

## Addressing the Challenges, Barriers, and Enablers to Physical Activity Participation in Priority Women's Groups

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**Background:** The Women's Active Living Kits (WALK) Pilot Program was an Australian federal government initiative designed to identify an effective model for extending physical activity participation in government identified priority women's groups. The purpose of this study is to address the barriers and challenges to physical activity participation in selected priority women's groups and present possible strategies to assist with engaging these groups in physical activity. **Methods:** Ten focus group evaluation sessions were undertaken with priority women's groups who took part in the WALK program. Participants were encouraged to share their opinions, perceptions and beliefs regarding their physical activity behaviors, in a semistructured, open table discussion. **Results:** Participants reported a number of psychological and cognitive, sociocultural, and environmental factors which restricted their participation in physical activity. Participants also highlighted strategies they felt would enable physical activity participation. **Conclusions:** These findings are valuable and should be used as a platform to inform the design and implementation of future physical activity interventions for priority women's groups.

**Keywords:** health promotions, women's health, focus group research

It has been well established that physical activity plays a crucial role in women's health promotion and disease prevention. Large-scale epidemiological studies have revealed that regular physical activity reduces the risk not only of premature mortality, but also coronary heart disease, hypertension, some cancers, type 2 diabetes, osteoporosis, and poor mental health.<sup>1-3</sup> More specific to women, a recent review of the research has shown

that regular participation in walking or moderate intensity physical activity reduces the risk of cardiovascular disease, type 2 diabetes, and certain cancers, including breast, colon, endometrial, and ovarian cancer.<sup>4</sup>

Despite the beneficial effect physical activity has on women's health, women of all ages are less physically active than are their male counterparts.<sup>5-7</sup> This trend is magnified in particular priority groups of women such as women with young children, older women, women from culturally and linguistically diverse (CALD) groups, career-oriented women, and indigenous women. For instance, data for the Australian Longitudinal Study of Women's Health found that women with children are less likely to be adequately active for health benefits compared with women without children.<sup>8</sup> Further Australian reports have indicated that CALD women and Aboriginal/Torres Strait Islander women are far less likely to be sufficiently active when compared with women from the general Australian population.<sup>9,10</sup>

Research has suggested that there are barriers beyond personal motivation, which may help to explain women's low levels of participation in physical activity;<sup>11-13</sup> however, little is known of the specific barriers that limit physical activity participation in priority women's groups. In addition to the barriers women experience, further evidence has suggested that the development and implementation of general physical activity programs may not necessarily meet the needs of all women. Speck<sup>1</sup> and Sallis et al<sup>14</sup> indicated that men and women have differing patterns of physical activity, suggesting the importance of tailoring programs to meet the specific needs of female participants.

The Women's Active Living Kits (WALK) Pilot Program was an Australian federal government initiative with the principal objective of developing and conducting a pilot project that would identify an effective model for increasing women's physical activity participation. The initiative identified and targeted government-defined "priority groups" of women, including young and older women, mid-age women, women who are busy with careers and families, women from CALD groups, indigenous women, and disabled women. The year-long pilot project commenced in July, 2006 and

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included 48 priority women's groups ranging in membership from 3 to 27 women from metropolitan, regional, and rural areas in New South Wales, Victoria, Australian Capital Territory, and Queensland. In addition to the promotion of physical activity for priority women's groups, the WALK program was also used as a way to gather information concerning the physical activity behaviors of priority women's group with the intention to inform future intervention research. Further details concerning the WALK program have been reported elsewhere.<sup>15</sup> Thus the purpose of this paper is to report the barriers, challenges, and enablers to physical activity participation in priority women's groups as identified within the WALK program and present possible strategies to assist with engaging these women in physical activity.

## Method

Ten focus groups were selected from the 48 priority women's groups who took part in the WALK program. The selected groups were identified as one or more of the priority groups and were from diverse locations throughout regional and urban parts of the Australian states of New South Wales, Victoria, and Queensland. The primary contact person for each of the 10 groups was contacted and given a detailed explanation of the focus group session. This individual then approached his/her respective group members, explained the details of the focus group, and encouraged members to volunteer their time to participate. Most members, including group leaders of the 10 groups who were initially approached, agreed to participate in the focus group sessions. Each group varied in the number of participants, ranging from a group of four members to a group of 27. Participation was strictly voluntary; no incentives were offered to participants at any time of the study.

Focus group evaluation sessions were started in early March, 2007 and completed at the end of May, 2007. Researchers from the WALK Project Team traveled to each of the ten locations to undertake the focus group evaluation sessions. The principal researcher acted as the moderator, guiding the discussion and providing assistance where needed, while the secondary researcher acted as a scribe to take notes and was responsible for the audio recording of each session. A translator/interpreter was used during one of the focus group sessions to accommodate CALD group participants who spoke minimal or no English. Each session ranged from 45 to 90 minutes in length, during which time participants were encouraged to share their opinions, perceptions, and beliefs regarding the barriers and enablers to women's physical activity, in a semistructured, open-table discussion. Discussion questions were guided by the objectives of the project and based on previous literature concerning the physical activity and health behaviors of women. Following each of the sessions, the data were professionally transcribed.

Using an inductive approach, data analysis focused on eliciting themes concerning barriers and enablers to women's physical activity participation. Two experienced researchers read the transcripts multiple times, highlighted segments of interest, and made annotated comments on the transcripts to identify potential themes. Emerging themes were summarized and categorized during the process of reading and rereading. Structural corroboration, where segments of data validated each other, was performed by noting emerging descriptors, issues, and concerns in each transcript.<sup>16</sup> Both researchers reached consensus concerning emerging themes and categories through a process of ongoing discussion to mutually resolve any discrepancies or concerns with analysis. Final themes and categories were identified by the researchers and are summarized below.

Ethical approval was obtained from the Central Queensland University's Human Research Ethics Committee, and all participants gave written informed consent before each focus group session.

## Results

Overall, 78 women participated in the 10 focus group sessions. Each group was identified as a priority women's group, including 1 group of mothers with young children, 2 groups of working women, 2 groups of older women, 2 CALD groups, and 3 indigenous groups.

The results are reported under two main themes that emerged from the data. These themes have been summarized as challenges and barriers to physical activity and strategies for future physical activity participation. The following outlines these themes and highlights individual, as well as group responses.

### Challenges and Barriers to Engaging in Physical Activity

After considering the data, the authors divided the results into three categories, including psychological and cognitive factors, sociocultural factors, and environmental factors.

**Psychological and Cognitive Factors.** For most of the participants, a perceived lack of time due to family and work responsibilities was a major psychological barrier to engaging in physical activity. Many of the participants indicated that domestic duties around the house, such as cleaning, preparing lunches, looking after children and grandchildren, and having dinner ready limited their time to do other things like participating in organized physical activity. Responses such as "with women it's all about maintenance, I have to get tea, I need to do the cleaning and take care of the kids" and ". . . you don't have time for yourself, it's your family, your family takes all your time, so I gave up planning anything, especially if it was just for me" were indicative of many of the participants comments. Participants who worked full time also explained that by

the time they got home and finished preparing dinner for the rest of the family, not only were they too tired to participate in organized physical activity, but it is too dark outside to go for a walk or do anything else.

Low self-esteem and poor body image were also recognized as psychological barriers to engaging in physical activity. Many of the participants recalled times when they joined a gym for health purposes but quickly withdrew as they felt intimidated by other members (especially men) and the staff working there. Although the majority of the participants indicated that low self-esteem and poor body image were barriers for them, many indirectly supported walking as an activity where they were confident and felt good about themselves. For instance one participant described her experience as the following: "You know I went to the gym as an underweight person and was treated like freak and I never went back again. I thought I'm never going back again, I felt like a freak, that's why I keep walking."

**Sociocultural Factors.** Participants indicated that finding affordable facilities and trained employees to look after their children can be an immense challenge. Typical responses from participants included, "... looking after little kids or finding someone to look after them while we go for a walk together is probably the biggest issue" and "childcare is a problem for us, it is very expensive and many centers don't provide childcare and it is very important, very important." Many participants indicated that they would like to take their children with them on the walks; however, groups that walked in urban areas outlined that they couldn't take them as a result of safety issues. "We can't really walk with the children because there are too many of them and it can be dangerous" was indicative of this.

For many CALD participants and participants of Aboriginal/Islander descent, culture was revealed as a barrier to physical activity participation in terms of the types of activities promoted. Many of these participants prefer to be involved in more traditional activities (eg, traditional dance) rather than the mainstream sport and activities that are usually offered. Both groups of participants did recognize walking as a traditional activity, however, and were content with continuing with this activity, with the possibility of participating in other traditional activities such as traditional dance and bush walking.

**Environmental Factors.** The most reported environmental barrier revealed by the majority of the focus group participants was safety. Participants identified a range of factors such as traffic, lighting conditions, animals (eg, dogs and snakes), and gangs and suspicious individuals. Some of the comments describing safety issues included, "We have great walking tracks around the area but they are very secluded so safety is an issue. I prefer to go in groups because my husband won't agree to me walking on my own," and "(city) is very

busy, it is very dangerous, I can't even take my kids walking because my daughter is only three and she might run out in front of cars." Many of the participants also indicated that as women they didn't feel safe walking alone at any time.

The absence of trained staff to organize and manage programs and/or walking groups and other activities was a barrier for the majority of the groups. This was particularly emphasized with groups from regional areas. Consistent with other participants in this study, one participant indicated, "We don't have enough people that can facilitate these types of things. There's not that many people here that have the level of skill that can run things like this."

Participants also indicated that the costs associated with organizing and sustaining physical activity programs (such as WALK) and/or participating in certain programs is an environmental barrier in itself. Factors such as transportation, childcare, and equipment (such as walking/running shoes) can be very expensive, especially for budget cautious families and low income households. In terms of transportation, for instance, one participant indicated that "... I really think that somehow transportation needs to be met. Transport has always been an issue in our community and I think it's probably a problem overall, no matter which community." Individuals from the CALD groups also mentioned that public transportation can be very intimidating, especially when you don't speak very good English and don't know your way around the area; however, most of the CALD participants did use public transportation for daily activities such as grocery shopping, getting children to school, and getting to appointments as they did not own a car. For the majority of the CALD participants, walking was not an option due to safety issues and difficulties associated with navigating to and from different locations outside their immediate community. This alone had a direct effect on the activity levels of these participants, as many CALD group participants indicated that since moving to Australia from their country of origin, their incidental activity had decreased as a result of increased use of public transport.

We were more active in (country of origin) then here, it was part of our day. In (country of origin) we don't have a school bus so we walk on our legs, we walk to collect kerosene to use to cook or to go shopping.

Climate/weather was also referred to as a common environmental barrier. Participants indicated that their walking was restricted due to very hot, humid, and wet conditions during the summer months or colder climates during the winter months. This was particularly emphasized by those participants who moved from cooler climates to warmer climates and were not use to the high temperatures or humid conditions.

## Strategies to Enable Future Physical Activity Participation

In light of the challenges and barriers reported by the focus group participants, many also proposed a number of strategies that may help to enable future physical activity participation in these priority groups.

By far the most reported enabler highlighted by the majority of the focus groups was the inclusion of information/education pertaining to other health behaviors as part of the physical activity program. Many of the groups specified that they would really like to see health professionals brought in to educate the group members about such topics as food/nutrition, smoking, obesity, and alcohol intake, as well as to demonstrate alternative activities such as yoga, pilates, and Tai Chi. Participants indicated that encompassing multiple health approaches within one program would meet more needs of the women's group and make the program more valuable to participants. By developing a more valuable program, it would be assumed that more individuals would become involved and therefore engage in both physical activity and other health behaviors promoted.

Participants also stressed the importance of having a leader/organizer to facilitate the program. Participants indicated that this person plays a crucial role as they are usually the ones to initiate the program, organize meeting times and places, provide information to group members, and motivate group members. Comments indicative of this include the following:

You need the facilitators though, just like resources in regards to doing the little mail outs, occasionally to keep people motivated and for ringing people up all the time and to pick people up and to drop them around . . .

And

Yes, we need someone to push us harder because sometimes we are doing it but we laugh and we're not really pushing hard, we need someone to make us huff and puff.

Most importantly, group members and group leaders/organizers all agreed that the leader/organizer is instrumental in maintaining the physical activity group and plays a vital role in assisting with increasing its membership for future sustainability. Emphasizing physical activity in a group environment was another strategy of engagement shared by the majority of the focus groups. Many of the participants indicated that the group environment would be attractive to people who find it difficult to be active on their own (due to personal motivation or some of the barriers outlined above), who are new to the area, who live alone and/or are isolated, or who just like to be sociable. Similar to the feelings of many of the other participants, one group member stated,

One of the reasons why I joined the walking group was because I was going to be in a group. When (name) and (name) mentioned this group I jumped at the chance because I know I can lose a bit of weight and get the right nutrition values as well as everything. Now that I have joined the walking group I've met heaps of other women, we've got a friendship now. That's all I wanted, was to find friends as well as go on a walk and feel safe.

Participants from CALD and Aboriginal/Islander groups specified that the promotion of group activity was extremely important, further indicating that this would give many of them the opportunity to meet with people from their own culture as well as meet new members who may not be from a CALD or Aboriginal/Islander heritage.

In terms of physical environment, participants recommended some solutions to the climate/weather barrier, such as being active early in the morning to beat the heat, as well as finding a facility (such as a shopping mall) to walk in as a way to avoid the extreme heat and humidity, the wet season, and the colder conditions.

Another strategy suggested by many of the focus group participants included partnering a physical activity program with an existing community program. Participants believed that by doing this, a number of the barriers and challenges discussed above may be resolved as well as providing participants with the opportunity to take advantage of other community services. An example of this is the WALK group that aligned themselves with a community learning center. This partnership assisted the overall program by providing resources and facilities, as well as trained staff to facilitate the program, while giving participants the opportunity to socialize with other community members and the opportunity for CALD members to learn English and learn about Australian culture. The provision of resources, facilities, and trained staff helped to address many of the environmental barriers discussed earlier.

## Discussion and Conclusion

Two major themes emerged from the WALK focus group evaluations: challenges and barriers to physical activity participation and possible strategies that could enable future activity participation for these priority women's groups. The focus group participants reported a number of psychological and cognitive factors, socio-cultural factors, and environmental factors that they perceived restricted participation in physical activity. Participants also highlighted strategies they felt would enable physical activity participation. In particular, these strategies included increased use of health professionals to deliver education regarding physical activity and other health behaviors (eg, nutrition, alcohol intake, smoking), the use of an organizer/leader to facilitate the program, encouraging group activity, being culturally sensitive to the specific needs of all cultures, and devel-

oping a partnership with other community social service centers.

Participants in this study identified a perceived lack of time due to family and work responsibilities as a barrier to physical activity. It has been suggested that these competing demands<sup>17,18</sup> may only be constraints for sports and organized exercises<sup>19</sup> which occur at an inconvenient time and/or place. Promoting and encouraging activities that fit into the context of women's daily routine, such as walking to local shops, actively playing with children, and pursuing daily activity through domestic duties, may be a way to overcome this barrier. It was apparent that women often failed to consider the actual amount of incidental physical activity that they were doing. In numerous instances, the barriers and constraints to organized physical activity actually consisted of incidental physical activities, thus emphasizing the need for women in these groups to understand the potential benefits accrued from such activities and work to maximize their opportunities. The lack of consideration of incidental physical activity and the lack of acknowledgment that much of the activities that these women were perceiving to be barriers or time constraints were actually physical activities themselves. Women need to be more cognizant of the activity they do as part of housework and childcare, which may assist any disappointment they may have in failing to be active. Research concerning the misinterpretations and misunderstandings that many women have of incidental physical activity<sup>20</sup> highlights the importance for researchers and health professionals to emphasize the benefits of incidental activity to these groups.

This may also address the barriers of low self-esteem and poor body image as previous literature examining the maintenance of women's physical activity has indicated that women feel more comfortable walking and participating in other lifestyle activities (eg, gardening) rather than participating in sport or organized exercise classes.<sup>1,21</sup> Low self-esteem and poor body image were also barriers to women attending local fitness centers or gyms due to the intimidating nature of other members, specifically men, and the center's staff. Practical recommendations such as holding women-only fitness classes or sectioning off a part of the gym for women-only use may be ways to address these barriers. In addition, training staff to be sensitive to the specific needs of women and to be more accepting of those who are not already fit and slim may also help to overcome these barriers.

Sociocultural factors, such as lack of childcare and cultural differences, were clearly recognized as major barriers to physical activity participation. The lack of affordable childcare facilities available during activity times makes it difficult for women with young children to participate in structured activity.<sup>13,22</sup> Many Government managed Community Social Service Networks, as well as some of the local organizations who deliver the activity programs, provide childcare at little or no charge for a portion of the day or during the time in which the

activity takes place.<sup>23-25</sup> Raising mother's awareness of these services through social marketing campaigns and/or when visiting health professionals and social service organizations may prompt them to use these services, providing them with the time and ability to participate in physical activity classes or sessions.

Cultural differences were outlined as barriers to physical activity, particularly in Aboriginal/Islander and CALD groups. Research has highlighted that traditional cultural activities (eg, traditional dance, bush walking) once carried out by Aboriginal/Islander and CALD people occur less frequently or not at all when these individuals migrate to a new country and/or are subjected to a different culture.<sup>26</sup> In the future, cultural sensitivity should be practiced by providing culturally appropriate resources and programs to meet the specific needs of each subculture<sup>27,28</sup> in an attempt to increase or maintain physical activity levels. Aboriginal/Islander and CALD participants from this study suggested that the promotion of traditional cultural activities, especially dance, was an appealing strategy to enhance further physical activity participation. Research has shown that culturally relevant dance and exercise programs have a positive effect on physical activity participation among women from CALD backgrounds.<sup>29</sup> Thus, more effort needs to be given to identifying ways to make traditional dance activities available and affordable for these participant groups. Furthermore, Rogerson and Emes<sup>28</sup> suggested that health professionals working with CALD groups need to have a cognitive understanding of the communities culture, including specific beliefs and behaviors. This can be developed by reading books, visiting websites, and attending information sessions about the specific cultural group, as well as meeting with key people from the cultural community. These key individuals should be involved in the development and delivery of the resources and programs as they would be able to provide practical advice concerning what would and would not be appropriate and/or of interest to their specific culture.

Environmental factors (eg, safety, accessibility to facilities and resources, transportation, and climate) were revealed as barriers to physical activity for these women. Previous research has suggested that structural environmental changes should be encouraged (eg, improved lighting and footpaths, alternative indoor facilities during extreme climates, etc.),<sup>30</sup> as these physical improvements would overcome many of the safety issues outlined, as well as address problems with facility accessibility and climate. Practical solutions for overcoming the issues regarding transportation, in particular the intimidating nature of public transport, may include the employment of language and culture specific transport officers in specific communities where people have limited English skills or limited knowledge of the area. These officers would be beneficial in assisting community members with ticket sales and queries regarding bus routes and bus times. Physical improvements (eg, adequate lighting, benches for sitting, clean

sheltered areas, etc.) that would make bus stations and bus stops more inviting to the public is another recommendation that may help to address the issues associated with utilizing public transport.

Structural changes alone may not be sufficient to promote or maintain long term behavioral change, however.<sup>17</sup> Individuals must be made aware and educated about the barriers imposed by the environment and believe they have the capabilities to overcome these barriers. For this to occur, individuals need to know about the existing community resources, funding opportunities, and support available to them and have the confidence and motivation to use these resources.<sup>17,27</sup> Once they are made aware of these resources, training and education seminars should be offered by local health professionals and health organizations to assist these women with utilizing these resources. For instance, one seminar may focus on the skills needed to properly complete a funding application. Possessing such skills may help to develop the confidence and motivation needed to use these resources.

Participants also identified a number of strategies they felt may enable them to be or remain physically active. These findings are very important given that it is these priority women's groups that require attention.<sup>18</sup> It could be assumed that these women are at a stage where they want to be active and improve their overall health by their initiative in joining the WALK program; however, they will require further support to overcome the barriers identified above and institute the strategies they feel will help them change their behavior. Consistent with recent research,<sup>31</sup> the delivery of information/education by health professionals was highlighted by participants as a strategy to help overcome some of the barriers faced by these priority groups. It has been reported that women often lack an understanding of what constitutes physical activity<sup>20</sup> or what is meant by healthy living messages.<sup>32</sup> Providing these women with credible information from health professionals in the form of education seminars, workshops, and specifically tailored resources, these priority groups will be equipped with the knowledge and self-assurance to engage in physical activity and healthy lifestyle behaviors.

The use of leaders/organizers was also cited as a potential strategy to assist with overcoming the barriers outlined. Previous research has highlighted the pivotal role a leader plays in participants' attitudes toward, and adherence to, physical activity programs, even suggesting that leadership is the most important determinant of participation in physical activity programs.<sup>33,34</sup> For leaders/organizers to be affective in supporting group members, however, it is encouraged that leaders are properly trained in the appropriate techniques and strategies for the promotion of physical activity, portray the sense they are interested in each group member, and are able to set up an appropriate environment which encourages group integration and monitor group progress.<sup>33</sup>

In addition to leader support, participants indicated that establishing a group environment is another key strategy to the physical activity barriers specific to these government-defined priority groups. Research supporting group affiliation and group cohesion<sup>35,36</sup> highlights the influence that being a group member can have on the physical activity behaviors of adults. For women in particular, walking in a group alleviates safety concerns,<sup>37</sup> encourages social interaction,<sup>36</sup> and provides motivational and emotional support.<sup>31</sup>

Lastly, developing partnerships and fostering relationships with local councils, public health agencies, and other community organizations may play a role in overcoming these barriers, supporting physical activity initiatives, and promoting long term behavioral change in priority women's groups.<sup>1,17</sup>

Before generalizing the findings of this study to all priority women's groups, certain limitations must be considered. First, the sample was drawn using a purposive sampling method and from a pool of women who were associated with a physical activity program (WALK program). Thus the perceptions of these participants may not necessarily represent the perceptions of all women from priority groups. Second, the focus groups were generally conducted toward the conclusion of the physical activity programs and would not have included women who had previously dropped out of the program. These women may have experienced other barriers that could not be overcome, which would not have been identified in the focus groups. It is also important to note that the majority of these groups were newly formed as a result of the WALK project, thus the perceptions shared by each participant may more likely represent their own distinct views rather than the consensus of the group. Future research should focus on large-scale representative sampling of similar groups to clearly establish the validity of the reported barriers and constraints in large representative samples.

In sum, it is necessary that health care professionals, academic institutions, and government agencies consider the perceptions, opinions, and suggestions of the focus group participants as these are a sample of the actual community members that these programs are designed for. The outcomes highlighted in these specific focus group sessions provide detailed strategies for physical activity engagement by priority women's groups, a population in which activity levels are among the lowest and who require special attention regarding health promotion. These findings are valuable and should be used as a platform to inform the design and implementation of future physical activity interventions for priority women's groups.

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## References

- Speck BJ, Harrell JS. Maintaining regular physical activity in women: evidence to date. *J Cardiovasc Nurs*. 2003;18(4):282–291 quiz 292–3.
- United States Department of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General*. Pittsburgh, PA: U.S. Government Printing Office, Superintendent of Documents; 1996.
- Bauman AE. Updating the evidence that physical activity is good for health: an epidemiological review 2000–2003. *J Sci Med Sport*. 2004;7(1, Suppl):6–19.
- Brown WJ, Burton NW, Rowan PJ. Updating the evidence on physical activity and health in women. *Am J Prev Med*. 2007;33(5):404–411.
- Armstrong T, Bauman AE, Davies J. *Physical Activity Patterns of Australian Adults: Results of the 1999 National Physical Activity Survey*. Canberra: Australian Institute of Health and Welfare; 1999.
- Lim K, Taylor L. Factors associated with physical activity among older people—a population-based study. *Prev Med*. 2005;40(1):33–40.
- Wen LM, Thomas M, Jones H, et al. Promoting physical activity in women: evaluation of a 2-year community-based intervention in Sydney, Australia. *Health Promot Int*. 2002;17(2):127–137.
- Brown WJ, Mishra G, Lee C, Bauman A. Leisure time physical activity in Australian women: relationship with well being and symptoms. *Res Q Exerc Sport*. 2000;71(3):206–216.
- Bauman A, Brown W, Bellew B, Lesjak M, Vital P. *NSW 1996 Physical Activity Survey: Summary of Major Findings*. Sydney: New South Wales Health Department; 1999.
- Australian Bureau of Statistics. *Migrants and Participation in Sport and Physical Activity 2006*. Canberra: National Centre for Culture and Recreation Statistics; 2006.
- Osuji T, Lovegreen SL, Elliott M, Brownson RC. Barriers to physical activity among women in the rural mid-west. *Women Health*. 2006;44(1):41–55.
- Lawton J, Ahmad N, Hanna L, Douglas M, Hollowell N. ‘I can’t do any serious exercise’: barriers to physical activity amongst people of Pakistani and Indian origin with Type 2 diabetes. *Health Educ Res*. 2006;21(1):43–54.
- Miller YD, Trost SG, Brown WJ. Mediators of physical activity behavior change among women with young children. *Am J Prev Med*. 2002;23(2, SUPPL. 1):98–103.
- Sallis JF, Calfas KJ, Alcaraz JE, Gehrman C, Johnson MF. Potential mediators of change in a physical activity promotion course for university students: project grad. *Ann Behav Med*. 1999;21(2):149–158.
- Caperchione C, Mummery K, Joyner K. WALK Community Grants Scheme: Lessons learned in developing and administering a health promotion micro-grants program. *Health Promot Pract*. in press.
- Eisner E. On the differences between scientific and artistic approaches to qualitative research. *Educ Res*. 1981;10:5–9.
- Jilcott SB, Laraia BA, Evenson KR, Lowenstein LM, Ammerman AS. A guide for developing intervention tools addressing environmental factors to improve diet and physical activity. *Health Promot Pract*. 2007;8(2):192–204.
- Eyler AE, Wilcox S, Matson-Koffman D, et al. Correlates of physical activity among women from diverse racial/ethnic groups. *J Womens Health Gend Based Med*. 2002;11(3):239–253.
- Sternfeld B, Ainsworth BE, Quesenberry CP. Physical activity patterns in a diverse population of women. *Prev Med*. 1999;28(3):313–323.
- Tudor-Locke C, Henderson KA, Wilcox S, Cooper RS, Durstine JL, Ainsworth BE. In their own voices: definitions and interpretations of physical activity. *Womens Health Issues*. 2003;13(5):194–199.
- Booth ML, Bauman A, Owen N, Gore CJ. Physical activity preferences, preferred sources of assistance, and perceived barriers to increased activity among physically inactive Australians. *Prev Med*. 1997;26(1):131–137.
- Lewis B, Ridge D. Mothers reframing physical activity: family oriented politicization, transgression and contested expertise in Australia. *Soc Sci Med*. 2005;60(10):2295–2306.
- Guerin PB, Diiriye RO, Corrigan C, Guerin B. Physical activity programs for refugee Somali women: working out in a new country. *Women Health*. 2003;38(1):83–99.
- Miller YD, Brown W. Determinants of active leisure for women with young children—an ‘Ethic of Care’ prevails. *Leisure Sci*. 2005;27:405–420.
- Dawson AJ, Sundquist J, Johansson SE. The influence of ethnicity and length of time since immigration on physical activity. *Ethn Health*. 2005;10(4):293–309.
- Evenson KR, Sarmiento OL, Ayala GX. Acculturation and physical activity among North Carolina Latina immigrants. *Soc Sci Med*. 2004;59(12):2509–2522.
- Kolt G, Paterson J, Cheung V. Barriers to physical activity participation in older Tongan adults living in New Zealand. *Australas J Ageing*. 2006;25(3).
- Rogerson M, Emes C. Physical Activity, older immigrants and cultural competence: a guide for fitness practitioners. *Active Adapt Aging*. 2006;30(4).
- Hovell MF, Mulvihill MM, Buono MJ, et al. Culturally tailored aerobic exercise intervention for low-income Latinas. *Am J Health Promot*. 2008;22(3):155–163.
- Taylor WC, Sallis JF, Lees E, et al. Changing social and built environments to promote physical activity: recommendations from low income, urban women. *J Phys Act Health*. 2007;4(1):54–65.
- Burgoyne LN, Woods C, Coleman R, Perry IJ. Neighbourhood perceptions of physical activity: a qualitative study. *BMC Public Health*. 2008;8:101.
- Shepard RJ. Whistler, A Health Canada/CDC conference on ‘Communicating physical activity and health

- messages: Science into practice'. *Am J Prev Med.* 2001;23:221–225.
33. Estabrooks PA, Munroe KJ, Fox EH, et al. Leadership in physical activity groups for older adults: a qualitative analysis. *J Aging Phys Act.* 2004;12(3):232–245.
  34. Loughhead TM, Colman MM, Carron AV. Investigating the mediational relationship of leadership, class cohesion, and adherence in an exercise setting. *Small Group Res.* 2001;32(5):558–575.
  35. Caperchione C, Mummery K. Psychosocial mediators of group cohesion on physical activity intention of older adults. *Psychol Health Med.* 2007;12(1):81–93.
  36. Estabrooks PA, Carron AV. Group cohesion in older adult exercisers: prediction and intervention effects. *J Behav Med.* 1999;22(6):575–588.
  37. Hoebeke R. Low-income women's perceived barriers to physical activity: focus group results. *Appl Nurs Res.* 2008;21(2):60–65.