develop interventions; (2) use of regression analyses and path analysis techniques to predict important factors for adoption of physical activity;

(3) use of stages of motivational readiness to target interventions; and (4) use of different channels for personal level interventions. Clearly more work needs to be done in relation to the efficacy of these interventions, but we also need to begin to develop interventions to test their effectiveness, for example, how well will worksite and community interventions using stages of change materials generalise to other worksites and communities? We also need to continue to develop theories with more explanatory power in order to develop more effective interventions.

INTERPERSONAL LEVEL APPROACHES

Interpersonal approaches have not been widely employed in physical activity interventions to get sedentary adults to be more physically active. These approaches focus on group, for example families or class formats, and include involvement of peers in the format. For example, one study conducted by Nader and colleagues³⁹ targeted Mexican-American and Anglo-American families and randomly assigned half to a year long dietary education and physical activity intervention. Although physical activity was not significantly increased by this intervention, knowledge of exercise was increased. It is possible that family interventions such as these need to use less traditional approaches to increasing physical activity such as discussed above, and should also incorporate stages of motivational readiness measures as part of outcome measures. More interventions targeting families need to be done.

In addition to intervening in families, using peer counsellors may be another way to increase adoption of physical activity in the community. My search reveals there are no studies that have specifically addressed physical activity adoption using this type of approach. However, the approach has been used with other risk factor interventions such as the Zuni Indian diabetes project in New Mexico,⁴⁰ and the heart, body and soul project in East Baltimore.⁴¹ Results from these programmes have been encouraging and they have been shown to increase physical activity. However, more work needs to be done using peer counsellor approaches to determine their effectiveness in getting individuals to adopt physical activity.

ORGANISATIONAL AND COMMUNITY APPROACHES

Interventions that are designed for the organisational and environmental level could include a change in rules, such as limiting car traffic in parks, expanding hours, and making facilities or programmes available to either enhance the behaviour or remove barriers.⁵ Programmes offered in worksites and health maintenance organisations (HMO) are examples of these types of programme. In the USA, the government has established a physical activity objective for worksites for the year 2000.⁴² This is one of the few physical activity goals that will be met by the year 2000 and this is probably due to the increase in employee wellness programmes which include health risk appraisal

(HRA), fitness facilities, and exercise programmes as part of sophisticated multifactorial interventions. (See Pelletier⁴³ for a review and analysis of health and cost effective outcomes studies on worksite health promotion programmes.)

Several studies have shown that it is possible to increase physical activity levels in the worksite.^{44,45} However, a recent study that compared four different multifactor cardiovascular disease risk factor interventions at a worksite deserves mention. This study⁴⁶ compared health risk assessment, risk factor education, behavioural counselling, and behavioural counselling plus incentives. It was hypothesised that the behavioural counselling interventions would be superior to the health risk assessment and the risk factor education. In the case of increasing fitness, all groups significantly increased their aerobic fitness by three months and there were no differences between any of these groups. However, by the end of 12 months, fitness levels for all groups had returned to baseline. Use of health risk assessments was studied recently by Mayer and colleagues⁴⁷ in an HMO. In this study, a health risk appraisal combined with one face to face session and two follow up phone calls offered to elderly Medicare beneficiaries showed that individuals who received these sessions increased their level of physical activity significantly over 12 months compared with controls.

Both of these studies indicate that it is possible to increase the adoption of physical activity with these broad based approaches in targeted populations. However, the study by Gomel and colleagues⁴⁶ showed the importance of evaluating their effectiveness, particularly over time, since these same strategies may not be effective in helping to maintain the behaviour. More evaluations of these programmes need to be conducted to identify the important factors for physical activity adoption within these types of programme.

Multiple risk factor interventions aimed at reducing cardiovascular disease have also included a physical activity component. These have also been done in a number of community settings including the Pawtucket heart health program,⁴⁸ the Stanford five cities project,⁴⁹ the Minnesota heart health program,⁵⁰ the County health improvement project in Pennsylvania,⁵¹ and the North Karelia project.⁵² Most of these programmes have used a variety of the approaches described above and have shown modest increases in physical activity. The reader is referred to King⁵³ for a comprehensive review of these studies.

As part of these community based studies, some workers have used large scale mass media campaigns. To my knowledge only one study has evaluated the effects of such campaigns on increasing physical activity participation in the community.⁵⁴ This study evaluated the effects of two national campaigns conducted in 1990 and 1991. The goals of these campaigns were (1) to increase awareness of the message; (2) to increase physical activity participation in moderate intensity activity; and (3) to increase the intention to become more physically active.

The results from the 1990 campaign show that these goals were achieved, though not for all age groups for actual increases in physical activity participation. Only age groups 40 and over showed significant increases in physical activity participation after the 1990 campaign. Results from the 1991 campaign, however, only showed increases in awareness of the message, though this increase was a much smaller magnitude than the 1990 campaign. For example, the 1990 campaign showed message awareness before the campaign was 46% compared with 71% after. In 1991 message awareness was 63% before compared to 74% after. These results seem to indicate that it is possible to increase physical activity participation with large scale mass media campaigns; however, it is possible that these types of campaign might have limited effectiveness, that is, ceiling effects might have occurred as a result of the 1990 campaign. It is possible that more targeted approaches using different messages aimed at different stages of motivational readiness could be more effective. At this time, these approaches remain untried.

ENVIRONMENTAL/POLICY APPROACHES

Policy approaches refer to either explicit or implicit statements or rules that have been established at all levels of government. These approaches are more fully discussed by King and colleagues⁶ and my search found that only one study evaluated changes in policy community wide. This evaluation⁵⁵ compared building bicycle paths, extending hours at recreation facilities, installing new exercise equipment at gyms, scheduling broadly based athletic events, marking running courses throughout the community, and organising running and cycling clubs. Release time and rewards for fitness improvements were authorised by commanding officers. There were significant improvements in fitness in the community that changed these policies compared with a similar community that did not incorporate any of these changes.

Many communities may be instituting these changes but few are evaluating the effects of these programmes on increasing physical activity participation. Evaluations of these policy changes need to be conducted to determine their effects on increasing the adoption of physical activity in sedentary populations.

Conclusions

In this review I have described important predictors of exercise adoption from observational studies. I have also described important factors that have been found to increase physical activity adoption at multiple levels including personal, interpersonal, organisational/community, and environmental/policy levels. Most interventions have been conducted at the personal level. For those wishing to begin programmes to increase physical activity for sedentary adults, it is important to do the following: (1) determine the target population and the level of intervention; (2) select a theory to guide intervention development; (3) include components that will increase self efficacy and

realistic outcome expectations; (4) take into account motivational readiness of the target population; (5) take into account important demographic factors such as education, socioeconomic status, and gender; and (6) perform evaluations of methods and results.

Summary

The aim of this paper has been to review methods that have been found to be effective in getting sedentary adults to adopt physical activity, to examine these methods within the multilevel framework conceptualised by Winett *et al.*,⁷ and to provide recommendations for future research to test new methods and their effectiveness in leading to the adoption of physical activity in sedentary populations. Searches for relevant studies were conducted on the Medline computerised database. Additional studies were located in reference sections of these studies and other review papers. Surveys that specifically identified determinants of adoption of physical activity in adults were included. Reviewed articles were selected on the basis of quasi-experimental and experimental designs that specifically examined the question of how to get sedentary adults to adopt a programme of physical activity or exercise, had completely described methods, and evaluated the effectiveness of methods of increasing physical activity and/or exercise.

While numerous reviews have been written on determinants on physical activity adoption and maintenance, only two prospective surveys have identified specifics of adoption of physical activity. Most of the evidence for techniques that help inactive people to adopt physical activity comes from quasi-experimental and experimental intervention studies examining various cognitive and behavioural strategies at the individual level. Fewer studies have examined techniques at the interpersonal, organisational, community, environmental, and policy level. More prospective observational studies aimed at homogeneous subgroups are needed to identify correlates of physical activity adoption to help tailor interventions. Continued clinical studies are needed to differentiate the necessary and sufficient strategies at the personal and interpersonal levels. Interventions aimed at environmental, institutional, and social levels remain largely unexplored and there is a need for more research that specifically targets inactive subgroups at these levels.

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