National recommendations for health-enhancing physical activity: the situation for Switzerland in 2011 and options for further developments

Summary
National recommendations on physical activity for health are an important element of a comprehensive strategy to promote physical activity and sport. Switzerland has developed recommendations for adults in 1999 and for young people in 2006. International experts have recommended that in view of new global and international recommendations, countries in Europe should review their national recommendations. Therefore, five important international and illustrative national examples of recommendations for different age groups were analyzed with regard to implications for the Swiss situation. Overall, the Swiss recommendations for young people and adults are in line with recent evidence but some differences were found regarding specific aspects. Also, no recommendations for pre-school children or older adults exist. Options for updates and further developments of the current Swiss recommendations were developed. They form the basis of a national process lead by the Swiss Federal Office of Sport, which also includes a wide consultation with all relevant stakeholders.

Introduction
The topics of sport, physical activity and health are gaining interest nationally as well as internationally. Evidence on the positive health effects of physical activity across a whole range of diseases as well as mortality is extensive [1, 2]. In 2009, the World Health Organization (WHO) demonstrated that physical inactivity is now the fourth-leading risk factor for premature mortality, causing about 6% of all deaths worldwide. In Europe alone, almost 1 million deaths per year were associated with physical inactivity, as well as a considerable burden of morbidity [3].

One important element of a comprehensive approach to the promotion of physical activity and sport are national recommendations for health-enhancing physical activity [4–6].

Swiss recommendations for health-enhancing physical activity and levels of physical activity
In 1999, national recommendations for adults were launched which are still in use [7, 8]. The minimal recommendation is to be physically active at least a 30 min daily (or at least on most days of the week) at moderate-level intensity (involving a slight increase in breathing, equivalent to brisk walking or cycling). Additional health benefits can be obtained through endurance training (20 min at least 3 times per week with high intensity) and through strength and flexibility training. Individuals reaching the minimal or the endurance recommendations are considered to be sufficiently active. Furthermore, the recommendations mention that physical activity also has positive effects for stress management, self esteem, social integration and in therapy and rehabilitation. The recommendations were represented graphically in the form of an activity pyramid [7, 8] (Fig. 1).

In 2006, recommendations for children and youth were published [8, 9]. Adolescents should be physically active for at least 1 h per day as they near the end of school age. Younger children should be considerably more active. As for adults, activity bouts of at least 10 min duration can be added up to reach the minimum recommendation. At least 10 min several times a week should be devoted to activities for bone health, cardiovascular fitness, strength, flexibility and agility. For children and adolescents, it is also recommended to take short activity breaks if sedentary activities last longer than about 2 h. After testing several graphic representations of the recommendations with school classes, it was decided to use the physical activity disk (Fig. 1).

The recommendations and graphs are presented in 2-page brochures, accompanied by a more extensive base document; all documents are available in German, French and English [8].
and on overweight and obesity. The selected examples were also increasingly recognized as independent risk factor [11, 12].

With regard to the implementation of recommendations, the reduction of sedentary activities (which have been shown to improve cardiovascular health) is particularly important. The selected examples also recommended a combination of different types of training (e.g., endurance training, strength exercises, and flexibility exercises) to achieve the recommended total minimum duration of physical activity.

This article aims at analyzing the most important international and selected illustrative national examples of recommendations for health-enhancing physical activity for different age groups with regard to implications for the Swiss situation. On this basis, the current Swiss recommendations will be assessed and options for updates and further developments will be presented.

**Methods**

Recommendations for health-enhancing physical activity were selected for analysis aiming to assess and discuss the current Swiss recommendations in the most comprehensive way. The following selection criteria were used:

- Public health recommendations (i.e., whether a specific recommendation was made
- Comprehensive consideration of the most recent scientific evidence;
- Systematic and documented development process; and
- Publicly available by May 2011.

In addition, an example from a neighboring country which had gone through a similar process recently was sought to further inform the Swiss process.

The selected examples were systematically analyzed by age group according to the key aspects of recommendations (frequency, duration, intensity and total recommended duration of physical activity) and additional aspects, including minimum bouts of activity (i.e., whether a specific recommendation was made on the minimum duration of each bout of activity to count towards the recommended total minimum duration), the recommended amount of physical activity for additional health benefits and recommendations on specific types of training (e.g., strength, flexibility), the reduction of sedentary activities (which is increasingly recognized as independent risk factor [11, 12]) and on overweight and obesity. The selected examples were also examined with regard to the use of graphical illustrations (such as a pyramid or disk) and other communication elements used for dissemination.

Subsequently, the analyzed examples were contrasted with the current Swiss recommendations to identify agreements and differences. Based on the results, options for possible amendments and further developments of the current Swiss recommendations for health-enhancing physical activity were developed.

**Results**

The following international and national recommendations were selected for analysis:

- The WHO's Global Recommendations on Physical Activity for Health [2];
- The recommendations of the American College of Sports Medicine (ACSM) and the American Heart Association (AHA) [13, 14];
- The national recommendations of Austria, as relevant example of a neighboring country [15];
- The national recommendations of Canada [16, 17]; and
- The national recommendations of the United States of America [18].

The recommendations had been developed in the following chronological order: The 2007 recommendations of the American College of Sports Medicine (ACSM) and the American Heart Association (AHA) [13, 14] were an update of the much publicized first American recommendations of the Centers for Disease Control and Prevention (CDC) and ACSM [19] published in 1995. The update was mainly based on an extensive review commissioned by the U.S. Department of Health [1]. The national recommendations of the United States of America published in 2008 [18] were developed by a committee commissioned by the Department of Health and Human Services, also based on the aforementioned review [1]. Their development process also included a consultation of other parts of the administration and of the general public [18].

The Global Recommendations on Physical Activity for Health of the WHO as the first truly international recommendations were published in 2010 after an extensive 3-year preparatory process [2]. They were based on the US review mentioned above, on additional reviews of the Chinese and Russian literature and on other previously published reviews (see p. 46ff in [2]). The Austrian recommendations of 2010 were developed by a working group commissioned by the Ministry of Health and the national Health Promotion Foundation [15]. The development was based on the American [1] and Canadian evidence reviews [20] as well as the Australian [21]
and Swiss [7–9] recommendations. The national recommendations of Canada published in 2011 [16] were also developed through a perennial process, lead by the Canadian Society for Exercise Physiology [22]. They were based on their own literature reviews [20] and altogether, over 1000 people participated in the development, including the interested public.

Table 1 shows the results of the analysis of recommendations on children and adolescents. The key minimum recommendations are quite similar across the analyzed examples, promoting at least 60 min of at least moderate-intensity physical activity per day. The WHO, the US and Canada specify that this should include vigorous-intensity activities, for which the US and Canada further specify a minimum frequency of at least 3 days per week. WHO and Canada also specify that more physical activity will provide additional health benefits. All selected examples recommend activities for muscle and bone health at least 3 times per week. Only Switzerland recommends minimum bouts of at least 10 min, while Austria and the US underline that in young people, no activity is too short to count. Switzerland and Austria also include recommendations to minimize the time spent sitting; Canada issues specific recommendations on this topic [17].

The results on the recommendations on adults in Table 2 show that the WHO, the US and Austria give the same minimum recommendation. Canada’s minimum recommendation is similar to these three, but not mentioning a specific way of combining moderate- and vigorous-intensity activities as the other three, instead recommending 150 min of moderate- to vigorous-intensity physical activity per week. Also, Canada is the only example not recommending to spread the minimum amount over several (or daily) sessions throughout the week.

The US also promote that some activity is better than none, considering that the current evidence does not suggest a minimum threshold of activity needs to be reached in order to achieve health benefits [1]. ACSM/AHA and Switzerland promote at least 30 min threshold of activity needs to be reached in order to achieve health benefits [2]. Also, Canada is the only example not recommending to spread the minimum amount over several (or daily) sessions throughout the week.

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Table 1: Analysis of selected international and national recommendations for children and adolescents

<table>
<thead>
<tr>
<th>Minimum recommendations</th>
<th>Further recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>General recommendation</td>
<td>Additional aspects</td>
</tr>
<tr>
<td>Switzerland [9]</td>
<td>Adolescents 1 h per day, younger children even longer with intensity equivalent to at least brisk walking or cycling</td>
</tr>
<tr>
<td>WHO [2]</td>
<td>At least 60 min of moderate- to vigorous-intensity physical activity daily. Vigorous-intensity activities should be incorporated.</td>
</tr>
<tr>
<td>ACSM/ AHA*</td>
<td></td>
</tr>
<tr>
<td>Austria [15]</td>
<td>60 min of at least moderate intensity physical activity daily</td>
</tr>
<tr>
<td>Canada [16, 17]</td>
<td>60 min of moderate- to vigorous-intensity physical activity daily, should include vigorous-intensity activities at least 3 days per week</td>
</tr>
<tr>
<td>US Dept. of Health [18]</td>
<td>60 min or more of moderate- or vigorous-intensity, should include vigorous-intensity physical activity at least 3 days a week</td>
</tr>
</tbody>
</table>

* No recommendations exist for this age group.
+ Except during sleep periods.
§ Part of the examples chapter, not of the main recommendations.
Switzerland recommends such activities as a possibility for already active individuals to achieve additional health benefits. Beyond that, ACSM/AHA, Canada and Switzerland mention in general that additional health effects can be achieved with more exercise, while the WHO, the US and Austria quantify the recommended amount for additional health benefits with 300 min of moderate-intensity activities or their equivalent of vigorous-intensity activities. The recommendation on strength training was similar in all analyzed examples. In some cases there were also recommendations on flexibility training or load bearing activities to promote bone health (ACSM/AHA). The concept of bouts of at least 10 min duration was adopted by all analyzed examples; some recommend this only for those at risk of falls (ACSM/AHA, US) or in those with poor mobility (WHO, Canada).

Overall, the main Swiss recommendations for young people and adults are in line with the most recent evidence. The total recommended minimum amount of physical activity concurs, while the comparison with some of the other examples shows slight differences concerning the recommended frequency: along with Switzerland, Canada currently has no separate recommendation for older adults. The other examples for over 65-year olds are summarized in Table 3. In all cases, the main recommendations were based on those for adults. All except the Canadian recommendations specify that individuals should be as active as possible, even if they did not reach the minimum recommended amount. The US recommendations also suggest explicitly to adapt the intensity of activities relative to the individual's level of fitness. In addition to strength-training, balance training is recommended for this age group in all examples; some recommend this only for those at risk of falls (ACSM/AHA, US) or in those with poor mobility (WHO, Canada).

None of the analyzed examples except for Switzerland uses a graphical representation such as a pyramid or disk. Canada had used a rainbow figure in their previous recommendations. The graphical representation such as a pyramid or disk. Canada had used a rainbow figure in their previous recommendations. The decision not to continue its use was on the one hand related to copyright properties of the earlier figure. On the other hand, it was felt the new recommendations did not lend themselves easily to a graphical representation, and lastly, continuing to use the same figure might have reduced the news value of the updated recommendations.

### Discussion

Overall, the main Swiss recommendations for young people and adults are in line with the most recent evidence. The total recommended minimum amount of physical activity concurs, while the comparison with some of the other examples shows slight differences concerning the recommended frequency: along with Swit-
Within the existing recommendations for adults, should the following aspects be revised:

- Should the current stratification of recommendations for children and adolescents of school age and adults be maintained, or should recommendations for other age groups such as pre-school children or older adults be developed?
- Within the existing recommendations for adults, should the following aspects be revised:
  - Explicit recommendation to avoid physical inactivity?
  - Explicit statement that daily activities of light intensity do not count toward the minimal recommendations?

In some countries, such as Australia, national recommendations for pre-school children have been issued [24]. However, no detailed information was available on the background information used. WHO has noted that in its view, further evidence was needed for the development of global recommendations in this age group [2].

Based on the analysis summarized in this article, options for updates and further developments of the current Swiss recommendations were derived and commented with pros and cons for each of them [25].

The main issues identified were:

- Switzerland only ACSM/AHA still recommend daily or at least 5 times 30 min per week for adults, while the WHO, the US, Austria and Canada now recommend a minimum weekly dose of physical activity, in almost all cases recommending to spread it throughout the week. The Swiss recommendations currently do not explicitly mention the possibility to combine moderate- and vigorous-intensity activities for adults, though there are endurance recommendations in addition to the minimum recommendations. Switzerland indicates that all activities of at least moderate intensity count towards the minimum recommendations. Some of the other examples specifically state that activities of daily living of light intensity do not. The Swiss recommendations for adults point out that doing more than the minimum recommended amount of physical activity will yield additional health benefits but do not quantify the recommended amount, as do the WHO, Austria and the US.

Minimum bouts of at least 10 min duration are in line with the documented effects of physical activity on cardiorespiratory fitness and biomarkers for cardiovascular disease [1]. However, the US and Austrian recommendations specifically point out that for children any episode of moderate- or vigorous-intensity physical activity, however brief, counts towards the recommendations. For practical reasons, the Swiss recommendations suggest to count all bouts of 10 min or more. The Swiss recommendations made for muscle strength both for young people and adults concur with the other analyzed examples. To recommend activity breaks for young people to intermit extended periods of sitting are current state of

Table 3: Analysis of selected international and national recommendations for older adults

<table>
<thead>
<tr>
<th>Minimum recommendations</th>
<th>Further recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate intensity</td>
<td>Vigorous intensity</td>
</tr>
<tr>
<td>Switzerland *</td>
<td>150 min/week, or be as physically active as conditions allow</td>
</tr>
<tr>
<td>WHO [2]</td>
<td>30 min on 5 days/week Positive health effects also from less activity</td>
</tr>
<tr>
<td>ACSM/AHA [14]</td>
<td>150 min/week Be as active as condition allows</td>
</tr>
<tr>
<td>Austria [15]</td>
<td>150 min/week</td>
</tr>
<tr>
<td>Canada [16]</td>
<td>150 min/week</td>
</tr>
<tr>
<td>US Dept. of Health [18]</td>
<td>Some activity is better than none Be as active as possible 150 min/week</td>
</tr>
</tbody>
</table>

* No recommendations exist for this age group.
The presented options form the basis of a national process towards the revision of the Swiss recommendations for health-enhancing physical activity. This process is lead by the Swiss Federal Office of Sport and includes a wide consultation of stakeholders. It will aim to develop national recommendations that are consistent with the latest scientific evidence, can provide guidance for the development and evaluation of physical activity promotion efforts and can be used and adapted for communication purposes in different target groups.

Acknowledgements:

This work has been carried out through a project funded by the Swiss Federal Offices of Sport and of Public Health. We gratefully acknowledge input and comments by Urs Mäder and Nadja Mahler from the Swiss Federal Office of Sport.

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