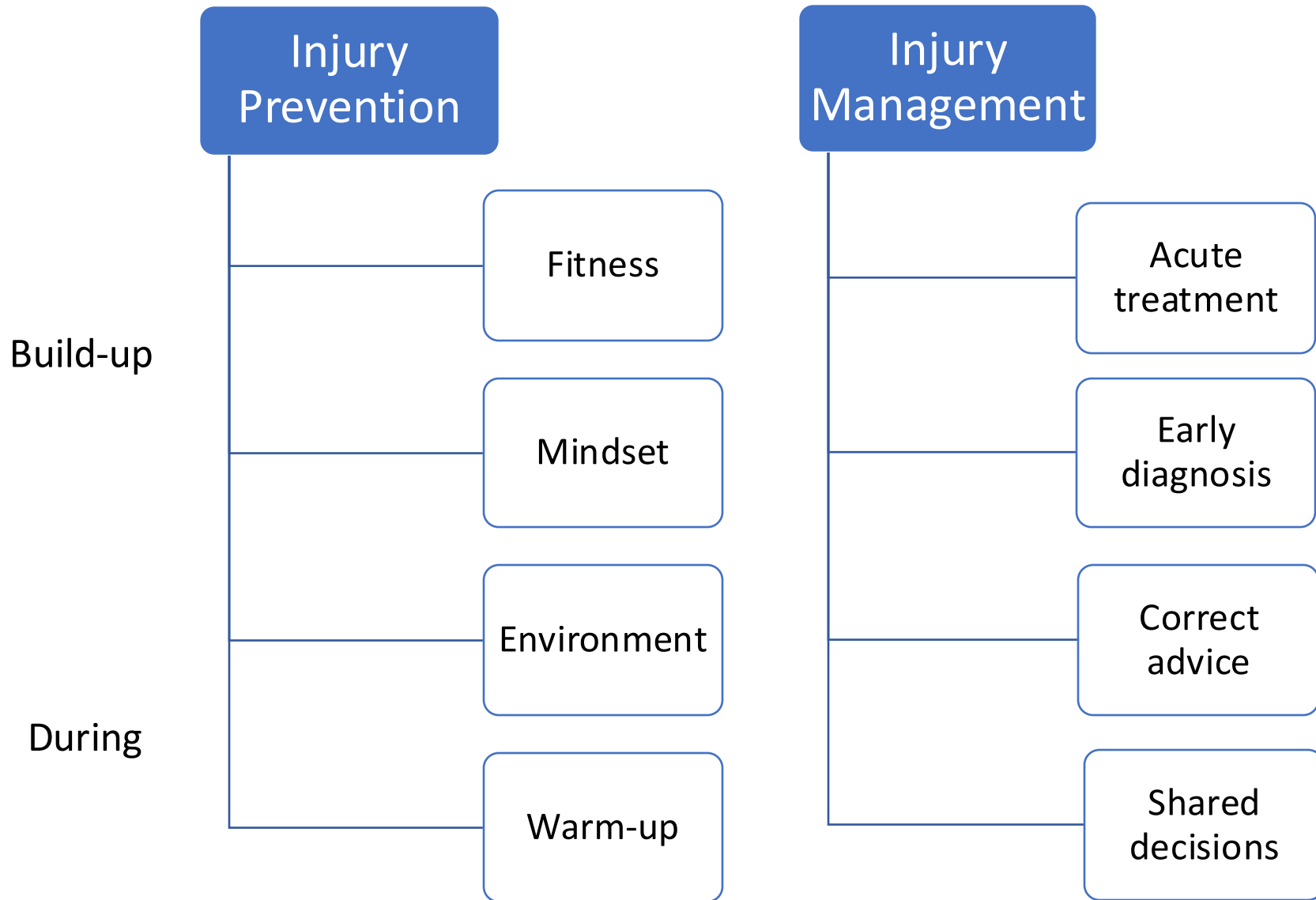




# PERFORM BETTER, RECOVER SMARTER

Optimising Performance Through  
Prevention and Recovery

**Sven Putnis**





**SNOWSPORT**  
**ENGLAND**

**CRYSTAL**  
— SKI HOLIDAYS —  
*David Lloyd*  
— CLUBS —





## INJURY PREVENTION TRAINING PROGRAM

For each exercise, aim to complete between 8-12 repetitions per set and x3 sets (except for planks when aim to hold for 20-30s x 3 sets).

For further progression of injury prevention exercises, consider implementing plyometric movements such as lateral pogos, bounding and single leg landings.

Powered by



### EARLY PHASE (0-2 WEEKS)

#### HOME EXERCISE PLAN

Sit to stand



Step up



Star excursion



DL bridge



Dead bug



*X3 per week*

#### GYM-BASED PLAN

Goblet box squat



Weighted step up



Star excursion



DL bridge



Dead bug



*X3 per week*

# Confidence

Believe in your own abilities

# Commitment

Continued interest and work-rate over time



# Concentration

Ability to focus on the task

# Control

Managing emotions e.g. anxiety

**LOUISE PODE**



**KIMBERLEY KAY**



**DR CAROL PORTER**



**ProAbility**





# Research: Environmental Conditions



International Journal  
of Sports Medicine



392 Knee ACL-injured skiers,



392 Uninjured controls matched for sex and skiing skill







Risk factors:

Fresh snow (OR 10.5), Grippy snow (OR 7.8), Icy slope (OR 12.4),

Very cold/cold temperature (OR 1.6), Skiing on a blue run (OR 6.9)

Effect of environmental conditions on injury rates at a Colorado ski resort






 Lauren A Pierpoint<sup>1</sup>,  Zachary Y Kerr<sup>2</sup>, Gary Grunwald<sup>3</sup>, Morteza Khodaei<sup>4</sup>, Tessa Crume<sup>1</sup>, R. Dawn Comstock<sup>1</sup>




-  Injury rates 71% higher on hardpack compared with powder days
-  Injury rates 36% higher on packed powder compared with powder days



Article

## Risk Factor Analysis of Ski and Snowboard Injuries During the 2023/2024 Winter Season: A Single, High-Volume Trauma Center Database Analysis

Michele Paolo Festini Capello <sup>1,\*</sup>, Pieralberto Valpiana <sup>1,2</sup>, Giuseppe Aloisi <sup>3</sup>, Giovanni Cristofolini <sup>1</sup>, Svea Caren Misselwitz <sup>1</sup>, Giuseppe Petralia <sup>3</sup>, Mario Muselli <sup>3</sup>, Salvatore Gioitta Iachino <sup>1</sup>, Christian Schaller <sup>1</sup> and Pier Francesco Indelli <sup>1,2,4,5</sup>

-  579 patients returned questionnaires
-  More ski injuries than snowboard, knee injuries most common (30%)
-  Fractures more common in older, Ligament injuries in younger

**‘Fatigue is underestimated, and the general physical preparation is often lacking for sports like skiing and snowboarding.’**

# Research: Warm-up



Original research articles

Search term: 'warm-up' in the title AND:

Soccer: 100 hits

Football: 69 hits

Cycling: 95 hits

Running: 126 hits




Basketball/Netball: 29 hits

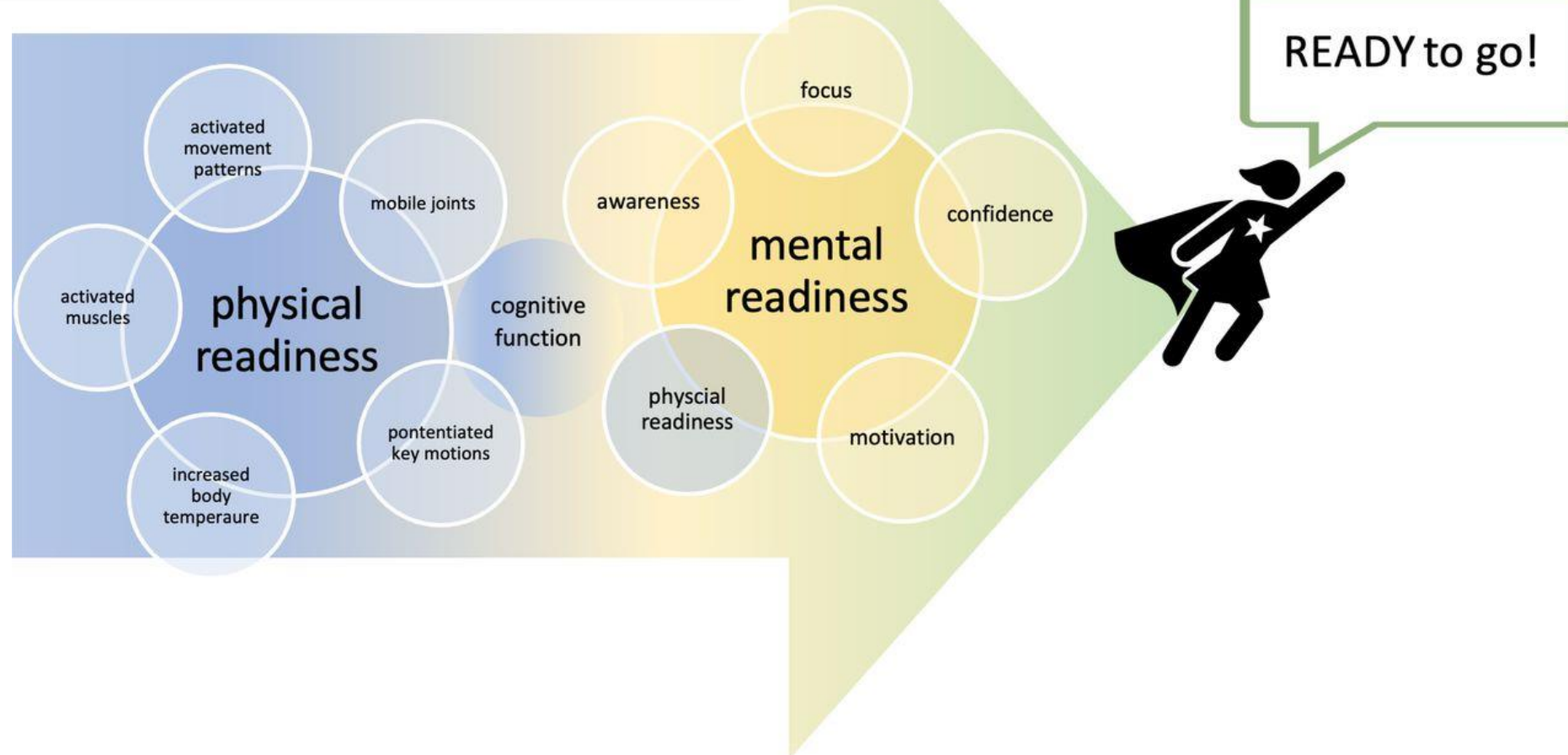
Ski/Snow: 5 hits

**ONLY 5 HITS!**



# Before hitting the slopes: athlete and staff perspectives on warm-up and activation in high-performance snowsports

Lisa Beck <sup>1,2</sup>, Sheree Bekker,<sup>3</sup> Evert Verhagen <sup>4</sup>, Caroline Bolling,<sup>4</sup>  
Jörg Spörri <sup>1,2</sup>



# International Ski and Snowboard Federation consensus statement on warm-up and cool-down in competitive alpine and freestyle skiers and snowboarders

Jörg Spörri <sup>1,2</sup>, Lisa Beck <sup>1,2</sup>, Oriol Bonell Monsonís <sup>3</sup>, Marine Alhammoud <sup>4</sup>, Roald Bahr <sup>5</sup>, Sheree Bekker <sup>6</sup>, Dave Collins <sup>7</sup>, Lars Engebretsen <sup>8</sup>, Julie Harvey <sup>9</sup>, Hubert Hörterer <sup>10</sup>, Gerald Mitterbauer <sup>11</sup>, Johannes Scherr <sup>1,2</sup>, Wolfgang Schobersberger <sup>10,12</sup>, Jan Seiler <sup>13</sup>, Maarit Valtonen <sup>10,14</sup>, Karlheinz Waibel <sup>15</sup>, Tina Weirather <sup>11</sup>, Vincent Gouttebarger <sup>16,17</sup>, Caroline Bolling <sup>3,16</sup>, Evert Verhagen <sup>3</sup>

## At Hotel (Morning)

- Light aerobic work
- Mobility
- High quality relaxation
- Fueling
- Caffeine
- Know the rough plan

## Off-Snow

- Upregulation of focus
- Getting increasingly “serious”
- Aerobic work
- Mobility
- Neuromuscular activation
  - Increasing Intensity
  - Sports-Specificity
  - Complexity
- Know the exact schedule

## On-Snow

- Narrowing of focus
- Perception of the own body and environmental conditions
- Brief muscle activation with ski/board boots
- Imagery
- WUP runs on the hill/track
- Fueling
- Extension of focus

**Preparation**  
(Same Day)

## At Start

- Narrowing of focus
- Mid- to high-intensity cardiovascular activation
- Sport-specific mobility
- Neuromuscular activation
  - Particular focus on snow sport discipline-specific demands (e.g., core muscles)
- WUP runs on the hill/track
- PAP of the performance relevant muscles
- Psychological up-/down-regulation, imagery

**Immediate Warm-up**  
(15-20 min before training/competition)

Readiness

Avoid longer transition times;  
re-WUP may be indicated

**Training/  
Competition**

## At Finish

- Cardiovascular and respiratory down-regulation
- Mental downregulation
- Dealing with the outcome
- Start reperfusion (compression, legs up...)
- Refueling

**Immediate Cool-down**  
(15-20 min after training/competition)

## On-Snow

- CD runs on the hill/track
- Continue reperfusion
- Refuelling

## Off-Snow

- Light intensity aerobic work
- Stretching/ mobility

## At Hotel (Evening)

- Long-term training content
  - Depending on the day intensity and the meso and macro planning
- Physiotherapy/massage
- Cold water immersion
- Chill time
- Debriefing (recap-evaluation-refocus)

**Recovery**  
(Same Day)

# The ICE-BREAKER warm-up

A 3 minute warm-up

- raises heart rate
- increases blood flow
- warms muscles
- increases joint range
- synchronises muscle groups
- optimises function
- reduces injury risk

Take time to fit this in!







but, what if...

# Road to Recovery



**Thank-you!**



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