



# Safety in Sports

## Expert Consultation Meeting



Kuratorium für Verkehrssicherheit KfV, Schleiergasse 18, A-1100 Vienna,  
25th January 2010, 10:30 - 16:00

### AGENDA

1. Welcome & agenda
2. Project status report
3. Baseline survey(s)
4. Inventory of existing prevention measures
5. Discussion on best prevention measures (toolbox)
6. Approaches for national pilots
7. Detailed elaboration of subcontracts
8. Joint project work plan
9. Miscellaneous





# Development of practical guidelines for handball injury prevention

On the basis of measures and strategies which work **and** which are accepted in the handball community...

...an evaluation of these preventive measures **and** a consensus building among experts should lead to...

...**Practical guidelines** for injury prevention in handball representing a kind of „Gold Standard“ or „State of the Art“ will be gathered and provided as a „toolbox“.

It is **not** intended to carry out new studies to prove the effectivity of specific preventive measures



# Project Status

Inventory on the burden of sports injuries,  
existing prevention measures and safety  
promotion strategies

Assessment of identified preventive measures  
and promotion strategies in handball and  
basketball:

best preventive measures  
+ best promotion strategies  
= injury prevention toolkit

**Consensus  
Building**

Implementation and testing of  
injury prevention toolkits in handball  
(Norway, Czech Republic)

**Sub-  
contracting**

General guidelines for the development and  
implementation of sustainable injury prevention  
toolkits in sports (all sports)



# Steps of Consensus Building

## **Opinions and demands of coaches concerning injuries and prevention**

- Causes
- Possible interventions
- Which focus
- What is actually practised

## **Compilation and differentiation of existing knowledge on injury prevention**

- Training (programmes)
- Technical/political strategies
- (protective) equipment and facilities
- Medical + nonmedical support + treatment
- Multifaceted approaches

## **Quality ranking of existing injury prevention measures**

- Effectivity
- Applicability
- Acceptance



# Baseline Surveys

## General Information

$\Sigma = 266$	EHF(Skopje) : International Top Level Coaches n = 45	Norway: Norwegian Top Coaches n = 45	EHF(Győr) : International Elite Youth Coaches n = 51	Norway: Norwegian Regions n = 125	Czech Republic: N/A
<b>Age</b>	39	37	40	35	
<b>Gender</b>	Male: 86% Female: 14%	Male: 78% Female: 22%	Male: 81% Female: 19%	Male: 56% Female: 44%	
<b>Coaching Education</b>	National team: 26% 1st league: 64% 2nd league: 8%	None: 0% Level 1: 5% Level 2: 14% Level 3: 47% Level 4: 33% Level 5: 2%		None: 30% Level 1: 25% Level 2: 37% Level 3: 6% Level 4: 1% Level 5: 1%	



# Baseline Surveys

## Opinions and Demands

	International Top Level Coaches	Norwegian Top Coaches	International Elite Youth Coaches	Norwegian Regional Coaches
<b>Awareness</b> (Injuries as a problem?)	<b>Yes: 67%</b> No: 33%	<b>Very important issue (12%)</b> <b>Important issue (44%)</b> Medium (35%) Less important (9%) Not important (0%)	<b>Very important issue (38%)</b> <b>Important issue (53%)</b> Medium (9%) Less important (0%) Not important (0%)	Very important issue (7%) <b>Important issue (43%)</b> <b>Medium (43%)</b> Less important (3%) Not important (3%)
<b>Causes</b>	<b>Poor physical preparation (36%)</b> Fouls / unfair play (18%) Collisions / body contact (18%) Lack of regeneration (6%) Insufficient warm-up (15%)	<b>Poor physical preparation (71%)</b> Fouls / unfair play (24%) Collisions / body contact (49%) Too many matches (58%) <b>Lack of regeneration (64%)</b> Insufficient warm-up (47%) Bad luck (36%)	<b>Poor physical preparation (77%)</b> Fouls / unfair play (46%) Collisions / body contact (38%) Too many matches (54%) <b>Lack of regeneration (65%)</b> Insufficient warm-up (50%) Bad luck (25%)	<b>Poor physical preparation (68%)</b> Fouls / unfair play (24%) Collisions / body contact (35%) Too many matches (15%) Lack of regeneration (35%) <b>Insufficient warm-up (68%)</b> Bad luck (36%)
<b>Reduction</b>	<b>Better athletic preparation (54%)</b> Modification of rules (32%)	<b>Better athletic preparation (84%)</b> Longer regeneration (69%) Reduction of matches (40%) Modification of rules (4%) Protective equipment (13%) <b>Prevention programmes (80%)</b>	<b>Better athletic preparation (83%)</b> Longer regeneration (49%) Reduction of matches (28%) Modification of rules (17%) Protective equipment (19%) <b>Prevention programmes (64%)</b>	<b>Better athletic preparation (80%)</b> Longer regeneration (32%) Reduction of matches (7%) Modification of rules (2%) Protective equipment (16%) <b>Prevention programmes (86%)</b>
<b>Demand for measures</b>	knee, ankle and shoulder injuries	knee, ankle, shoulder and wrist and finger injuries	knee, shoulder, ankle, wrist and finger injuries	knee, shoulder, ankle, wrist and finger injuries



# Baseline Surveys

## What is actually practised

	International Top Level Coaches	Norwegian Top Coaches	International Elite Youth Coaches	Norwegian Regional Coaches
<b>Prevention (training measures)</b>	Strengthening (15%) <b>Stretching (77%)</b> Warm-up (31%) Balance exercises (15%) Physiotherapy (23%)	<b>Strengthening (84%)</b> Stretching (56%) Physiotherapy (23%) Warm-up (81%) <b>Balance exercises (91%)</b> Athletic drills (33%), <b>Coordination exercises (86%)</b>	Strengthening (57%) <b>Stretching (91%)</b> Physiotherapy (73%) Warm-up (75%) Balance exercises (68%) Athletic drills (73%) Coordination exercises (39%)	<b>Strengthening (78%)</b> Stretching (67%) Physiotherapy (8%) <b>Warm-up (85%)</b> Balance exercises (58%) Athletic drills (12%) Coordination exercises (54%)
<b>Popularity Scale (Players)</b>	<b>Yes (77%)</b> No (23%)	1 not at all (0%) 2 (5%) <b>3 (42%)</b> <b>4 (51%)</b> 5 very much (2%)	1 not at all (0%) 2 (25%) 3 (32%) 4 (18%) 5 very much (25%)	1 not at all (1%) 2 (7%) <b>3 (36%)</b> <b>4 (45%)</b> 5 very much (12%)
<b>Additional prevention measures</b>	<b>Physiotherapy (86%)</b> Mouth guards (14%) Tape (64%)	Physiotherapy (41%) Orthoses (44%) Mouth guards (5%) Protectors (36%) <b>Tape (80%)</b> Supplementation (13%) Massage (21%)	Physiotherapy (50%) Orthoses (14%) Mouth guards (6%) Protectors (56%) <b>Tape (72%)</b> Supplementation (14%) Massage (42%)	Physiotherapy (19%) Orthoses (28%) Mouth guards (3%) Protectors (42%) <b>Tape (77%)</b> Supplementation (6%) Massage (3%)



# Steps of Consensus Building

## **Opinions and demands of coaches concerning injuries and prevention**

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## **Compilation and differentiation of existing knowledge on injury prevention**

- Training (programmes)
- Technical/political strategies
- (protective) equipment and facilities
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- Multifaceted approaches

## **Quality ranking of existing injury prevention measures**

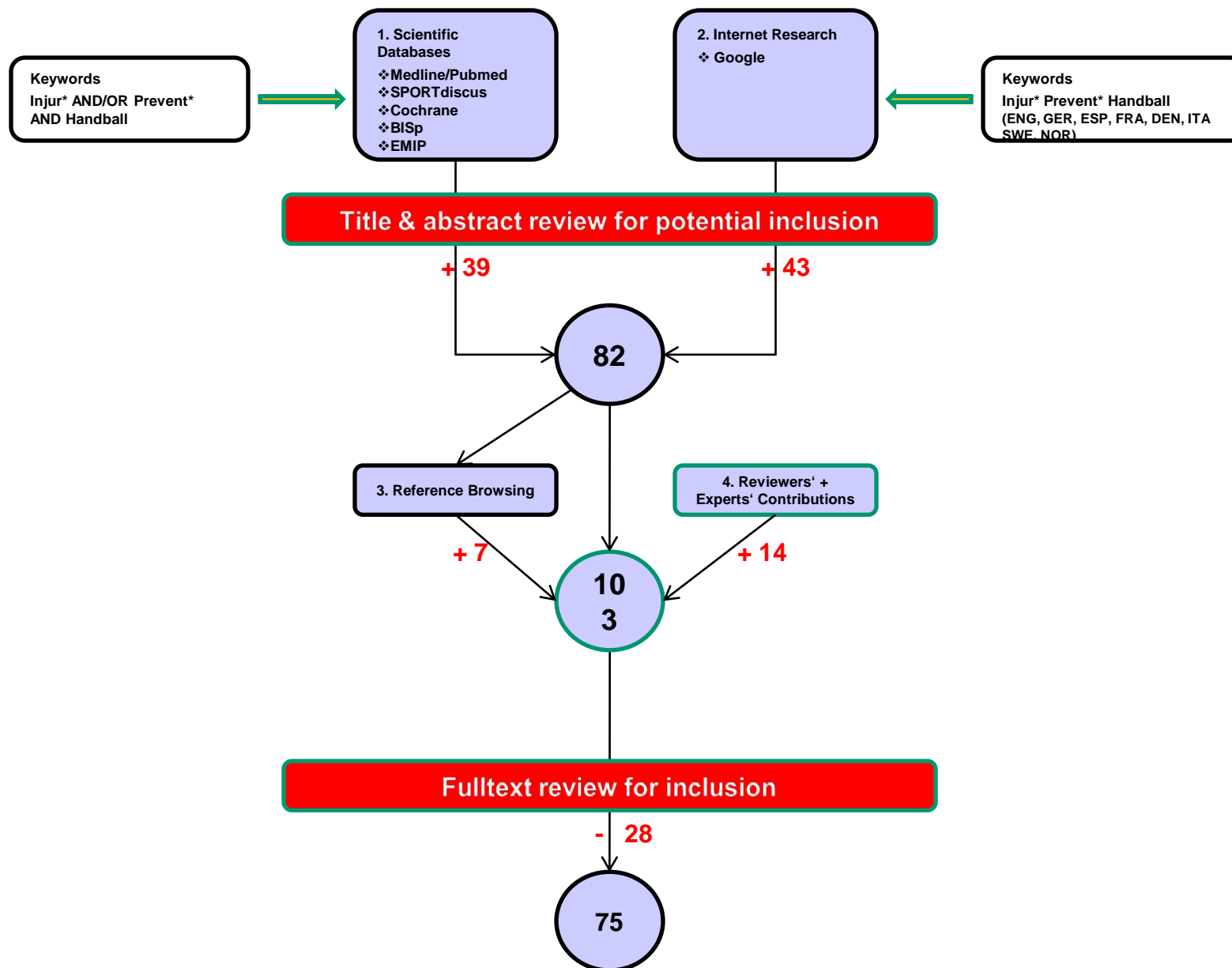
- Effectivity
- Applicability
- Acceptance





# Search Keywords and Languages

Language	Rank EHF	Keyword 1	Keyword 3	Keyword 4	Keyword 5	Keyword 6	Keyword 7	Keyword 8
GER	1	Handball	Verletzung	Prävention	Prophylaxe	Sportverletzung	Verletzungsprophylaxe	Präventionsstrategie
ESP	2	Balonmano	Lesiones	Prevención	Profilaxis	Deportes lesión	La prevención de lesiones	estrategia de prevención
DEN	3	Håndbold	Skade	Forebyggelse	Profylakse	Sports skade	Forebyggelse af personskader	forebyggelsesstrategi
FRA	5	Handball	Blessures	Prévention	Prophylaxie	Blessures sportives	Prévention des blessures	stratégie de prévention
RUS	6	Гандбол	Вред	Предупреждение	Профилактика	Спорт травмы	Травматизма	Стратегия предотвращения
SLO	7	Rokomet	Škode	Preprečevanje	Profilaksa	Športnih poškodb	Preprečevanje poškodb	strategija preprečevanja
ROU	9	Handbal	Leziuni	Prevenirea	Profilaxia	Sporturi de prejudiciu	Leziuni de prevenire a	strategie de prevenire a
CRO	10	Rukomet	Povreda	Prevenција	Profilaksa	Sportske ozljede	Povreda prevencije	strategije za prevenciju
POL	12	Piłka ręczna	Szkoda	Zapobieganie	Profilaktyka	Sport szkody	Zapobiegania urazom	strategii zapobiegania
SWE	14	Handboll	Skada	Förebyggande	Profylax	Sport skada	Skadeprevention	förebyggande strategi
POR	15	Handebol	Lesão	Prevenção	Profilaxia	Esportes lesão	Prevenção de lesões	prevenção estratégia
NOR	16	Håndball	Personskade	Forebygging	Prophylaxis	Sport skader	Personskade forebygging	forebyggende strategi
SVK	19	Hádzaná	Úrazy	Prevencia	Profylaxia	Športové zranenia	Prevencia úrazov	preventívne stratégie
ITA	20	Pallamano	Pregiudizio	Prevenzione	Profilassi	Sport pregiudizio	Prevenzione delle lesioni	strategia di prevenzione
SRB	21	Рукомет	Повреда	Превенција	Профилакса	Спортске повреде	Повреда превенције	стратегije за превенцију
GRE	23	Χάντμπολ	Τραυματισμός	Πρόληψη	Προφύλαξη	Σпор ζημίας	Πρόληψη των τραυματισμών	στратηγική πρόληψης
CZE	28	Házená	Zranění	Prevence	Profylaxe	Sportovní zranění	Prevence úrazů	preventivní strategie
LTU	29	Rankinis	Pažeidimas	Prevenција	Profilaktika	Sporto traumų	Žalos prevencija	prevencijos strategija
LAT	34	Handbols	Traumas	Profilakse	Profilakse	Sporta traumų	Traumų profilakse	profilakses stratēģiju
NED	35	Handbal	Letsel	Preventie	Profylaxe	Sport letsel	Preventiebeleid	preventiestrategie
BUL	36	Хандбал	Наранявания	Профилактика	Профилактика	Спорт щети	Предотвратяване на щетите	стратегия за превенция
FIN	38	Käsipallo	Vammat	Ennaltaehkäisy	Profylaksia	Urheilun vahingon	Vammojen ehkäisy	ennaltaehkäisevä strategia
ENG	41	Handball	Injury	Prevention	Prophylaxis	Sports injury	Injury prevention	prevention strategy





# Inventory - Detail

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# Inventory of existing Prevention Measures

(75 references from 15 countries)

## Subdivision:

### Group A:

Training (Programmes) (e.g. Proprioceptive/neuromuscular, athletic conditioning)

### Group B:

Technical + Political Strategies (e.g. fairplay, change in attitude/awareness, rules)

### Group C:

(protective) Equipment + Facilities (e.g. PSA, orthosis, taping, ground conditions)

### Group D:

Medical + Non-medical Support + Treatment (e.g. physiotherapy, psychological supp. medical check-ups, PPE)

### Group E:

Multifaceted approaches (combination of more than 1 measure of the groups A-D)



# Inventory - Overview

	Training (Programmes)	Technical + Political strategies	(protective) Equipment + Facilities	Medical + Non- medical Support + Treatment		Multi-faceted Approaches
Multiple scientific validation	16	2	5	1	<b>24</b> (22%)	5
Single scientific validation	13	0	1	2	<b>16</b> (15%)	2
Science-based	14	7	5	0	<b>26</b> (24%)	5
Multiple expert recommendation	13	6	5	1	<b>25</b> (23%)	6
Single expert recommendation	9	3	4	2	<b>18</b> (16%)	4
	<b>65</b> (60%)	<b>18</b> (17%)	<b>20</b> (18%)	<b>6</b> (5%)	<b>109</b>	<b>22</b>





# Steps of Consensus Building

## **Opinions and demands of coaches concerning injuries and prevention**

- Causes
- Possible interventions
- Which focus
- What is actually practised

## **Compilation and differentiation of existing knowledge on injury prevention**

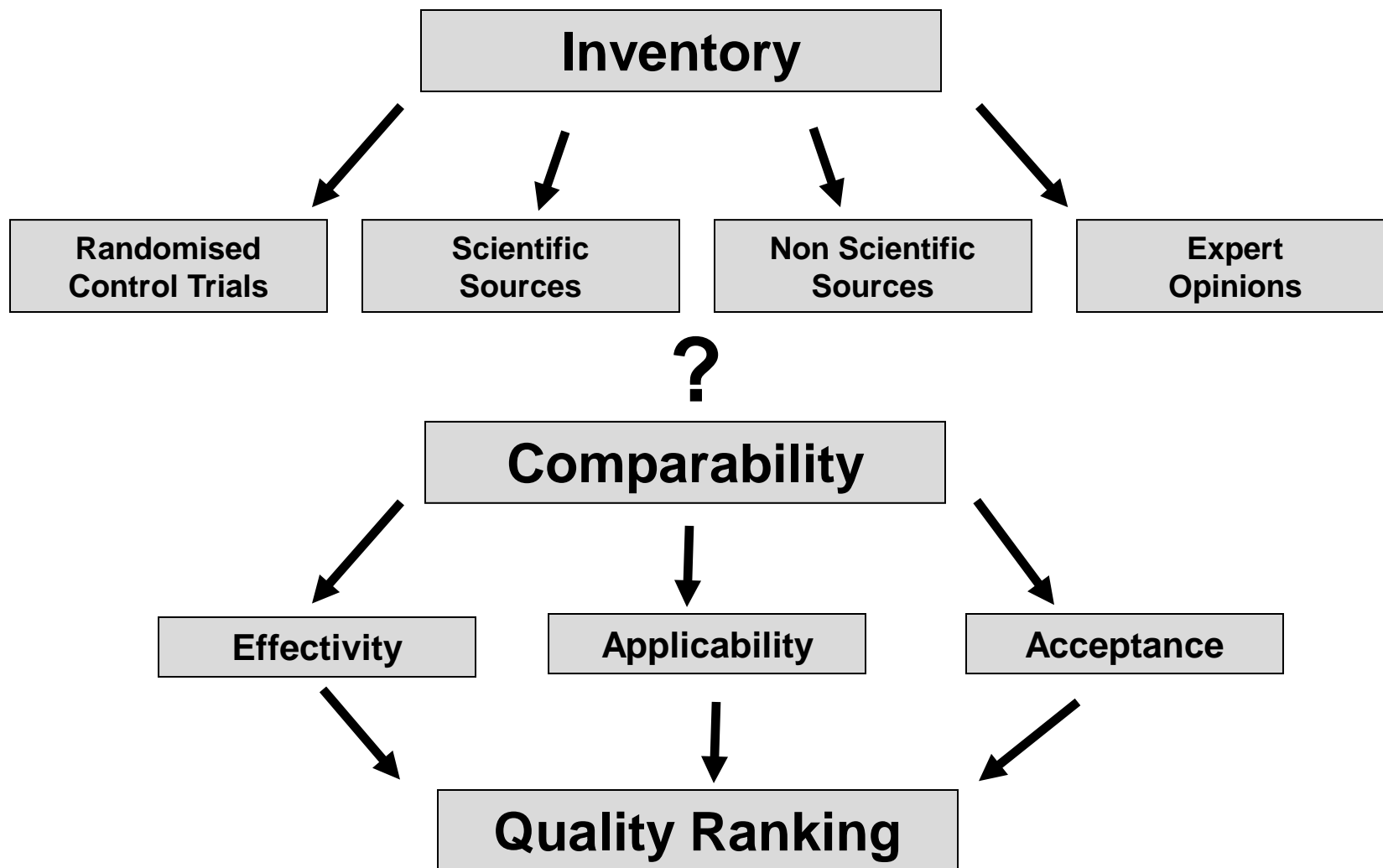
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## **Quality ranking of existing injury prevention measures**

- Effectivity
- Applicability
- Acceptance



# From Inventory to Best Practices





# Evaluation Procedure

potential **EFFECTIVITY** in terms of reducing injuries in handball (*i.e. injuries become less frequent or less severe*)

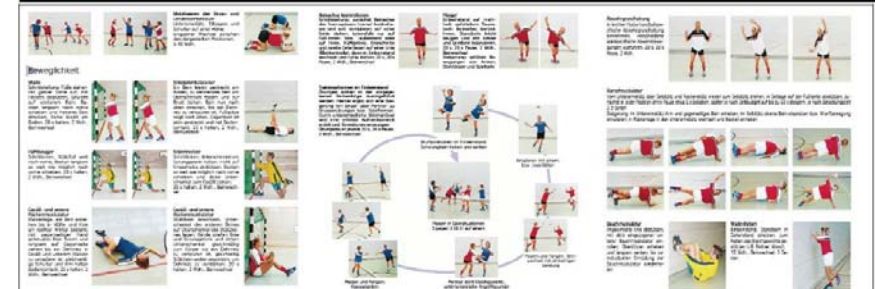
potential **APPLICABILITY** in terms of required effort for realisation (*i.e. low time, financial, material and personnel expenditures*)

potential **ACCEPTANCE** within the "handball community" (*i.e. execution in compliance with athletes, coaches and associations*  
*e.g. adoption into curricula of trainer education; becoming well known integral part of training, becoming a mandatory rule*)

	excellent	good	moderate	poor	very poor	Comments
<b>Effectivity</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<b>Applicability</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<b>Acceptance</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
						<input type="button" value="Submit"/> <input type="button" value="Reset"/> <input type="button" value="Stop evaluation"/>

Title		Author / Editor		
Original title		First author		
English Title		Year	Country	Doc.No
Original title in English		of publication	of origin	Internal coding
Source	Category	Validation		
Place of publication/finding	Main subject(s) of the final preventive recommendation: <u>Training programmes</u> (e.g. proprioception, balance, agility, strength, flexibility)		Validity of the final preventive recommendation: <u>Multiple scientific validation</u> (e.g. review, meta-analysis)	
Form / Dissemination	<u>Technical and/or political strategies</u> (e.g. Fair play campaigns, changes or modification of rules, refereeing and penalisation, psychological and behavioural aspects)		<u>Single scientific validation</u> (e.g. Single RCT, intervention study)	
Subject-matter + presentation and promotion	<u>Equipment and/or facilities</u> (e.g. orthoses, mouthguards, shoes, protectors, surface conditions, safety standards)		<u>Science based</u> (With reference to scientific data, studies)	
	<u>Medical support</u> (e.g. PPE, medical screening, physiotherapy, return to play guidelines)		<u>Multiple expert recommendation</u> (by more than one expert from the fields of coaching, [sport] science, medicine, etc.)	
	<u>Multifaceted approach</u> (multifaceted recommendation referring to more than one of the above mentioned categories)		<u>Single expert recommendation</u> (from the fields of coaching, [sport] science, medicine, etc.)	
	Description			
Summary	Brief summary of the context, contents, main findings and statements			
Preventive recommendation	Autonomous, comprehensive and conclusive statement(s) of the source towards prevention in handball			

Title		Author / Editor		
English Title		Year	Country	Doc.No
Unfallverhütung im Handball Teil 1: Maßnahmen zur Vermeidung von Knie- und Sprunggelenksverletzungen		2003	Germany	003
Source	Category	Validation		
ARAG Allgemeine Unfallversicherung, Duesseldorf: 2003 www.arag-sport.de	<input checked="" type="checkbox"/> Training programmes <input type="checkbox"/> Technical and political strategies <input type="checkbox"/> Equipment and facilities <input type="checkbox"/> Medical support <input checked="" type="checkbox"/> Multifaceted approach	<input type="checkbox"/> Multiple scientific validation <input type="checkbox"/> Single scientific validation <input type="checkbox"/> Science-based <input type="checkbox"/> Multiple expert recommendation <input type="checkbox"/> Single expert recommendation		
Form / Dissemination				
Education and information Print publication				
Description				
A six-page leaflet, based on experts' knowledge and German epidemiology, giving information on typical injury mechanisms leading to exemplary training measures in the fields of flexibility, coordination, stabilisation and strengthening. General information on appropriate shoes, floor surfaces and protective equipment is provided additionally. The contents have been developed in collaboration with the medical commission of IHF and DHB (German Handball Federation).				
Summary				
Structured warming-up and mobilisation before training and competition, improving the flexibility, core stability and handball specific coordination, promotion of correct knee and foot position, appropriate shoes and flooring.				
Preventive recommendation				







# Next steps to identify best practises

## Opinions and demands of coaches concerning injuries and prevention

- Causes
- Possible interventions
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## Compilation and differentiation of existing knowledge on injury prevention

- Training (programmes)
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## Quality ranking of existing injury prevention measures

- Effectivity
- Applicability
- Acceptance

**... your expertise in addition should lead to ...**

## Prevention Matrix

Gender	Age	Performance Level	Training (programmes)	Technical + political strategies	(protective) equipment + facilities	Medical + nonmedical support + treatment
Female	Children	low				
		medium				
		high				
	Youth	low				
		medium				
		high				
	Adults	low				
		medium				
		high				
Male	Children	low				
		medium				
		high				
	Youth	low				
		medium				
		high				
	Adults	low				
		medium				
		high				



# Prevention Matrix

Gender	Age	Performance Level	Training (programmes)	Technical + political strategies	(protective) equipment + facilities	Medical + nonmedical support + treatment
Female	Children	low				
		medium				
		high				
	Youth	low				
		medium				
		high				
	Adults	low				
		medium				
		high				
Male	Children	low				
		medium				
		high				
	Youth	low				
		medium				
		high				
	Adults	low				
		medium				
		high				

**Demands  
Etiology**

**Effectivity  
Applicability  
Acceptance**



**Balance /  
proprioceptive  
Training**

**Media**

**???**

**Coaches**

**Officials**



# Prevention Matrix

Gender	Age	Performance Level	Training (programmes)	Technical + political strategies	(protective) equipment + facilities	Medical + nonmedical support + treatment
Female	Children	low				
		medium				
		high				
	Youth	low				
		medium				
		high				
	Adults	low				
		medium				
		high				
Male	Children	low	Physical demands Etiology			
		medium				
		high				
	Youth	low				
		medium				
		high				
	Adults	low	Effectivity Applicability Acceptance			
		medium				
		high				

Physical demands  
Etiology

Effectivity  
Applicability  
Acceptance

Rules modification

Media

???

Coaches

Officials



# Prevention Matrix

Cells containing preventive measures which are promising to be

- effective
- applicable
- accepted

Depending on the

- respective physical demands
- etiology of injuries

Dissemination of the measures to

- athletes (media)
- coaches (educational module)
- officials (informational module)

Gender	Age	Performance Level	Training (programmes)	Technical + political strategies	(protective) equipment + facilities	Medical + nonmedical support + treatment
Female	Children	low				
		medium				
		high				
	Youth	low				
		medium				
		high				
	Adults	low				
		medium				
		high				
Male	Children	low				
		medium				
		high				
	Youth	low				
		medium				
		high				
	Adults	low				
		medium				
		high				

## Questions and Tasks

What is the complete and optimal structure of the matrix?

- Consensus building leading to the contents of the cells

Which cells are already filled with contents in your federation?

- Status Quo in your country

Which cells should be filled in for your federation within the project collaboration?

- Tasks concerned with the project collaboration and the subcontracting



# Thanks for attention and collaboration!



**European Handball Federation**



**Norwegian Handball Federation**



**Czech Handball Federation**



**Charles University Prague**  
Faculty of Physical Education and Sports



**Consumer Safety Institute**



**Sports Insurance**