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## Physical activity in the second half of life—current situation in Switzerland

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**Abstract** Over the past several decades, there has been a gradually growing awareness among health care professionals and policy makers of the impact of physical activity (PA) in the second half of life. Implementation of PA recommendations among the most inactive members in the community aged 50+ has been the subject of considerable discussion in Switzerland. A vital step towards promoting good exercise habits in populations is to describe the current PA behavior of both the sedentary and physically active. According to previous findings about PA behavior (sports, exercise, habitual PA) in the Swiss population aged 50+ and associated sociodemographic variables, health status, and health orientation, habitual PA seems to have the greatest potential for increasing overall guideline-compliant activity levels. The findings suggest a behavioral/cognitive and political/environmental approach to improving PA. Nevertheless, since the findings were obtained from cross-sectional analyses, the information provided has to be considered with reservation. PA promotion campaigns targeting the 50+ age groups can be rendered more effective if relevant information (such as current and previous lifestyles that also have impact on PA behavior in the second half of life) can be gathered through data-differentiated multi-item cross-sectional studies and/or cohort studies.

**Keywords** Swiss population aged 50+ · Guideline-compliant sports and exercise · Habitual physical activity · Physical activity promotion

### Introduction

In 2002, the Swiss population consisted of approximately 1.33 million people aged 50–64, 830,000 people aged 65–79, and 307,000 people aged 80+, corresponding to 18.2, 11.4, and 4.2%, respectively, of the current total population. By the year 2030, the numbers are expected to increase to approximately 1.45 million (age 50–64), 1.25 million (age 65–79), and 500,000 (age  $\geq 80$ ), corresponding to 19.2, 16.6, and 6.7%, respectively, of the expected total population. This scenario implies that the 80+ age group will be the fastest growing segment of the Swiss population, followed by the 65–79 age group. Currently, Switzerland has one of the highest life-expectancy rates in the world. However, within the context of an aging population, we should look at “healthy life expectancy” rather than only “life expectancy” as such. Population models suggest that by focusing greater attention on reducing morbidity rather than mortality, it is possible to increase “healthy life expectancy” and reduce the period of disability in the latter years of life (Crimmins et al. 1994). Physical activity (PA) has been proven effective in reducing both morbidity and disability and in compensating for dysfunction among the chronically ill. PA is therefore considered a key factor in predicting whether a person will be free of disability in the latter years of his/her life (Vita et al. 1998).

Numerous studies have shown that physical activity performed by the elderly can maintain and/or improve physical health (Blair et al. 1995; Blumenthal et al. 1999; Eriksson et al. 1998), reduce risks of disease (Blair et al. 1995), improve physical functioning (Campbell et al. 1997; Rubenstein et al. 2000; Jadelis et al. 2001; Ratanen et al. 1999), and reduce functional status decline (Stuck et al. 1999). PA participation has been shown to be associated with more positive psychological attributes and both

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**Table 1** Sports/exercise and habitual physical activity categories, according to US and Swiss guidelines, and as used for analysis physical activity behavior of the Swiss population segment age 50+

	Moderate sports/exercise <sup>a</sup>	Vigorous sports/exercise <sup>a</sup>	Habitual physical activity <sup>a</sup>
Types of sports/exercise and physical activity <sup>b</sup>	Calisthenics, fitness, sports	Calisthenics, fitness, sports	Habitual walking and/or cycling
Perceived intensity	Moderate	High	-
Frequency (days per week)	≥5	≥3	≥5
Duration (min per day)	Minimum 30	Minimum 20	Minimum 30
Total duration per week (min)	≥150; ≥180	≥60	≥150
Guideline references	Pate et al. (1995); Swiss Federal Office of Sports (2000)	American College of Sports Medicine (2001)	Swiss Federal Office of Sports (2000)

<sup>a</sup> Perceived intensities were mutually exclusive (coding of either “moderate sports/exercise” or “vigorous sports/exercise,” but not both at the same time for the same person. The one exception was “habitual PA,” which could be combined with either “moderate sports/exercise” or “vigorous sports/exercise”

<sup>b</sup> The category “No physical activity” refers to individuals who did no sports (be it moderate or vigorous) and additionally whose habitual PA was deemed insufficient (<30 min/day)

a lower prevalence and incidence of depressive symptoms in cross-sectional and prospective epidemiological studies (Hughes 1984; McAuley and Rudolph 1995) and in experimental trials (Blumenthal et al. 1999; Singh et al. 2001). It is worth mentioning that effects are also highly significant in those with comorbid illness, such as cardiovascular or pulmonary disease (North et al. 1990) or major depression (Blumenthal et al. 1999; Singh et al. 2000, 2001), attesting to the clinical relevance of exercise.

In the United States and Europe (Switzerland included), 50+ age groups, particularly the 75+ age group, were reported to be the most sedentary segment of the adult population (e.g., Breuer 2004; Martin et al. 1999; Mokdad et al. 2001; U.S. Department of Health and Human Services 1996). Previous recommendations on health-relevant PA addressed to the general adult population were mostly limited to sports and/or sports-like activities (American College of Sports Medicine 1990). PA guidelines have since been adapted to include moderate PA most days of the week (American College of Sports Medicine 1998, 2000; Centers for Disease Control: Pate et al. 1995; Swiss Federal Office of Sports 2000). Moreover, any bodily movement that contracts skeletal muscles and increases energy expenditure is now deemed to be health-relevant. This change in PA recommendation is particularly important for the elderly segments of the population. Although many questions still remain about dose-response curves of PA (Lee and Skerret 2001), there are relevant studies on exercise prescription that have demonstrated that a change from a sedentary lifestyle in midlife or beyond can reduce mortality (Blair et al. 1995; Bunen et al. 1999; Eriksson et al. 1998). For Switzerland and many other developed countries, little is known about how physically active the older and elderly population is and to what extent elderly persons meet guideline criteria of physical activity. Describing current PA behavior is a vital step towards promoting good exercise habits in these population segments.

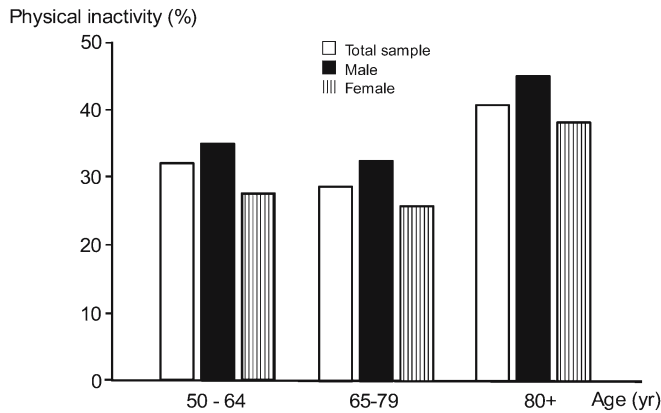
## Methods

To get more information we analyzed the prevalence of PA for more than 9,000 Swiss citizens aged 50–80+, using self-reported data of the Swiss Health Survey in 2002 (for a description of the recruitment of persons and survey methods, see Meyer et al. 2005). In brief, the study population is a representative sample of community-dwelling Swiss citizens. Self-reported physical activity behavior was used to create categories based on Swiss and United States guidelines on exercise to improve fitness and health (American College of Sports Medicine 2000; Pate et al. 1995; Swiss Federal Office of Sports 2000) (for a definition of categories as used for our analysis, see Table 1). Persons who did not meet any of the criteria used for these PA categories were defined as physically inactive. The prevalence of guideline-compliant PA and physical inactivity was determined for three age groups (50–64, 65–79, and ≥80 years).

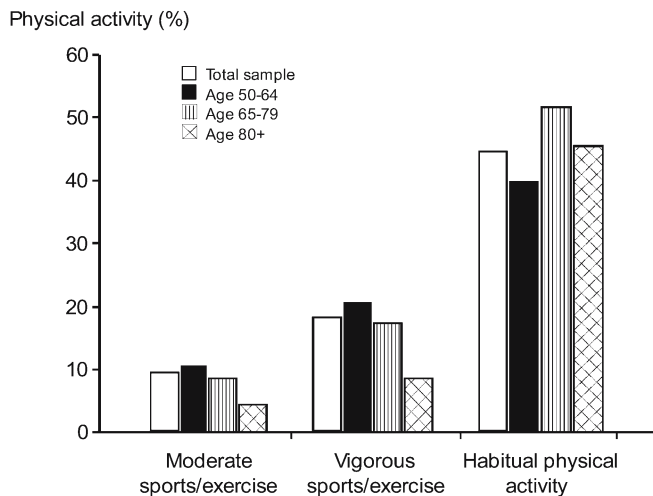
## Sedentary lifestyle and guideline-compliant PA in Swiss aged 50+

More than one-third of the Swiss population aged 50 and beyond reported that they did not participate in either sports/exercise or sufficient habitual PA. Considered for three age groups, sedentary lifestyle was most prevalent in individuals aged ≥80 (41.9%) and lowest in the 65–79 age group (29.1%) (Fig. 1). When comparing the prevalence of sedentary lifestyle of the population segment of 50+ with that reported for the younger Swiss population aged 15 to ≥50, the 50+ demonstrated somewhat higher values (26.7 vs 32.3% on average).

The older the age groups assessed, the less likely the Swiss population was to do guideline-compliant moderate and vigorous sports/exercise. For habitual PA, the youngest age group (50–64 years) had the lowest prevalence, the oldest age group (age ≥80) was in the middle and the 65–79 age group had the highest prevalence (Fig. 2). When we compared the PA behavior of the ≥50 age group to the entire Swiss population from another physical activity survey (Martin et al. 1999), the older members of the population had a considerably lower prevalence of doing regular sports/exercise, but a substantially higher prevalence of doing habitual PA. When



**Fig. 1** Physical inactivity by three age groups ( $n=9171$ ), the permanent resident population in Switzerland



**Fig. 2** Prevalence of guideline-compliant physical activity by three age groups for each of the four categories

evaluating these findings, various methodological aspects typical for cross-sectional studies such as the confounding effect of age, cohort membership, and effects related to the historical time period (period effects) must all be considered (Breuer 2003).

### Limited effects of physical activity campaigns

The aims of PA campaigns are to change our views regarding the benefits of sports, exercise, and habitual PA, to raise awareness regarding ways to increase PA, to explain methods for overcoming barriers and negative attitudes about PA, and to increase PA behaviors among community members. Different methods can be used (e.g., mass media campaigns, community-wide campaigns, and classroom-based education). Swiss campaigns such as “Feel Your Power” and “Switzerland on the Move”—intended for the adult population of all ages—were only partially successful: those who were already

physically active became more active and those who were physically inactive failed to adopt better exercise habits (Lamprecht et al. 2004). Failing to achieve changes in health-relevant behavior and awareness might be one explanation and the different effects of various intervention approaches (information; social and behavioral; political and environmental) might be another (Dunn and Blair 2002). A specific difficulty is the fact that there is still uncertainty regarding whether or not intervention programs have led to a fundamental improvement in the physical activity behavior of aging population segments (Conn et al. 2003; Lamprecht et al. 2004). To get more specific information for further efforts to promote PA of the Swiss population segment aged 50 and beyond, their PA behavior was related to sociodemographic characteristics, economic conditions, and health-related variables.

### Physical activity behavior in the sociodemographic context

In all of the age groups, women demonstrated a lower prevalence of PA in general (range 23.9–39.3%) than men (range 31.1–46.3%). Nevertheless, with the exception of moderate sports/exercise, more women did both guideline-compliant vigorous sports/exercise and habitual PA than men (Meyer et al. 2005). Similar findings were also reported in recent studies (Breuer 2004; King et al. 1998; Lamprecht and Stamm 2000). These results contradict the classic notion of PA behavior in women. A variety of popular sports/exercises designed specifically for males and females and associated with new health ideals and fitness concepts could explain the improved PA behavior in women among aging populations.

Empirical studies have shown that PA behavior patterns throughout life of the entire Swiss adult population are highly correlated with social characteristics such as education and income, respectively (Lamprecht and Stamm 2000; Swiss Federal Statistical Office 2003a). In the Swiss population segment aged 50+, the higher the education and income, the more likely it was to do moderate sports/exercise and/or vigorous sports/exercise. A reverse association was seen between income and habitual PA. Moreover, in light of the expected increase in the number of single-person households among the demographically aging Swiss population (Swiss Federal Statistical Office 2003b), differing preferences for habitual PA and vigorous sports/exercise among those population segments living in single-person households and those living in households with two and more persons are worthy of mention (Meyer et al. 2005). Living alone and providing for oneself require physical exertion for daily living (e.g., the physical exertion that comes with doing housework, gardening, doing the laundry, etc.). Since physical exertion with threshold energy expenditure has been proven to be health-relevant (for an overview see Oja 2001), measurement of PA behavior in general (and in the elderly in particular) should take physical exertion from daily living into consideration.

## Environments and physical activity

Physical environments play a large role in a person's choice to be physically active (Cunningham and Michael 2004). Environments may also be associated with involvement in different modes and types of physical activity. Therefore, in order to describe a population's PA behavior patterns adequately, a distinction must be drawn between habitual physical activity (e.g., walking, cycling, climbing stairs, etc.) and sports/exercise (e.g., aerobics workout, resistance training, swimming, etc.) with respect to the local environment where these population segments are living. The Swiss segment 50–80+ living in urban areas were less likely to lead a sedentary lifestyle and more likely to do guideline-compliant sports/exercise and habitual PA than those living in rural areas (Meyer et al. 2005). In this context, previously the 60- to 74-year-old Swiss reported a preference for sports/exercise outdoors or at home rather at fitness centers (Lamprecht and Stamm 2000). The findings may reflect the fact that infrastructures are being set up in many Swiss urban areas to encourage urban populations to walk or ride bicycles more. Correlation studies have shown that the availability of exercise equipment in the home and the proximity and density of places for PA within neighborhoods are associated with PA levels (Task Force on Community Preventive Services 2002).

## Physical activity behavior and health status

Empirical studies and theoretical models have shown that PA behavior patterns throughout one's life are influenced by health-related factors such as physical and mental health status (Abu-Omar et al. 2004a), perceived health (Meyer et al. 2004), health orientation (Stewart et al. 1977), and self-efficacy in terms of health (Booth et al. 2000). The Swiss aged 50–80+ who reported that they were in poor health, overweight, or obese were more likely to be physically inactive, and less likely to be involved in vigorous sports/exercise and habitual physical activity than the elderly who reported contrasting parameter values (Meyer et al. 2005). Additionally, the existence and/or absence of health problems and pain in the joints had a differentiating effect on physical inactivity, vigorous sports/exercise, and habitual PA, whereas a previous history of heart attack had no impact on the likelihood of a person being sedentary or physically active. It is important to note that the population segment with self-reported poor and/or moderate health was less likely to be involved in vigorous sports/exercise, and habitual PA than the population segment with self-reported good health, regardless of whether there were chronic health problems, pain in joints, cardiovascular risk factors, or earlier heart attacks. Similar to the perception of good health, health orientation was associated with PA in the Swiss population aged 50+ (Meyer et al. 2005). The apparent relevance of health perception in determining PA behavior among the older and oldest

population, as seen in the Swiss population aged 50+, is supported by a 55- to 65-year-old representative population from the Swiss capital, where perceived health was strongly linked to habitual PA and self-reported fitness (Meyer et al. 2004). The finding was further backed by analyses of pooled data from 16 countries of the European Union adjusted for age, gender, education, income, and nationality, *inter alia* (Abu-Omar et al. 2004b). When evaluating these results, we have to remember that health-relevant behavior including PA may influence an individual's perception of health (Kaplan and Baron-Epel 2003), but an individual's perception of health may also have a positive impact on his/her health-relevant behavior (which includes sports/exercise; Bailis et al. 2003).

The positive association of perceived good health and health-orientation with involvement in almost every single category of PA (see Table 1), as seen for the Swiss population in the second half of life, provides an important cognitive aspect for future endeavors to get aging populations to adopt sufficient PA habits. And yet, in view of the high prevalence of perceived good health and health orientation, as well as the independent association with involvement in PA, the question still remains as to why around 50 and 32% of the Swiss population aged 50 to 80+, respectively, were not engaged in habitual PA and/or led sedentary lives.

## Implications for practice and research

Physical activity in the elderly reflects a life-long process that is influenced by previous life experiences. In 70- to 98-year-old Canadians, the ability to do health-oriented sports/exercise in the latter years of their lives was significantly associated with recollections of the skills and movement capabilities gained decades earlier in childhood (Cousins 1997). These experiences match the findings on older adults for whom a positive sports/exercise experience was a greater motivating factor than the sports/exercise content itself.

In terms of health, as seen in the Swiss population aged 50+, the decision to adopt adequate PA behavior patterns seem to have less to do with whether a person actually had chronic health problems than with the person's mental outlook (i.e., self-reported good health, health orientation). However, whether mental outlook drives PA or PA helps to improve mental outlook remains an open question. This implies that both individual and general approaches may be needed to address physical activity promotion. Exercise advice should be given on an individual basis with respect to both an individuals' exercise experiences in the past and ideas and preferences on exercise at present. Strategies to improve physical activity should therefore be based on a multidimensional evaluation, taking into account the interactions between physical activity and other health-related factors such as comorbidity, functional status, nutrition, environment, and psychosocial health. In Switzerland, a study (in cooperation with other European countries) evaluating the fea-



sibility and effects of such an approach is currently under way (Stuck et al. 2002). In the Swiss population aged 50+, the relationship between PA and various sociodemographic and health-related variables suggests that a behavioral/cognitive approach should be combined with a political/environmental one for programs designed to encourage people to be more physically active. The clear preference for habitual PA suggests that infrastructures for age-adequate PA should continue to be developed in both urban and rural areas. To achieve improvements in PA behavior, the involvement of multiple government agencies (not simply those dealing with health- and sports-related matters) seems indispensable.

## Methodological requirements

From the standpoint of age-group comparison, there are inherent methodological and theoretical aspects associated with cross-sectional studies that can influence the chosen variables. This is the case for comparison of PA behavior in population segments composed of individuals of different ages. It is always difficult in such cases to determine to what extent differences can be ascribed to age, generation gaps, natural aging cycles, or selection processes. Independent information on the effects of age, cohorts, and period effects should be possible through multi-item cross-sectional and cohort studies. However, there is a lack of studies of this type being carried out in Switzerland. Physical fitness promotion campaigns targeting the 50+ age groups can be rendered more effective if relevant information (such as current and previous lifestyles that have an impact on PA behavior also in the second half of life) can be gathered through data-differentiated multi-item cross-sectional and cohort studies.

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