International Paralympic Committee

Illness Prevention in a Winter Sports Environment

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Chair British Paralympic Association
IPC Medical Committee
Incidence of Illness

<table>
<thead>
<tr>
<th></th>
<th>Summer Olympics</th>
<th>Summer Paralympics</th>
<th>Winter Paralympics</th>
<th>Winter Olympics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illness proportion (%)</td>
<td>7</td>
<td>15.1</td>
<td>17.4</td>
<td>8</td>
</tr>
<tr>
<td>Illness rate (/1000 athlete days)</td>
<td>5.2</td>
<td>13.2</td>
<td>18.7</td>
<td>5</td>
</tr>
</tbody>
</table>
Incidence of Illness

Illness 2 x more common in Paralympians v Olympians

Winter > Summer
## Incidence of illness by sport – Sochi Paralympics

<table>
<thead>
<tr>
<th>Sport</th>
<th>Total number of illnesses</th>
<th>Athletes with an illness</th>
<th>Athletes</th>
<th>Total number of athlete days</th>
<th>Proportion of athletes with an illness</th>
<th>Illness incidence rate illnesses/1000 athlete days (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>123</td>
<td>95</td>
<td>547</td>
<td>6564</td>
<td>17.4</td>
<td>18.7 (15.1 – 23.2)</td>
</tr>
<tr>
<td>Alpine skiing/Snowboarding</td>
<td>51</td>
<td>41</td>
<td>219</td>
<td>2628</td>
<td>18.7</td>
<td>19.4 (13.9-27.0)</td>
</tr>
<tr>
<td>Cross country skiing/biathlon</td>
<td>30</td>
<td>24</td>
<td>149</td>
<td>1788</td>
<td>16.1</td>
<td>16.8 (10.9 – 25.9)</td>
</tr>
<tr>
<td>Ice sledge hockey</td>
<td>30</td>
<td>18</td>
<td>129</td>
<td>1548</td>
<td>14.0</td>
<td>19.4 (12.6 – 29.9)</td>
</tr>
<tr>
<td>Wheelchair curling</td>
<td>12</td>
<td>12</td>
<td>50</td>
<td>600</td>
<td>24.0</td>
<td>20.0 (10.1-39.6)</td>
</tr>
</tbody>
</table>
## Incidence of Illness by System

<table>
<thead>
<tr>
<th>Physiological system</th>
<th>Total number of illnesses</th>
<th>Number of athletes with an illness</th>
<th>Proportion of athletes with an illness</th>
<th>Illness incidence rate illnesses/1000 athlete days (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>123</td>
<td>95</td>
<td>17.4</td>
<td>18.7 (15.1-23.2)</td>
</tr>
<tr>
<td>Respiratory</td>
<td>37</td>
<td>30</td>
<td>5.5</td>
<td>5.6 (3.8 – 8.0)</td>
</tr>
<tr>
<td>Eye and adnexa</td>
<td>18</td>
<td>17</td>
<td>3.1</td>
<td>2.7 (1.7 – 4.4)</td>
</tr>
<tr>
<td>Digestive system</td>
<td>16</td>
<td>14</td>
<td>2.6</td>
<td>2.4 (1.4 – 4.2)</td>
</tr>
<tr>
<td>Skin and subcutaneous</td>
<td>16</td>
<td>13</td>
<td>2.4</td>
<td>2.4 (1.3 – 4.6)</td>
</tr>
<tr>
<td>Genitourinary</td>
<td>8</td>
<td>8</td>
<td>1.5</td>
<td>1.2 (0.6 – 2.4)</td>
</tr>
<tr>
<td>Mental and brain</td>
<td>8</td>
<td>8</td>
<td>1.5</td>
<td>1.2 (0.6 – 2.4)</td>
</tr>
</tbody>
</table>
21% of athletes reporting an illness required one or more days of exclusion from training or competition.
Illness Prevention – Key Issues

Address Major Risks – all athletes
  – URTI
  – Gastrointestinal infection
  – Eye – conjunctivitis, keratitis

Para sport Specific Issues
  – Urinary Tract Infection
  – Skin breakdown & Infection – Residual Limb & Insensate Areas
Hand hygiene – good practices are the mainstay of minimising spread of infection.

- Hand washing helps but some products have ‘residual activity’ i.e. the effect lasts for a few hours after application – e.g. Alcohol Gels, First Defence hand foam, Byotrol - Active for 8 hours

- Encourage regular use and make available to athletes and staff
Hand Hygiene

Need to be sure that Medics are not Spreading infection in Non-clinical settings
Sleep - essential to recovery and immune health

Diet - diet rich in fruit, vegetables and healthy fats to ensure a plentiful intake of micronutrients.

Bottled water, avoid ice

Vitamin D3 and vitamin C supplements may help prevent colds

Consider taking zinc supplement while you have a cold

Probiotics
Prevention - Probiotics May Reduce Infection in Athletes

- Study of the effects of a probiotic supplement during 4/12 of winter training in men and women engaged in endurance-based physical activities on incidence of upper respiratory-tract infections (URTIs) and immune markers.

- The proportion of subjects on placebo who experienced 1 or more weeks with URTI symptoms was 36% higher than those on Probiotics.

- Saliva IgA concentration was higher on probiotics than placebo.

Probiotics: Effects on URTI and Illness - Meta-analyses

- **Hao et al 2015 Cochrane review**
  - 47% reduction of upper respiratory tract infections
  - Reduction in the average duration of an acute URTI episode by 2 days

- **King et al 2014 meta analysis**
  - Lower numbers of illness days
  - Shorter illness episodes
  - Fewer days of absence from school or work

- **Pyne et al 2015 in athletes**
  - 5 of 8 studies in athletes found reduced URTI frequency or fewer days of illness and 3 reported trivial or no effects.
Probiotics: Effects on URTI and Illness - Meta-analyses

Fewer URTIs
Shorter Duration
Severity Unchanged
Proposed mechanisms for reducing illness in gastrointestinal and respiratory tract

- Direct interaction with the gut microbiota
- Promotion of the integrity of the intestinal mucosa
- Interaction with the mucosal immune system
- Immune signalling to a variety of organs and systems including the liver, brain and respiratory tract
Practical issues for athletes considering the use of probiotic supplementation

- **Screening**
  - Medical review
  - Dietary review

- **Planning**
  - Sourcing of supplements
  - Dose–response issues
  - Individual tolerance and side effects

- **Handling**
  - Storage and handling
  - Transport

- **Implementing**
  - Start 14 days prior
  - Review and monitor

Published in: David B. Pyne; Nicholas P. West; Amanda J. Cox; Allan W. Cripps; *European Journal of Sport Science* 2015, 15, 63-72.
Practical issues for athletes considering the use of probiotic supplementation

- Take a daily dose of probiotic containing Lactobacillus and/or Bifidobacterium species containing at least \( \sim 10^{10} \) live bacteria

- Probably better than multi-strain probiotics as different strains can produce different effects which may oppose each other.

- Take the probiotic in the morning with breakfast.

- Probiotics may need to be taken for several weeks before positive health effects can be expected

Published in: David B. Pyne; Nicholas P. West; Amanda J. Cox; Allan W. Cripps; *European Journal of Sport Science* 2015, 15, 63-72.
Infection Risks

Environment - Close proximity living
- Room
- Apartment
- Village
  - Dining
  - Transport
- Sports Venue
- The other team!
Infection Control – Limitation

- Monitor good hygiene practices
- Early detection - encourage reporting of symptoms
- Consider early use of First Defence nasal spray or zinc lozenges (>75 mg zinc/day) for cold symptoms
- Team Specific Infection Control Policy document
Infection Control Policy

- Isolate ill athletes
- Set aside room in village
- Infection control monitoring
- RTP protocol
- Neck check

Prevention  Reporting  Assessment  Isolation  Resolution  Return To Play
Eye Problems

- Previously unreported in sports med literature
- Increased tear evaporation - cold, altitude., air conditioning
- Under uncontrolled exposure to ultraviolet irradiation
- Or associated with URTI?
Eye Problems

Prevention
UV Eye Protection
Lubricant drops
Reduce URTI incidence
Urinary Tract Infection

- Commonest cause of *disabling* (time loss) infection in SCI athletes
- ‘Hero to Zero’ in hours
- Education –
  - Hydration
  - Hand hygiene
Urinary Tract Infection
Athletes susceptible to urinary tract infections will be offered dipstick testing on entry to camp and village and if positive sent for culture.

Early intervention with correct antibiotics
STD Prevention
Key Points

Hand Hygiene

Prevention

Education & Policies
Thank you for your attention