2. Participation in women's sport in Australia

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2.1 INTRODUCTION

The health and social benefits from regular participation in sport and physical recreation activity are well known. Only recently, however, have economists begun to analyze the motivations and constraints that determine an individual's allocation of time to sport and exercise. For example, Humphreys and Ruseski (2009 and 2010) analyze the economics of physical activity in the United States and Canada, respectively, while Farrell and Shields (2002) do the same for England.

Governments at all levels in Australia have become increasingly active in encouraging people to adopt physical activities as a regular part of their lifestyle. However, there has been little formal study of what factors govern individual choices involving physical activity. This chapter uses data compiled by the Australian Bureau of Statistics (ABS) to motivate a simple model of how Australian men and women decide whether to undertake physical activity, and, if they do, how they choose which activity to pursue.

The data, contained in the report 'Women in Sport' (ABS, 2009), detail the differences in how men and women allocate their time across a variety of physical activities and how these choices change over the life cycle.¹ The survey population starts at age 15, and the survey defines a 'sport participant' as a person who physically undertakes the activity. Hence, individuals in non-playing roles, such as coaches or referees, are not regarded as participants. The survey also documents both why people choose to exercise or not to exercise. We use these reports of individual choices and motivations as a jumping-off point for creating a model of how a typical individual allocates his or her time. The model provides insights into individual behavior and can serve as the basis for future empirical studies based on micro-level data.

In Section 2.2, we present some key findings of the 2009 study. In Section 2.3, we construct a model of time allocation based on these findings and show how the data allow us to reach some basic conclusions regarding men's and women's behavior. We also briefly discuss the role

of women as spectators of sports in Australia. Section 2.4 describes some institutional barriers to growing participation by women in Australian sport. Section 2.5 concludes.

2.2 PATTERNS OF SPORTS AND PHYSICAL RECREATION ACTIVITIES IN AUSTRALIA

Australian women differ significantly from men in their choice of recreational activities. One of the most notable differences is that women participate in a few highly popular activities, while men participate in a wider array of options. According to figures compiled by the ABS for 2005–06, the majority of female participants who were at least 15 years old (58 percent or 3.1 million women) undertook just one sport or physical recreation activity, with 25 percent participating in two activities and 17 percent participating in three or more. The most popular physical activity for women in 2005–06 was walking for exercise, with 2.7 million women (33 percent) participating. This accounted for almost half of all women who undertook any activity. Walking was also the most popular activity for men, with a participation rate of 17 percent (1.3 million men). However, men's activities were more widespread, so walking accounted for only a quarter of all men who exercised at all. This finding conforms to results of Humphreys and Ruseski (2009), who found that walking was by far the most popular sport in the US in terms of total participation.

Aerobics/fitness was the second most popular activity for both men and women. Aerobics was also dominated by women, with 16 percent (1.3 million women) participating, while only 9.4 percent of men (or 744,500) participated. This pattern continues, as eight of the 10 most popular activities for women also appear among the 10 most popular activities for men. The two activities that are not in the top 10 for men are yoga and netball.² The latter result is hardly surprising, as netball is generally regarded as a 'women's sport' in Australia.

Figure 2.1 illustrates the different patterns in sporting activities in which Australian men and women participate. Women are far more likely to engage in walking and aerobics than are men. Men are much more likely to be involved in cycling and golf than women.

Women are more likely than men to participate regularly in physical activity, where we define 'regular participation' as engaging in an activity more than twice a week. About 32 percent of all Australian women participate in a physical activity, while only about 27 percent of men do.³ These figures are far lower than Humphreys and Ruseski report for the US. They

Source: *Participation in Sports and Physical Recreation, Australia, 2005–2006.*

Figure 2.1 The 10 most popular sports and physical recreation activities by gender

claim that over 50 percent of the US population participate regularly in some sport.

Figure 2.2 shows that men's and women's participation in physical activity changes over the life cycle. Women participate more in sport and physical recreation as they get older. Their participation rate peaks at 74 percent for the 25–34-year-old age group and then slowly declines until age 64. There is a discrete drop in the last category, but even then almost half the women aged 65 and over report participating in physical activity (48 percent or 652,900 women). The figure also shows that the changes in men's participation rates over the life cycle are highly correlated with women's rates, as they differ only slightly by gender.

The survey also provides insights into the motivation for physical activity, as women and men who participated in sports and physical recreation activities 13 times or more in the 12-month period prior to being interviewed also reported their reasons for participating. The vast majority of participants claimed that they participated for health/fitness reasons. About half did so for enjoyment and slightly under half did so for a sense of well-being. Other major reasons included social or family reasons and weight loss. Less than 10 percent of the women surveyed reported that

Source: *Participation in Sports and Physical Recreation, Australia, 2005–2006*.

Figure 2.2 Participation in sports and physical recreation by age and gender

they exercised for the competition or challenge involved. To put that figure in perspective, more women reported exercising in order to walk the dog than for the competition or challenge. Figure 2.3 shows the reasons given for each physical activity by men and women.

Early studies of reasons for athletic participation, such as McDonald and Thompson (1992), found clear differences between men and women, as women were much more likely to exercise to control their weight than men were. More recent studies – such as Strelan and Hargreaves' survey of Australian men and women (Strelan and Hargreaves, 2005) – found that men and women were equally likely to cite weight loss as a reason to exercise.

The ABS survey finds that the pattern of responses men gave for why they exercised closely resembles the pattern for women, though there are some differences. Women were more likely to cite health and well-being than were men, while men were more likely to cite enjoyment and social

Source: *Participation in Sports and Physical Recreation, Australia, 2005–2006.*

Figure 2.3 *Reasons for participating in sports and physical recreation*

or family reasons. However, the percentages of men and women reporting these reasons differed only slightly. Only two reasons for exercise differed significantly. Contrary to Strelan and Hargreaves, women were about twice as likely as men to report weight loss as a reason for exercise. Men were about twice as likely as women to cite competition or challenge as a reason for exercise or sport. The pattern of responses was generally consistent with the stereotypical image of male behavior. Only the greater tendency of men to cite the social aspect of physical activity surprised us.

The people who either did not participate at all in sports and physical recreation or who had participated only 1–12 times in the previous 12 months gave a variety of reasons for their lack of participation. The most common reasons they cited related both preferences – a lack of interest in exercise or sport – and constraints – a lack of time to participate because of their need to work or study or because of family obligations and the physical constraint of old age. Figure 2.4 illustrates the reasons men and women gave for not engaging in physical activity.

With two major exceptions, men and women hardly differed at all in

Source: *Participation in Sports and Physical Recreation, Australia, 2005–2006*.

Figure 2.4 Reasons for not participating in physical activity

the constraints they cited as preventing them from engaging in physical activity. The first exception was that men were over one-third more likely than women to cite work and study as reasons for not participating. The second exception was that women were almost twice as likely as men to cite family duties.

2.3 A SIMPLE MODEL OF PARTICIPATION IN PHYSICAL ACTIVITY

In this section, we gain deeper insight into the reasons for differences in the behavior of Australian men and women by extending the model presented by Downward and Riordan (2007). Downward and Riordan, in turn, extend Becker's (1965) model of the allocation of time by hypothesizing that different leisure activities bring unique rewards. Distinguishing between the value of different leisure activities allows us to analyze people's participation in sports because engaging in sports is part of their broader labor–leisure trade-off. For example, people might enjoy greater utility from participating in a sport because it improves their health (see, for example, Humphreys et al., 2011). Other possible sources of utility

are success in the activity and the social interaction associated with the activity. Social interaction could overlap with labor supply in cases where engaging in a sport allows one to engage customers, suppliers, or coworkers.

To construct a simple model of engaging in sports activity, we assume that a person maximizes a utility function that is defined over consumption of a composite commodity (C), health (H), competition (Z) and social interaction (S). We define ‘competition’ as the enjoyment that comes from participation in an activity that has a clear winner and loser. The individual thus maximizes the utility function:

$$U = U(C, H, Z, S). \quad (2.1)$$

Consumption of the composite commodity, C , requires either income that is gained by time spent working for the wage w (T_L) or time spent in home production (T_p). Since, for simplicity, we ignore autonomous income, the budget constraint becomes:

$$C = w * T_L + f(T_p). \quad (2.2)$$

The function $f(T_p)$ can be thought of as the ‘home production function’ with $f' > 0$ and $f'' < 0$. Substituting equation (2.2) into equation (2.1) allows us to express consumption of the composite commodity in terms of the time variables and the wage. Health and social interaction come from time spent in either of two physical activities, A_1 and A_2 . Individuals maximize (2.1) subject to the time constraint:

$$T = T_L + T_p + T_1 + T_2 \quad (2.3)$$

In equation (2.3), T_L is the time spent working for pay, T_p is the time spent in home production, T_1 is the time spent on physical activity A_1 , and T_2 is the time spent on physical activity A_2 . We assume that the amount of health, competition, and social interaction the individual consumes is a linear function of the time spent on the two activities, where α_j^i is the contribution of an additional hour spent in activity j to his/her consumption of health, competition, and social interaction ($i = H, Z, S$):

$$H = \alpha_1^H * T_1 + \alpha_2^H * T_2, \quad (2.3a)$$

$$Z = \alpha_1^Z * T_1 + \alpha_2^Z * T_2, \quad (2.3b)$$

$$S = \alpha_1^S * T_1 + \alpha_2^S * T_2. \quad (2.3c)$$

Restating equation (2.2) in terms T , T_p , T_1 and T_2 , and combining equations (2.1)–(2.3c) yields:

$$U = U[w^*(T - T_1 - T_2 - T_p) + f(T_p), \alpha_1^H * T_1 + \alpha_2^H * T_2, \alpha_1^Z * T_1 + \alpha_2^Z * T_2, \alpha_1^S * T_1 + \alpha_2^S * T_2]. \quad (2.4)$$

Maximizing equation (2.4) with respect to T_1 , T_p , and T_2 yields the first-order conditions:

$$\begin{aligned} \frac{\partial U}{\partial C} * w &= \frac{\partial U}{\partial H} * \alpha_1^H + \frac{\partial U}{\partial S} * \alpha_1^S + \frac{\partial U}{\partial Z} * \alpha_1^Z \\ &= \frac{\partial U}{\partial H} * \alpha_2^H + \frac{\partial U}{\partial S} * \alpha_2^S + \frac{\partial U}{\partial Z} * \alpha_2^Z \\ &= \frac{\partial U}{\partial C} * f'(T_p). \end{aligned} \quad (2.5)$$

The equality of the left-most and right-most terms of equation (2.5) yields the familiar result that the marginal value of home production equals the wage (see Gronau, 1980). The equality of $[(\partial U)/(\partial C)] * w$ with the remaining terms results from the fact that engaging in physical activity comes at the cost of earning income and thus of consumption. Similarly, the amount of time one spends on physical activity i depends on the activity's per unit contribution to health, success in competition, and social interaction as well as on these factors' contribution to the marginal utility of both of these activities. For example, an individual who places a low marginal value on social interaction and a high marginal value on health might engage in a lot of swimming, which is very good exercise but does not involve much interaction with one's fellow swimmers. Someone who has the opposite sentiments would choose to spend little time swimming and more time on an activity that allows for greater socialization, such as walking.

We can now use this simple framework to explain the gender differences in physical activities as well as the changing pattern of activities over the life cycle. Figure 2.1, for example, shows that aerobics and walking, two healthful activities that are not at all competitive, are much more popular among women than among men. In contrast, the more competitive activities of cycling, golf, and running are much more popular among men. This could reflect the fact that, as Figure 2.4 shows, women are more motivated than men by health-related factors, while men are more motivated by

competition and ‘enjoyment’ of the sport itself. Thus the different choices in activities might be traced to differences in the marginal value of health or competition to men and women. The popularity of golf, particularly among men, might be traced to its social value, a factor that is especially important among men. We shall explore another reason for golf’s popularity below.

The model also provides insight into why some people do not participate in physical activity. Men commonly cite work responsibilities as a reason for not engaging in sport. In terms of our model, a high wage increases the opportunity cost of sport, causing the individual to allocate more of his/her time toward work and less to leisure activities. Looking beyond the immediate context, the model also helps explain why people who live in subsistence societies do not engage in sport. Such people have very low hourly pay, but this is offset by a very high marginal utility of consumption $[(\partial U)/(\partial C)]$. This, again, causes people to allocate their time to work instead of recreation.

According to the Equal Opportunity for Women in the Workplace Agency (EOWA), Australian women earn almost 17 percent less than men (EOWA, 2011). If labor supply curves are upward sloping, lower wages lead to a lower quantity of labor supplied. As a result, we expect women to list work obligations as a binding constraint on their physical activity less frequently than men do. Given the continued prevalence of traditional sex roles, it is no surprise that household duties are far more of a factor for women. In terms of our model, traditional gender roles in the family dictate that the marginal product of home activity (f') is generally greater for women than for men, leading to home production being more of an obstacle to physical activity than work outside the home.

One final insight comes from modifying the model to account for interactions between work and play. People attribute such an interaction to golf, for example, as business deals are often closed on the fairway. Such interactions are denied to women through formal and informal restrictions at country clubs and golf courses. These restrictions – and their implications for business dealings – are summarized by the term ‘grass ceiling’ (*Golf Today*, 2011). We supplement the model by assuming that activity A_2 can be combined with work so that additional time spent at it increases consumption of the consumption commodity by $r_2 T_2$. This changes the first two first-order conditions:

$$\begin{aligned}\frac{\partial U}{\partial C} * w &= \frac{\partial U}{\partial H} * \alpha_1^H + \frac{\partial U}{\partial Z} * \alpha_1^Z + \frac{\partial U}{\partial S} * \alpha_1^S \\ &= \frac{\partial U}{\partial H} * \alpha_2^H + \frac{\partial U}{\partial Z} * \alpha_2^Z + \frac{\partial U}{\partial S} * \alpha_2^S + \frac{\partial U}{\partial C} * r_2. \quad (2.5a)\end{aligned}$$

Source: *Participation in Sports and Physical Recreation, Australia, 2005–2006*.

Figure 2.5 Attendance patterns at Australia's main sports

Because activity A_2 now has an additional, positive term, an allocation of time that would have generated equilibrium in equation (2.5) now has too little time devoted to activity A_2 . As a result, people will devote more time to activities that contribute to their business dealings as well as bring personal benefits, *ceteris paribus*. This helps explain the observation in Figure 2.1 that golf is more than twice as popular among men as among women.

In addition to participating in sports activities, large numbers of men and women watch others participate.⁴ In 2005–06, 37 percent of Australian women aged 15 and older (about three million women) and 52 percent of Australian men aged 15 and older (about 4.1 million men) attended one or more sporting events, excluding junior and school sport (ABS, 2010). Figure 2.5 shows attendance patterns of men and women at Australia's most popular spectator sports.

Women's attendance patterns deviate substantially from those of men. Women are less than half as likely as men to attend either motor sports or cricket, and they are only about half as likely to attend a rugby match. Women are also far less likely to attend an Australian Rules Football match than men. The difference, however, is less pronounced

for Australian Rules Football than for the above sports. Moreover, Australian Rules Football is the most popular spectator sport among women. The attraction of Australian Rules Football for women is not new. Hess (2000) notes that women attended football matches in large numbers – by some accounts, as much as 50 percent of the crowd – from the very beginning of the sport in the 1850s. This stands in sharp contrast to other sports, such as rugby, which have always catered to a more uniformly male clientele.

Only two sports, tennis and netball, draw more women than men. Again, the relative popularity of netball among women is to be expected, as it is played almost exclusively by women. Similarly, tennis might draw more women because so many women participate in the events and because many women play tennis recreationally.

Basketball and Australian Rules Football are far less popular in Australia than basketball and American football are in the United States. The percentage of American men who claim to be professional football fans ranges from 64 percent for 18–34-year-olds to 52 percent for those over age 55. (All US figures are from Clotfelter, 2011, p. 235.) The figures for American women range from 37 to 33 percent. Football is thus almost twice as popular among American women as it is among Australian men. One might discount this disparity, as Australian Rules Football is largely confined to the area around Victoria, which is in the southern part of the country. Such regionalism does not apply to basketball, but the same disparities between the US and Australia exist. The popularity of professional basketball in the United States ranges from 36 percent for 18–34-year-olds to 24 percent for 35–54-year-olds, with those older than 55 reporting at 26 percent. Basketball is only a little less popular among American women, with 20–22 percent claiming to be fans. Again, the figures for Australians are much lower, with 2–3 percent of both men and women reporting that they are fans.

The terms of the model developed above also have natural interpretations when we add a third activity (A_3), time spent watching sports. Being a spectator or a fan of a particular athlete or team should have no direct health benefits. The sedentary nature of spectating could even lead to poorer health outcomes. As a result, $\alpha_3^H \leq 0$ for activity A_3 . Because the impact is likely to be small, we simplify the analysis by assuming $\alpha_3^H = 0$. Spectating could, however, have a large impact on socialization and on competitiveness, vicariously through the success of one's favorite team. As a result, α_3^S and α_3^Z could be large positive numbers. Finally, to the degree that businesses use sporting events to entertain clients or close business deals, spectating could also have a sizable financial return, as denoted by a large r .

We can also use the model to explain gender differences in spectator behavior. The fact that women engage in so much less spectating than men is consistent with the findings of the ABS that women place much greater emphasis on the health benefits of sport. Spectating holds little appeal for people who are attracted to sport because of its contribution to their physical well-being. Men, on the other hand, stress the social and competitive aspects of sport. For men, being a spectator provides an alternative way to satisfy their desire for socialization and competition. It is also likely that the pecuniary rewards from being a spectator, in the form of closing business deals at an event or a sports bar, are greater for men than for women. Given this, it is no surprise that men spend far more time as spectators at sporting events than women do. It also helps to explain why men have lower participation rates in physical activity than do women. Being a spectator might actually be a more efficient way for men to maximize their utility than participating in sports.

2.4 LOWERING BARRIERS TO PARTICIPATION

While Australian women participate broadly in physical activity, their participation has not translated into leadership positions in sport or into well-developed professional leagues for women. The lack of women as leaders and role models may present a barrier to further growth in physical activity among women in Australia. Already, participation rates appear to have stalled.

According to the Australian Sports Commission (ASC), the governmental body responsible for distributing funds and providing strategic guidance for sporting activity in Australia, there has been very little change over the past 10 years in the participation of women and girls in all aspects of sport. It notes that there has been a major shift away from participation in organized sport towards participation in informal activities. The ASC also notes that women remain underrepresented at all levels in coaching, officiating, and leadership.

The representation of women at the national level has been rising slowly, but it remains very low. Only 19 percent of the national sporting organizations (NSOs) are headed by women, and women comprise only 23 percent of all NSO board membership. The ASC has identified the promotion of women in leadership roles in sport as a key priority, believing that growth in the number of women on Australia's sporting boards will help to promote inclusive cultures that support women in sport (ASC, 2011a).

The underrepresentation of women also extends to the Australian Olympic Committee (AOC). Jeffrey (2011) reports on the dissatisfaction

of AOC president John Coates, who argues that having only two of 15 AOC board positions occupied by women is not acceptable. It is particularly disturbing in light of the performance by Australian women at recent Olympic Games. For example, Australian women won 56 percent of the team's medals at the 2008 Beijing Olympic Games, despite their making up only 44 percent of the team. The representation of women on the AOC is roughly proportional to the representation of women on corporate boards in Australia. However, with most members of the AOC executive board elected rather than appointed, Coates cannot make unilateral decisions, and change will undoubtedly take time.

Coates also wants more women in senior management positions in Australian sport, and more women on the AOC executive committee. While the AOC's 2010 annual report states that 69 percent of the AOC's staff are women, only 40 percent of senior management positions are held by women. Coates said the gender imbalance was more marked in the management teams of the AOC's 32-member sports. Only six presidents and seven chief executives of the 32 national federations are female.

According to the ASC, five barriers prevent women from assuming a greater leadership role. First, women do not have enough role models and champions who are willing to foster the talents of women in their sport and its governance. The lack of mentors prevents women from receiving the same contacts and career advice that their male colleagues receive. This disparity can prevent even talented, ambitious women from attaining leadership roles ('A Word from Your Sponsor', 2012).

Second, the boards of the NSOs too often comprise volunteers with unlimited tenure. This perpetuates an 'old-boy network' in which mostly male volunteers recruit future members from among their own ranks. Lacking such connections, women have no way to break into this unending chain.

The third problem starts at the local level. Women remain a minority in the membership of many individual sports clubs. Thus, leadership candidates who advocate policies desired by women have a difficult time getting elected. Women therefore find it hard to move into leadership positions there and later into regional or national positions, which traps them in a vicious circle of underrepresentation.

The underrepresentation of women might stem from the fourth problem cited by the ASC, the inhospitable 'macho' culture of many of the local sports clubs. Many local organizations fail to accommodate the needs and desires of their women members. Some openly discriminate against women, which discourages them from participating at the grassroots level.

The final barrier is the family-unfriendly demands that participation in sports clubs poses. Even if women are encouraged and supported by

their local organizations, women's role as primary care-giver in most Australian families may preclude them from greater participation because the care-giver role frequently imposes commitments that conflict with the nature and timing of sports events. For women to increase their representation in sports clubs, the clubs will have to go beyond simply permitting women to take roles; they will have to reshape leadership roles to accommodate the needs of its female members, something that has yet to happen on a large scale.

In 2002, the ASC implemented two programs to address the above barriers: the Sport Leadership Grants and Scholarships for Women Program, and the Women in Sport Leadership Register (ASC, 2011b). Since 2002, the Sport Leadership Grants and Scholarships for Women Program has provided A\$3.3 million in funding for educational and development opportunities for over 16,000 women. Unfortunately, as the figures at the beginning of this section suggest, this initiative has had only limited success in increasing the representation of women. Any substantial improvement will occur over a long period of time.

2.5 CONCLUSION

The survey carried out by the ABS shows that there are clear similarities and differences in how much men and women engage in sport and physical recreation activities, the activities in which they choose to participate and their reasons for engaging in those activities. Women and men are roughly equally likely to engage in physical activity, but men's preferences are more widely spread than women's. While walking is the most popular physical activity for both women and men, about 33 percent of women who exercise engage in walking, while only 17 percent of men do. The reasons for exercising also differ. Women cite weight loss as their primary motive for exercise in contrast to men, who cite competition or challenge and socialization as leading motives. Men and women also play very different roles as spectators of professional or amateur sports.

We take these observations and provide a coherent model that explains how individuals allocate their time. Our model is based on Downward and Riordan's extension of Becker's theory of the allocation of time. We show that the different levels and types of physical activity are consistent with the results of a model of individual behavior in which the individual maximizes a utility function that is defined over consumption and different aspects of leisure, subject to income and time constraints. We also show that this model leads naturally to the conclusion that men participate much more as passive spectators at sporting events than do women

because men can satisfy their desires for competition and socialization but women cannot satisfy their desire for fitness or weight loss by watching a sport. With sufficient micro data, this model could serve as a paradigm for a study that looks more closely at the individual characteristics that lead a person to engage in sport either as an active participant or as an observer.

While the degree to which women participate in physical activity and spectatorship is roughly equivalent to that of men, the same cannot be said about women's representation in Australia's sport leadership. Women are badly underrepresented in leadership roles in Australian sport. We detail five of these barriers. The Australian government has attempted to increase the representation of women in leadership roles in sport, but – until it addresses the five barriers we have listed – women will continue to be underrepresented. Lacking role models and encouragement at the highest levels will limit the participation of women in organized sport, particularly at the highest levels.

NOTES

1. The 2005–06 Multi-Purpose Household Survey and the data were published in *Participation in Sports and Physical Recreation, Australia, 2005–06* (cat. no. 4177.0). The survey was to be conducted again in 2009–10, with the results published in early 2011.
2. Netball is played by two teams of seven players. It developed from early versions of basketball that began in England in the 1890s. Games are played on a rectangular court with raised goal rings at each end. Each team attempts to score goals by shooting a ball through its goal ring. Players are assigned specific positions, which define their roles within the team and restrict their movement to certain areas of the court. A player with the ball can hold onto it for only three seconds before shooting for a goal or passing to another player. For more on netball, see Booth, Chapter 19 in this volume.
3. A detailed definition of the participation regularity categories can be found in *Participation in Sports and Physical Recreation, Australia, 2005–06* (cat. no. 4177.0).
4. For a deeper analysis of women as spectators, see Montgomery and Robinson, Chapter 1 in this volume.

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