

ORIGINAL ARTICLE

# Institutionalization of sports safety: lessons from Swiss youth sports promotion programme

EXERCISE IS MEDICINE



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## Abstract

This study investigated whether instructors applied safety recommendations from the Swiss national programme for sports promotion, called Youth+Sports (Y+S), in training courses/camps with young people. Moreover, we analysed factors that affected the awareness and application of those recommendations. The

analysis was based on an online survey of Y+S instructors and Y+S experts (responsible for training instructors), as well as interviews with the education managers of sport associations. We found that two-thirds of Y+S instructors were familiar with the safety recommendations in their sport, and nearly half of the Y+S instructors put the recommendations into practice. A key finding was that, in sports with special safety regulations, instructors had higher awareness and more frequently applied the safety recommendations in the practice. Differences among instructors were partly explained by the institutionalization of the safety recommendations for the sport. Thus, our findings emphasised the importance of a good educational system for successful implementation of safety recommendations in supervised youth sport activities. Compulsory guidelines for the education of Y+S instructors should be established on a high institutional level to guarantee the dissemination of preventive measures from the education managers (at the top) to the Y+S instructors (at the bottom) of sport associations.

## Zusammenfassung

In dieser Studie wird untersucht, ob die Sicherheitsempfehlungen des nationalen Schweizer Sportförderungsprogramms Jugend+Sport (J+S) von Leiter/-innen in ihren Trainings/Lagern mit Jugendlichen angewendet werden und wie sich Unterschiede in der Wahrnehmung und Anwendung der Empfehlungen erklären lassen. Unsere Analyse basiert auf einer Online-Befragung von 3524 J+S-Leiter/-innen und 246 J+S-Experten/-innen (zuständig für die Ausbildung der Leiter/-innen), die im Februar 2019 durchgeführt wurde. Zusätzlich wurden 21 Interviews mit den jeweiligen Ausbildungsverantwortlichen der Sportverbände geführt. Unsere Studie zeigt, dass zwei Drittel der J+S-Leiter/-innen die Sicherheitsempfehlungen in ihrer J+S-Sportart kennen. Fast die Hälfte setzte die Empfehlungen in die Praxis um. Ein zentrales Ergebnis ist, dass die Empfehlungen in Sportarten mit besonderen Sicherheitsbestimmungen eher bekannt sind und angewendet werden und dass dies zum Teil damit erklärt werden kann, dass die Sicherheitsbestimmungen in diesen Sportarten institutionell stärker verankert sind. Unsere Ergebnisse unterstreichen somit die Bedeutung eines guten Ausbildungssystems für die erfolgreiche Umsetzung von Sicherheitsempfehlungen bei betreuten Jugendsportaktivitäten. Verbindliche Richtlinien für die Ausbildung von leitenden Personen sollten auf hoher Ebene institutionell verankert werden, um zu gewährleisten, dass Präventionsmassnahmen von den Ausbildungsverantwortlichen in den Sportverbänden bis zu den Personen an der Basis, die mit Kinder und Jugendlichen arbeiten, gelangen.

## Introduction

Sports are the main cause of injuries in youth; > 30% of injuries in youth are sustained during sports activities [1, see also 2,3,4]. In Switzerland, among children and adolescents, as high as 45% of all accidents are sports-related [5]. Thus, injury prevention is crucial in sport activities organized for children and adolescents. Previous studies have highlighted two aspects of sports-related injury prevention. First, prevention guidelines must be institutionalized, because, according to Emery et al. [2], children and adolescents are not primarily responsible for injury prevention; rather, the government and sport associations must enforce safety measures. Second, preventive measures can only impact public health significantly, when they are widely accepted and adopted by coaches and sport participants [6]. In Switzerland, over 600 000 children and adolescents participate every year in a sport within the national

programme for sports promotion, called Youth+Sports (Y+S). The Y+S programme, the largest sports promotion programme in the country, offers supervised sport activities (such as training courses and camps) for children and adolescents (aged 5–20 years) in about 70 sports. The training courses and camps are led by Y+S instructors, who are trained by Y+S experts. Every year, approximately 80 000 Y+S instructors are educated by approximately 3000 Y+S experts.

Injury prevention has become a key issue for Y+S. Thus, the Swiss Federal Office of Sports – the Federal Office responsible for the Y+S programme – collaborates with the Swiss Council for Accident Prevention BFU to create fact sheets on injury prevention in all sports in the Y+S programme. The fact sheets are distributed on paper and as downloadable pdf files. The fact sheets list the most important safety recommendations for each type of sport [7].

This study investigated whether Y+S instructors applied these safety recommendations in training courses and camps with young people. Additionally, we analysed the reasons for differences in the awareness of these recommendations among instructors. These findings will have practical implications for actors engaged in injury prevention in institutionally organised youth sports and offer clues for future studies.

## Methods

Our analysis was based on a standardised, web-based survey of 3524 Y+S instructors (response rate: 41.9%) and 246 Y+S experts (response rate: 51.3%) from the three language regions (German, French, and Italian) in Switzerland, conducted in February 2019. The survey covered 13 different sports. The sports and the instructors/experts were selected as follows: First, sports with a high number of instructors/experts were chosen due to their quantitative relevance in Swiss youth sports. Second, sports with increased safety requirements were chosen due to the higher probability of the number and the severity of injuries in these sports (basis: Statistics of the Swiss Council for Accident Prevention [5]). We divided the sports into two groups, according to Y+S programme practices:

- Sports without specific safety regulations (category A): ice hockey, football, judo/ju-jitsu, children's sports, gymnastics, floorball, and volleyball.
- Sports with specific safety regulations (category B): mountain climbing, rowing, swimming, alpine ski/snowboard, sport climbing, and sport shooting.

To allow comparisons between these two groups, a non-proportional, stratified sample of equal size was drawn from a list provided by the Swiss Federal Office of Sport (*Table 1*). The questionnaire included questions about demographics (sex, age, experience as instructor/expert, language region), individual sensitivity to safety issues, and personal awareness and use of the fact sheets. The questionnaire was pretested by 10 Y+S instructors and Y+S experts to ascertain the comprehensibility of the questions. Additionally, 21 semi-structured qualitative interviews were conducted with education managers of the respective sports associations. These interviews provided information about the measures taken to disseminate the fact sheet in each sport (*Table A1, Appendix*).

Our analyses included the following dependent variables: the awareness of and use of the fact sheet. The independent variables were: sex, age, individual sensitivity to safety issues, and the existence of specific safety regulations within a sport. *Table A2 (Appendix)* shows how the dependent and independent variables were coded, for each question in the questionnaire. The empirical analysis comprised two steps.

First, we tested for correlations between the variables by providing descriptive cross-tabulations. Second, we used binary logistic regression to assess the impact of each factor, by holding the other factors in the model constant. The number of Y+S experts was too small for statistical analysis, particularly in assessing differences between sports. Nevertheless, the findings from the expert survey assisted in contextualising and interpreting results from the Y+S instructors.

Focus group	Total population (2018)	Size of random sample	Response rate
<b>Instructors</b>			
A-sports	38 077	4 276	45% (n = 1913)
B-sports	19 009	4 143	39% (n = 1611)
Total	57 086	8 419	42% (n = 3524)
<b>Experts</b>			
A-sports	2024	242	49% (n = 118)
B-sports	2002	238	54% (n = 128)
Total	4026	480	51% (n = 246)

Slight differences in the sizes of the random samples are due partly to invalid e-mail addresses. Y+S: Swiss national youth + sports programme; A-sports: sports without specific safety regulations; B-sports: sports with specific safety regulations.

Table 1: Sample sizes and response rates of the Y+S instructors and the Y+S experts selected from the total survey population

## Results

### *Characteristics of the population*

Table 2 shows the distributions of sex, age, and language region among instructors. Our sample of 3524 Y+S instructors was generally representative of all Y+S instructors, in Switzerland in terms of these three variables. However, older age groups were slightly overrepresented, given that 43% of respondents were at least 40 years old at the time they completed the survey, and only 35% of all Y+S instructors in Switzerland were at least 40 years old.

Characteristics	Instructors	
	Sample	Y+S population*
<b>Sex</b>		
Female	40% (1300)	38%
Male	60% (1930)	62%
<b>Age, y (mean = 38.0, SD = 13.0, range: = 17-82)</b>		
<31 years	37% (1205)	65%
31-40 years	20% (641)	
41-50 years	24% (778)	35%
51-60 years	14% (449)	
> 60 years	5% (158)	
<b>Language region</b>		
German-speaking Switzerland	72% (2540)	75%
French-speaking Switzerland	23% (808)	20%
Italian-speaking Switzerland	5% (176)	5%

Due to item nonresponse the numbers do not sum to the number of cases in the whole sample.

\*Source: Swiss Federal Office of Sports; only percentages were available; the figures for the age categories have been summarised to enable comparisons with the sample.

Table 2: Characteristics of survey sample (n = 3524), compared to Y+S population

### *Awareness and use of the fact sheet*

Table 3 shows the extent of awareness and use of the fact sheet among different subgroups of Y+S instructors. Among all Y+S instructors, 67% knew about the fact sheet and 42% used it in everyday practice with children and adolescents. However, some differences between subgroups were observed. First, both awareness of the fact sheet and its use were more common among older Y+S instructors and among Y+S instructors with more than 6 years of experience. Second, the more sensitive an instructor was to safety issues, the likelier it was that he/she was aware of and used the fact sheet. Third, men showed greater awareness and use of the fact sheet, compared to women. Finally, both the awareness and use of the fact sheet were more common in sports with special safety regulations (category B) compared to sports without safety regulations (category A).

Subgroup	Instructor knows the fact sheet	Instructor uses the fact sheet
<b>Sex</b>		
Female (n = 1300)	64%	40%
Male (n = 1930)	69%	46%
p-value*	<0.01	<0.01
<b>Age</b>		
17–31 years (n = 1205)	61%	32%
31–40 years (n = 641)	63%	42%
41–50 years (n = 778)	72%	51%
51–60 years (n = 449)	74 %	59%
61–82 years (n = 158)	83%	65%
p-value*	<0.01	<0.01
<b>Experience as instructor</b>		
<6 years (n = 1410)	63%	37%
>6 years (n = 2051)	69%	46%
p-value*	<0.01	<0.01
<b>Individual sensitivity to safety issues</b>		
Very weak (n = 11)	59%	0%
Rather weak (n = 230)	48%	19%
Rather strong (n = 1460)	62%	35%
Very strong (n = 1804)	74%	52%
p-value*	<0.01	<0.01
<b>Safety regulations in sports</b>		
Sports without specific safety reg. [Cat. A] (n = 1913)	64%	40%
Sports with specific safety reg. [Cat. B] (n = 1611)	71%	47%
p-value*	<0.01	<0.01
<b>Total</b>	<b>67%</b>	<b>42%</b>

Respondents are weighted to correct for non-proportional stratifications of instructors in sports with special safety regulations (category B). For the operationalization of the individual sensitivity to safety issues, the following question was used in the questionnaire in the online survey: What importance do you attach to accident prevention in your sport? (answers from 1 “very weak importance” to 4 “very strong importance”).

\*Differences between groups were evaluated with two-sample, weighted T-Tests (Welch)

Table 3: Awareness and use of the fact sheet among subgroups of Y+S instructors

*Factors related to awareness and use of the fact sheet*

Figure 1 shows that age, individual sensitivity to safety issues, and sports with special safety regulations (category B) had positive effects on the awareness of the fact sheet. In contrast, sex and long experience (> 6 years) did not have significant effects. We found similar results for the use of the fact sheet (Figure 2). Hence, the correlation found for years of experience in the previous section was most likely an effect of age, not experience in the Y+S programme. Moreover, the effect of sex seems to have resulted from the fact that male Y+S instructors in the sample were older than female Y+S instructors.

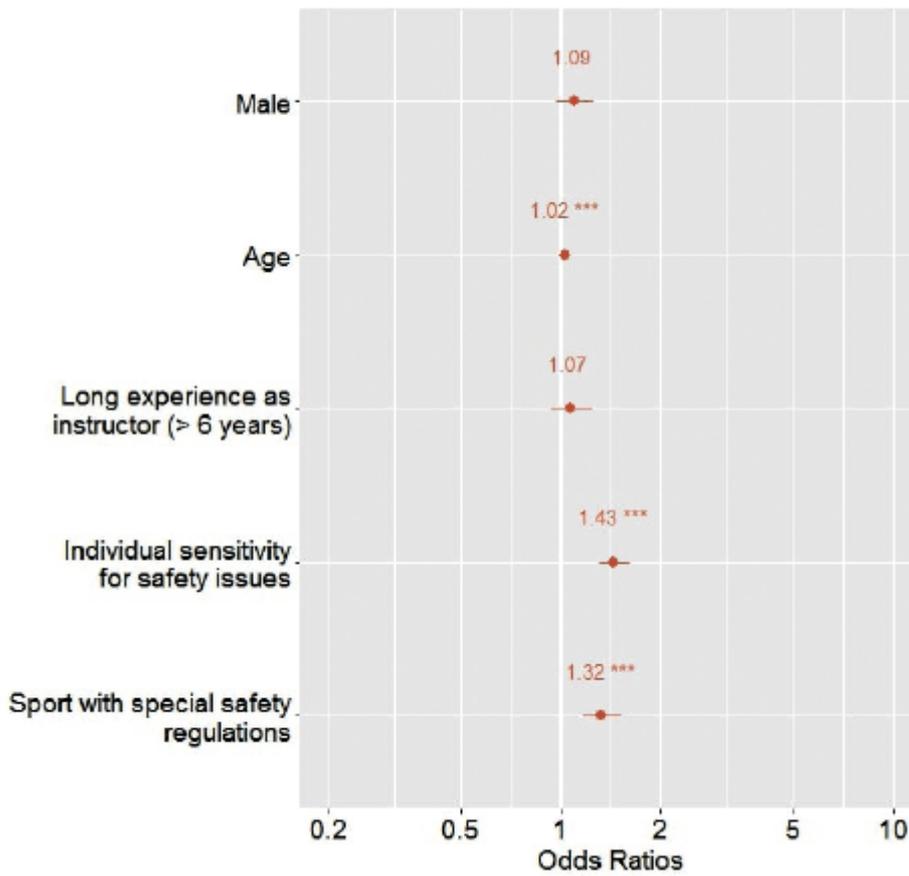


Figure 1: Logistic regression to explain which factors affected the probability that instructors were aware of the fact sheet. Notes: \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ , Nagelkerke's  $R^2 = 0.22$

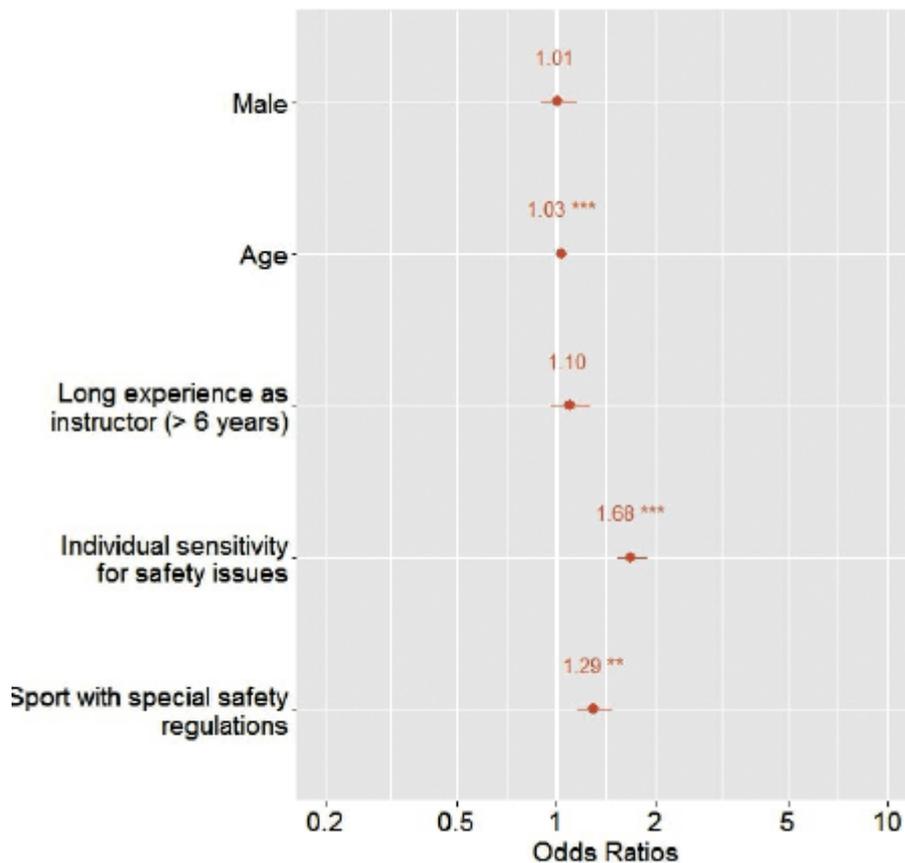
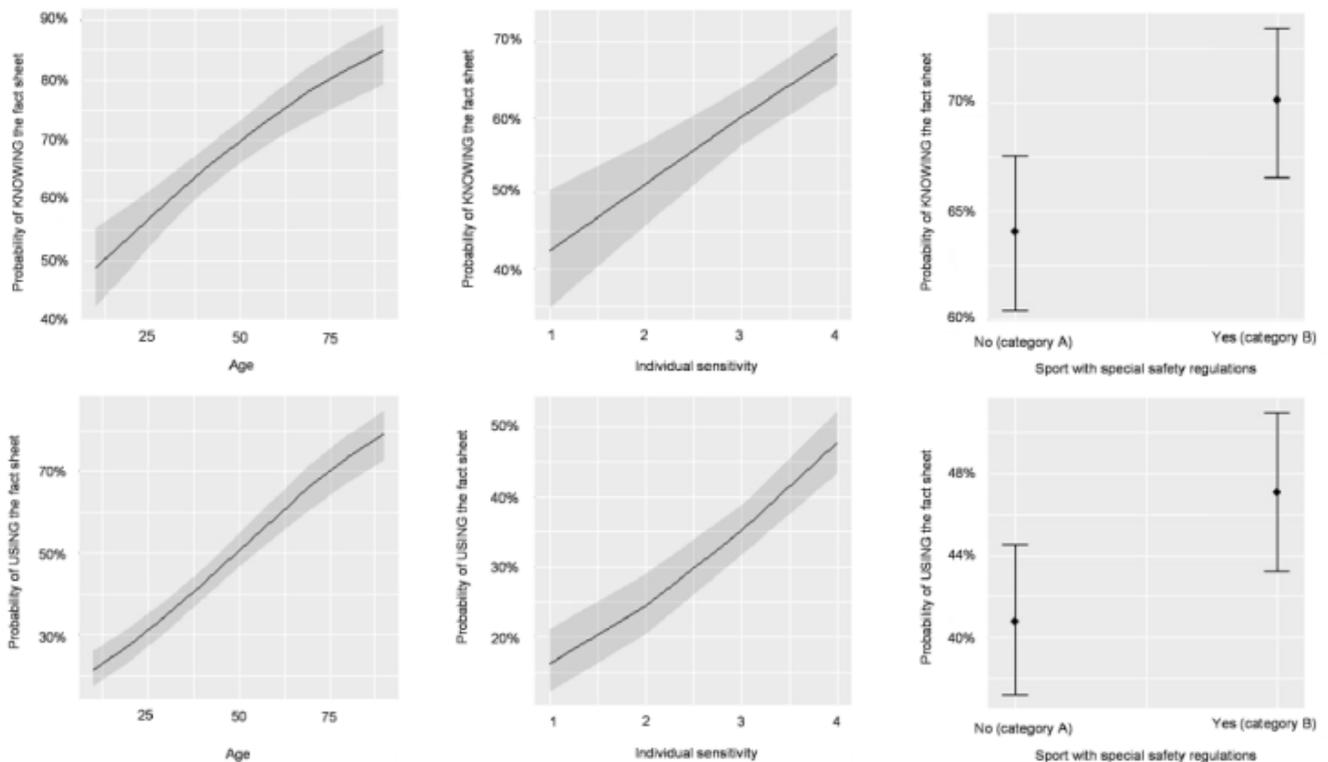


Figure 2: Logistic Regression to explain which factors affected the probability that the instructor used the fact sheet. \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ , Nagelkerke's  $R^2 = 0.20$

Figure 3 shows the size of the effects for the three variables that showed significant effects on the awareness and use of the fact sheet. We found that age and individual sensitivity to safety issues had the largest effects. Thus, the probability that instructors were aware of the fact sheet increased from 57%, for 25-year-old instructors, to around 70% for 50-year-old instructors, independent of all other characteristics. Accordingly, the probability of using the fact sheet increased from approximately 30% (25-year-old instructor) to approximately 50% (50-year-old instructor).

Importantly, 93% of all respondents were rather (numeric code = 3) or very (numeric code = 4) sensitive to safety issues (scale: 1 = not sensitive at all; 2 = rather not sensitive; 3 = rather sensitive; 4 = very sensitive). However, even this distinction made a difference in the probabilities of both awareness (8%) and use (13%) of the fact sheet, independent of other characteristics.

Figure 3 shows that the probabilities of both the awareness and the use of the fact sheet were around 6% higher in category B sports than in category A sports. Note that this difference resulted from a multivariate model which controlled for the variables age and individual sensitivity. Hence, this 6% difference was not linked to differences in instructor age or individual sensitivity between the two sport categories.



**Figure 3:** Marginal effects on the probability of the awareness (top) or the use (bottom) of the fact sheet. Notes: The values of the variables are listed on the x-axis, while the y-axis indicates the probability of awareness or use of the fact sheet. The grey shading (age, individual sensitivity) and the lines error bars (sport with safety regulations) respectively indicate the 90% percent confidence intervals.

## Discussion

This study revealed that two-thirds of the Y+S instructors were aware of the safety recommendations in the fact sheet for their sport within the Y+S education system. Nearly half of the Y+S instructors put the recommendations into practice. On the one hand, this is a positive finding since this number means that every year almost 40 000 Y+S instructors learn the safety recommendations and put them into practice. Y+S covers almost all youth sport activities in Switzerland, since it is the only financially supported programme of the federal government in this field. On the other hand, the results show that there is still a great potential to reach more instructors and to diffuse the recommendations even more.

Regarding the latter, it is worth thinking about why one half of the Y+S instructors were less sensitive to safety issues and how the safety recommendations could be implemented more extensively. Our findings revealed that factors on both the individual and contextual levels might affect this sensitivity.

At the individual level, we observed that Y+S instructors that were less sensitive to safety issues were also less aware of the safety recommendations and applied them less frequently in their lessons with children. This was particularly common among young Y+S instructors. Hence, we draw the conclusion that *individual sensitivity to safety issues plays an important role in the successful implementation of safety recommendations*. Previous studies have identified the various channels available for raising sensitivity to issues such as injury prevention. Timpka et al. [8,9] highlighted the importance of public authorities and sports associations, which could increase sensitivity with campaigns, media coverage, and examples of

famous personalities (i.e., using celebrity athletes as role models; see also Ross et al. [10] for measures on a programmatic level). The present study provides evidence that argues in favour of the adoption of those methods.

At the contextual level, an important finding was that Y+S instructors in sports without specific safety regulations (category A) were less aware of and made less use of the safety recommendations, compared to Y+S instructors in sports with specific regulations (category B). Part of this variance on the contextual level could be explained by individual sensitivity, which was higher among Y+S instructors in category B sports than among instructors in category A sports. However, our statistical models revealed that a residual part of the variance was not explained by the individual, but by the context. Specifically, we identified two elements of context that could explain the differences.

The first contextual element is related to the context of the sports association. In interviews with the education managers of the sports associations, we found that fact sheets for sports with special safety regulations were more institutionalized, in several respects. First, the fact sheets were more likely to be mentioned in the framework curriculum which served as the conceptual basis of the education; second, fact sheets were included in the Y+S experts' (that is the instructor educators') dossiers for the course (didactic tool); and third, fact sheets were included in the course folders distributed to the Y+S instructors. Although these three measures were not exclusive to sports with safety regulations, there was a clear tendency for sports in category B to make more frequent use of these measures. Hence, a second conclusion of our study is that sport associations play a key role in the institutionalization of safety recommendations within the existing educational structure. They are located at the very first beginning of the process of dissemination. To ensure that the dissemination of recommendations does not depend on individuals, it is important that they are institutionally anchored (within the structures of the sports clubs; e.g. integration in the curriculum for the formation of educators. The second contextual element is related to the educational context, namely the educators. In the Y+S programme, they are called experts. Indeed, survey data from these experts revealed that Y+S experts in category B sports were more sensitive to safety issues and addressed the recommendations more consciously in their courses, compared to experts in category A sports (*Appendix Tables A3-A5*). Hence, a second conclusion of our study is that educators play a key role as disseminators of safety recommendations. It is therefore crucial to think of the dissemination as process of multiple steps that cannot solely be based on institutionalization. Educators must be aware of their important role as multipliers. This awareness must already be strengthened in their formation. Our findings on the contextual level support the arguments of Emery et al. [2] and Timpka et al. [8]. Both those authors pointed out that the responsibility for preventing injuries did not lie primarily with the individual (here, the Y+S instructors and young participants), but rather, within the high-level structures determined by the government and sports associations. When preventive measures are specified in official documents and integrated into didactic teaching materials, the effect is expected to be more sustainable and less dependent on factors related to individuals.

Our study has some limitations. First, our findings were based on subjective answers from a survey. This method produced generalizable results that enabled us to make statements about the entire population. However, this method had some inherent weaknesses that made certain aspects difficult to examine in greater depth. In our view, a more in-depth study with qualitative methods would be useful to assess the effectiveness of individual measures in promoting institutional support. Second, our study was conducted in a Swiss population. Further research is needed to gain a better understanding of how preventive

measures work in different cultural and legal contexts, taking into account – among other factors – differences between countries in how sports associations are organised. In that sense, our findings represent an important starting point for further investigations that focus on the work of collective actors, such as sports associations, public authorities, and Non-Governmental-Organisations (NGOs).

## Conclusion

This is, to our knowledge, the first study on the implementation of safety recommendations in youth sports in a real-world setting in Switzerland. It shows that the dissemination of such recommendations does not have to depend solely on individuals (here the instructors). With adequate institutionalization at the level of the sports associations and a high awareness at the level of the instructors' educators (here the experts), the dissemination can be additionally strengthened. Nevertheless, according to self-reporting, around the half of instructors still do not put the recommendations into practice. This points to a challenge that intervention programme literature usually describes with the term "adherence" or "non-adherence", respectively [11,12]. McKay and Verhagen [13] argue that adherence "is a process influenced by the environment [...]" and "shaped by social contexts [...]". Our findings support the notion that evidence-based, sports injury prevention alone has no effect, when it is not implemented in a real-world setting [14,15]. Thus, it is imperative that injury prevention and safety promotion in sports are adapted to the specific (cultural) context of sporting practices to ensure that the measures are actually put into practice [6,16]. While more research is needed how to increase adherence of these around 50 percent of instructors, our findings at least indicate that contextual factors, namely the sports association and the multipliers, are key starting points.

## Practical implications

- A good system for educating sports instructors is crucial for the successful implementation of safety recommendations in supervised youth sports.
- Mandatory training guidelines should be established at a high institutional level to ensure the dissemination of prevention measures from the training managers of sports federations, at the top, to the frontline implementers, at the grassroots level.
- These mandatory training guidelines should be institutionalized within sports associations, that is in any type of documentation used for the formation of persons who will later work with children and adolescents.
- Safety recommendations should be easily accessible and attractively presented in order to increase the usability for multipliers as well as people who work with children and adolescents. New possibilities of digitalisation should be used.
- Further research is needed to identify the barriers for those Y+S instructors and Y+S experts who do not know the safety recommendations.

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## Table Appendix

Sport	Safety regulations not present (A), present (B)	Framework curriculum [Rahmenlehrplan]	Course instructor dossier [Kursleiterdossier]	Course folder [Kursordner]
Mountain climbing	B	Yes	No	No
Ice hockey	A	Yes	Yes	No
Football	A	No	No	No
Judo/Ju-Jitsu	A	No	No	No
Children's sport	A	No	No	No
Rowing	B	No	Yes	Yes
Swimming	B	No	Yes	Yes
Ski/Snowboard	B	No	Yes	N.A.
Sport climbing	B	N.A.	N.A.	N.A.
Sport shooting	B	Yes	Yes	Yes
Gymnastics	A	No	Yes	No
Floorball	A	No	Yes	No
Volleyball	A	No	No	No

Y+S = Swiss national youth + sports programme; N.A. = No information available from interviews with the corresponding education managers of the sport association

Table A1: Institutional channels of the Y+S programme that mentioned the fact sheet

Variable	Data source	Coding scheme
Sex	Question in questionnaire: Please indicate your sex: a) female, b) male	0 = female 1 = male
Age	Question in questionnaire: Please indicate your age	Age in years
Experience as instructor	Question in questionnaire: How long have you been a Y+S instructor? / How long have you been a Y+S expert?	0 = max. 6 years of experience 1 = more than 6 years of experience
Individual sensitivity for safety issues	Question in questionnaire: What importance do you attach to the topic of accident prevention in your sport?	1 = very strong importance 2 = rather strong importance 3 = rather weak importance 4 = very weak importance
Sport with special safety regulations	Official list from the Y+S programme	0 = category A (no specific regulations present) 1 = category B (specific regulations present)

Table A2: Data source and coding schemes for dependent and independent variables included in the logistic regression analysis

Sport category	What importance do you attach to accident prevention in your sport?			
	Very strong importance	Rather strong importance	Rather weak importance	Very weak importance
A: sport without special safety regulations	56 (47.5%)	50 (42.4%)	12 (10.2%)	0 (0%)
B: sport with special safety regulations	91 (71.1%)	35 (27.3%)	2 (1.6%)	0 (0%)

Table A3: Individual sensitivities of experts to safety issues in A- and B-category sports

Sport category	Do you mention the fact sheet in your courses?			
	No, I don't.	Yes, but I only explain some of the recommendations	Yes, I explain all recommendations in detail	I'm not aware of the fact sheet
A: sport without special safety regulations	6 (5.1%)	60 (50.8%)	16 (13.6%)	36 (30.5%)
B: sport with special safety regulations	2 (1.6%)	61 (47.7%)	39 (30.5%)	26 (20.3%)

Table A4: Experts mentioning the fact sheet in courses for A- and B-category sports

Sport category	Do you distribute the fact sheet in your courses?				
	Yes, as a single document or as part of the didactic material	No, but I show the fact sheet as a PDF file	No, but I mention where the fact sheet can be downloaded	I mention the information without saying exactly where to find it	I'm not aware of the fact sheet
A: sport without special safety regulations	19 (16.8%)	21 (18.6%)	29 (25.7%)	1 (0.9%)	43 (38.1%)
B: sport with special safety regulations	48 (38.1%)	20 (15.9%)	23 (18.3%)	7 (5.6%)	28 (22.2%)

Table A5: Experts distributing the fact sheet for A- and B-category sports

CHILDREN IMPLEMENTATION RESEARCH INJURY PREVENTION INSTITUTIONALLY ORGANISED SPORTS