



## **Childhood Physical Activity Involvement in Active and Inactive Female Adults**

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*Current trends show progressive declines in levels of physical activity from childhood through adolescence and adulthood, most notably for females. The current study examined organized activity involvement in active and inactive females (age 18) using retrospective data. Results indicated that active females participated in significantly more physical activities than inactive females from age 6 to age 18. No significant differences were found between groups for non-physical activities. In addition, parents of active and inactive females were the most influential factor in initiating physical activity. However, parents of active females initiated more physical activity involvement than did parents of inactive females. Results also indicate that certain periods in childhood and adolescence appear to be critical for developing long-term physical activity habits.*

Identifying adequate methods of fostering lifespan physical activity involvement is a critical topic in many societies. Sedentary lifestyles have been associated with increased cardiovascular disease, hypertension, and diabetes (Epstein & Goldfield, 1999; Metzl & Micheli, 1998). Further, engaging in physical activity (e.g., sport and exercise participation) has also been shown to provide physical health benefits in terms of decreased risk of physical ailments as well as mental health benefits. For example, Hills (1998) noted psycho-social implications of sport participation for youth including increased mental alertness, self-esteem, attitude, perceived competence, emotional well-being and psycho-social adjustment. Even for adults, physical activity has been shown to be an effective means of reducing the cognitive declines associated with ageing (Mazzeo et al., 1998). Psychological benefits of physical activity involvement include improved cognitive function and self-efficacy (Mazzeo et al., 1998), as well as reductions in state anxiety, depression and stress (International Society for Sport Psychology, 1992; Morgan & Goldston, 1987).

While there is clear evidence of the benefits of exercise and healthy lifestyles and the risks associated with sedentary behaviour and obesity, the prevalence of obesity and sedentary behaviour continues to rise. Tremblay and Willms (2000) reported that in Canada from 1981 to 1996, the prevalence of overweight boys (BMI greater than 85<sup>th</sup> percentile) aged 7-13 years has increased from 15% to 28.8%, and for girls aged 7-13 years from 15% to 23.6%. In addition, the prevalence of obesity (BMI greater than 95<sup>th</sup> percentile) has more than doubled from 5% to 13.5% in boys and from 5% to 11.8% in girls.

The Canadian Fitness and Lifestyles Research Institute (CFLRI, 2001) noted that 64% of adults in Canada over the age of 18 were not sufficiently active for optimal health. Furthermore, greater than half of 5-17 year old youths were not active enough for optimal development and growth. Activity levels have also been shown to decrease with age (CFLRI, 2001). King and Coles (1992) indicated that from the age of 11 to 15 years, boys and girls dramatically decreased involvement in community based and school based sports programs and that levels of participation are significantly lower in females. Similarly, a study by Crocker and Faulkner (1999) showed that elementary school students typically have higher physical activity scores than high school students with males consistently demonstrating higher physical activity levels than females. The trend towards decreased involvement in physical activity for females is a robust finding (see De Knop, Engström, Skirstad, & Weiss, 1996 for a review).

Tremblay (1998) noted that childhood behaviours perpetuate adult behaviours in the realm of physical activity; if individuals are inactive as children, they tend to be inactive as adults. Prior research has examined the link between childhood and adult patterns of physical activity and inactivity. Dennison, Straus, Mellitis, and Charney (1988) compared adult levels of physical activity with corresponding fitness test scores as 10-11 and 15-18 year-old youths. They found that childhood endurance scores (548.6m run and sit-ups) were strongest predictors of adult levels of physical activity and inactivity. Further, there is evidence that physical activity levels in childhood (Pate et al., 1999) and adolescence (Raitakari, Porkka, Taimela, Telama, Räsänen, Viikari, 1994) remain relatively stable across time. Dennison et al. (1988) concluded that in order to be most effective, health-related physical activity programs must be implemented at a young age to ensure appropriate exercise habits are formed early.

Perhaps the most salient influences in socializing children into sport and physical activity are parents because of their ability to control sport opportunities (Loy, McPherson, & Kenyon, 1979; McPherson, Curtis, & Loy, 1989). In a recent study, Côté (1999) indicated that parents play a significant role in the development of long-term involvement in sport. His results also showed that in the initial stages of sport involvement (which he termed the 'sampling years') parents are a chief source of emotional support, leadership, and encouragement. Further, the role of coaches and peers have been identified as primary influences to sport involvement in youth (see Côté, 2002 and Côté & Hay, 2002a for reviews).

The purpose of the current study is to retrospectively examine the physical activity patterns of active and inactive female young adults and to determine (1) the relationship between activity involvement during childhood-adolescence and adult physical activity involvement and (2) the role that influencing agents may have played in initiating involvement in physical activity.

## Method

### *Participants*

One hundred and two females from a mid-size Canadian University completed a frequency of physical activity questionnaire. Females in this group ranged in age from 18-22 years. The questionnaire required participants to indicate the number of hours per week they participated in organized sports, recreational physical activity, and working out during their final year of secondary school. The purpose of this questionnaire was to

obtain a pool of active and inactive women for the second stage of the study, a structured interview.

Of the 102 women who completed the questionnaire, 87 agreed to participate in the structured interview and 9 women were chosen for each group. All participants provided informed consent to partake in the study. The inactive group was composed of women who participated in fewer than five hours of physical activity a week during their last year of high school. The active group was composed of women who participated in more than 25 hours of physical activity a week during their last year of high school. This extreme range of physical activity criteria for active (> 25 hours/week) and inactive (< 5hours/week) participants was selected in order to maximize the possibility of noting differences between the two groups.

#### *Interview Procedure*

The structured interview was designed to retrospectively examine each participant's involvement in organized activities and used an adaptation of a standardized procedure recently developed by Côté, Ericsson, and Beamer (2001). The participants were asked to recall all organized activities they had performed from 6 to 18 years of age (including sports, arts, music, and organized clubs). Participants were also asked to report, who was responsible for getting them initially involved in the activity. Next, a detailed profile of the participants' activity involvement was created. Specifically, information was collected regarding the age the participant started and stopped each activity as well as the hours per week and months per year of participation. Two recent studies (Baker, Côté, & Abernethy, in press; Soberlak & Côté, in press) have established the reliability and validity of this method to collect retrospective information. To date, much of the research examining trends in youth sport has been collected using cross-sectional methods. The method used in the present study allows for the collection of data via retrospective recall and may present a more valid profile of female involvement in organized activities.

## **Results**

A two way repeated measures ANOVA was used to examine differences in participation in organized activities between the groups at 3-year intervals (i.e., 6, 9, 12, 15, 18). Results indicated active females participated in significantly more activities than inactive females ( $F(1, 17) = 34.0; p < .001$ ). More importantly, results indicated a significant interaction for group (active/inactive) by age ( $F(1, 17) = 3.4; p < .05$ ). These results are illustrated in Figure 1. For both groups there are an increasing number of physical activities until around 12-13 years of age. Following this, there is a decrease in number of activities done; however, this decrease lasts for only 3 years in the active group before increasing once again. For the inactive group the number of activities continued to decline until 18 years of age.

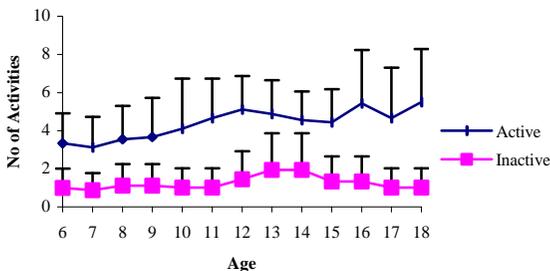


Figure 1

*Involvement in physical activities in physically active and inactive females.*

Figures 2 - 4 show the number of hours per year spent in artistic activities (Fig 2) (due to low response dance and art were combined as artistic activities), club activities (Fig 3) and physical activities (Fig 4). No significant differences were found between active and inactive females for artistic and club activities. However, there were significant differences in the number of hours of involvement active and inactive females spent in physical activities (Fig 4) only ( $F(1, 17) = 17.7; p < .001$ ). Additionally, the hours of activity involvement increased over time ( $F(1, 17) = 12.4; p < .001$ ). As indicated in Figure 4 there was an interaction between group (active/inactive) and age ( $F(1, 17) = 15.7; p < .001$ ) indicating patterns of involvement in these groups were different across time.

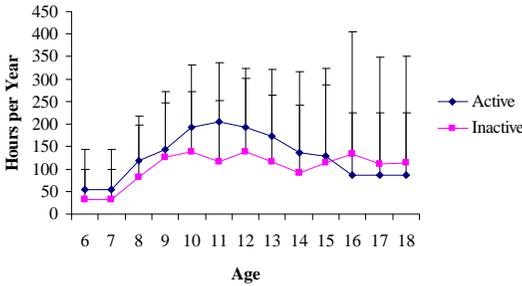


Figure 2  
Hours per year in artistic activities in physically active and inactive females.

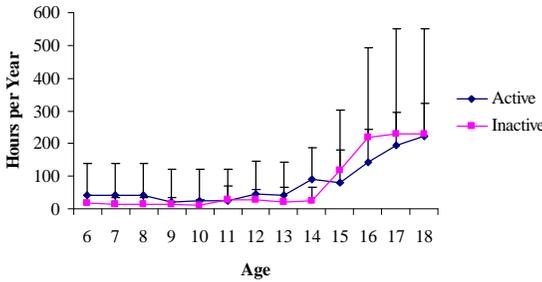


Figure 3  
Hours per year in organized club activities in physically active and inactive females.

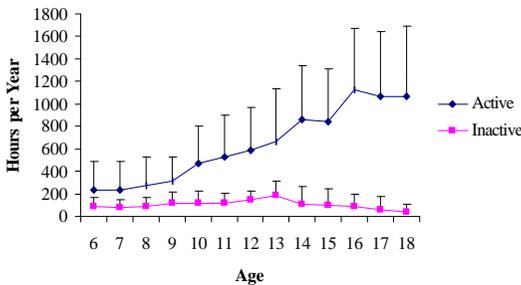


Figure 4  
Hours per year involved in physical activities for physically active and inactive females.

Table 1 presents descriptive information regarding the primary influences to initiating involvement in physical activity during childhood (i.e., before 12 years of age). For all activities, primary influences to initiating involvement were categorized into one of four categories, family (parents, siblings), peers (friends), coaches (organized coaches or teachers) and self (self-initiated activities). For both active and inactive groups, parents were the most influential element in initiating physical activity involvement. However, analyses of difference indicated that parents influenced initial involvement for a greater number of activities in active females than in non-active females ( $t = 2.3$ ;  $p < .05$ ). There were no differences between the number of activities where peers, coaches, or self influenced initial involvement.

Table 1  
Primary influences on beginning involvement in childhood physical activity for active and inactive females (mean number of sports influenced with standard deviation in parenthesis).

	Parents*	Peers	Teachers	Self
Active	3.7 (1.6)	0.9 (0.9)	0.2 (0.7)	0.6 (0.7)
Inactive	1.9 (1.6)	0.2 (0.7)	0.0 (0.0)	0.3 (0.7)

*Note.* \* t-test indicated significant difference between active and inactive groups on the number of times family members were influential in initiating involvement in physical activity ( $t = 2.3$ ;  $p < .05$ ).

## Discussion

Not surprisingly, the results of this study indicated that active females participated in a greater number of physical activities than inactive females. Beginning as early as six years of age, females in the active group participated in more physical activities than those in the inactive group. An important additional factor is that while inactive females are less active in physical activities they are not more active in artistic or club activities. This finding suggests that inactive females are either generally idle or they are spending their time in pursuits other than artistic, club and physical activities. Future research should examine whether inactive females spend greater amounts of time attending to unorganized forms of activity or academic interests.

The decreased activity involvement demonstrated in Figure 1 around 13 years of age supports previous research (e.g., King & Coles, 1992) indicating that this period is a key point of interest in understanding physical activity involvement. For active females this period showed a levelling off in the number of physical activities performed while at the same time, an increase in the number of hours spent in activity involvement. These findings support prior research (Butcher, Sallis, McKenzie, & Alcaraz, 2001; Côté, 1999; Côté & Hay, 2002b) indicating that youth involvement in physical activity is characterized by an early phase of sampling a wide range of activities before gradually whittling down the number of activities performed. For inactive females, there was a decrease in the number of physical activities performed and the number of hours involved in physical activities at around 13 years of age suggesting that this age group should be of

particular interest to educators and counsellors concerned with increasing levels of physical activity in females.

More importantly, even at 6 years of age, active females were participating in a greater number of physical activities than inactive females suggesting that exercise adherence and physical activity patterns emerge early in development. Further, the difference between the active and inactive groups in the number of physical activity pursuits increased throughout childhood and adolescence. This suggests that the stimulus for long-term physical activity involvement occurs as early as age 6 and presents an important topic for further research.

Results of the current study suggest that among the elements identified in previous research as being primary influencing agents (i.e., parents, peers, coaches), only the role of parents was found to be different among active and inactive females in this study. Specifically, parents were involved to a greater extent in influencing initial involvement in physical activities for active females supporting recent results of a two year longitudinal study of children's participation in organized physical activity (Butcher et al., 2001). This finding also adds to compelling evidence from various domains of achievement that place parents as one of the most important agents in child development (see Barber, 2000, for a review).

The current research study examined patterns of involvement in sporting activities in a small group of active and inactive females. Future research should strive to confirm these findings with a larger sample and to test for more complex relationships than those possible with the current sample. Future research should also consider involvement in physical activity as a continuous variable instead of examining groups at the extremes of the involvement continuum. Further, children's environment as early as 6 years of age should be examined in greater detail to identify the agents responsible for stimulating both the initial high levels of involvement as well as the continued involvement in physical activities. Identification of the factors that lead to long-term involvement in physical activity and the elements that contribute to drop out could have profound consequences to long term physical and mental well being.

While this research has provided some information regarding the patterns of involvement in physical activity for active and inactive females, future research may be better served by examining the causal factors behind these patterns. Given that individuals' perceptions of their reality is shaped by their social and political climates (Hall, 1996), a socio-political contextual analysis should be included in future research in physical activity to further our understanding of this area. There are cogent arguments to support that women do not experience sport in the same ways (e.g., Hall, 1996) and that these differences arise out of unequal relationships between men and women in a given culture (e.g., Hall, 1996; Young, 1990). Examining female motives through a feminist perspective may be especially useful in providing further information in this area.

This study's findings, coupled with previous research (Dennison et al., 1988; Pate et al., 1999), suggest that an important implication for health practitioners is that good physical activity habits are formed early. The current study's data indicate that patterns of inactivity and activity are formed during early childhood and that parental influence is an important determinant of participation. Therefore, the promotion of health, fitness, and physical activity must begin within the family, early in children's development, if it is to become a part of an individual's continued lifestyle.

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