Physical Activity and Individuals with Spinal Cord Injury: An Evaluation of Accuracy and Quality of Information on the Internet

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ADVANCING PHYSICAL ACTIVITY KNOWLEDGE AND PARTICIPATION AMONG CANADIANS LIVING WITH SPINAL CORD INJURY
Spinal Cord Injury (SCI)

• Damage to the spinal cord that results in a loss of function such as mobility or feeling.
  • Incomplete vs. Complete
  • Paraplegic vs. Tetraplegic

• 50,000 Canadians have an SCI, with over 1,000 injuries occurring each year
• 84% Living with an SCI are below the age of 34 years
• 80% Male

• Most frequent cause of SCI is a motor vehicle collision, falls, diving accidents and medical complications

• High rates of secondary complications (e.g., pressure sores, UTI, obesity)
Physical Activity (PA) and SCI

• Improves physical, psychological, and social functioning, as well as the overall quality of life for persons with SCI

• Virtually no systematic effort to increase PA in the SCI community

• Considered to be the most physically inactive segment of society

• Estimated that 50% of people with a SCI do not participate in any PA whatsoever, compared to about 35% of non-disabled Canadians
Internet Usage & SCI

• 65% use the Internet daily
• 67% own a computer
• 65% have an Internet connection at home
• Email, employment information, disability or health-related issues, shopping, playing online games, and visiting chat rooms
Quality and Accuracy of PA Information on the Internet

Accuracy
• Communication of information that is consistent with accepted recommendations

Quality
• *Technical* - authorship, attribution or references, currency of information, disclosure of website purpose, contact information and endorsement from a professional institution
• *Theoretical* – use of theoretical characteristics

Research in able-bodied bodied population
• Low accuracy and theoretical quality
Objective

1) Examine the characteristics of PA websites for persons living with SCI

1) Systematically assess the level of accuracy, technical and theoretical quality and targeting strategies in PA messages
Methods

Total Number of Websites Evaluated = 30

Search Strategy

• Community Partner Websites (e.g., CPA, ALA, Paralympic)
• Commonly Accessed Websites (e.g., Sitski, Disaboom)
• Google Search Engine Strategy
  – “spinal cord injury + physical activity”, “spinal cord injury + exercise” and “spinal cord injury + sport”

Inclusion

• SCI-focused PA websites that presented information on PA, exercise or sport for people with SCI were included in the analyses
Methods

• **Evaluation template** was created and examined the presence of descriptive characteristics accuracy, quality, and targeting constructs

• The presence of each construct was rated dichotomously as 1 (yes) or 0 (no)

• Evaluations were conducted by two independent raters and than compared.
  – discrepancies were discussed between the raters
Methods

**Descriptive characteristics**

- **Source**
  - academic, community-based, hospital/rehabilitation or independent

- **Accessibility**
  - number of mouse clicks

- **Links to alternative websites**

- **Communication outlets**
  - message boards, discussion forums and blogs

**Targeting Strategies**

- **Different injury levels and completeness**

- **Time post-injury**

- **Caregivers**
  - parents, homecare workers, or health care professional
Methods

Technical quality

- Authorship
- Attribution or references
- Currency of information
- Website disclosure
- Endorsement by a major institution
- Contact information

Theoretical Quality

Knowledge Dissemination Constructs

- General Information
- Access
- Aids

Cognitive-Based Constructs

- Perceived Benefits
- Perceived Barriers
- Perceived Risks
- Self-Efficacy
- Self-Talk
- Perceived Social Norms

Behavioural-based Constructs

- Self-Monitoring
- Realistic Goal Setting
- Social Support
- Modeling
- Motivational Readiness
Methods

Accuracy

Aerobic Exercise
• Twice a week
• Each bout should last 20 to 30 min
• Moderate intensity (40-50% HRR)

Resistance Training
• Twice a week
• 2-3 sets per muscle group and each set should include 8 to 10 reps (50-70% range of motion)
• Performed to fatigue
## Results

<table>
<thead>
<tr>
<th>Website Characteristics</th>
<th>Mean (SD)</th>
<th>Actual Score Range</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Website Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total websites analyzed*</td>
<td></td>
<td></td>
<td>30 (100)</td>
</tr>
<tr>
<td>Number of mouse clicks to access PA information</td>
<td>1.7 (.92)</td>
<td>1-4</td>
<td></td>
</tr>
<tr>
<td>Links to external PA websites*</td>
<td></td>
<td></td>
<td>26 (87)</td>
</tr>
<tr>
<td>Number of links to alternative PA websites provided</td>
<td>36.4 (42.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Database and catalogue of information*</td>
<td></td>
<td></td>
<td>17 (57)</td>
</tr>
<tr>
<td>Communication outlet (message board, discussion forum and blog)*</td>
<td></td>
<td></td>
<td>16 (53)</td>
</tr>
<tr>
<td><strong>Source</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Organization Website</td>
<td>11 (36.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Institution Website</td>
<td>4 (13.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rehabilitation or Hospital Website</td>
<td>5 (16.7)</td>
<td></td>
<td></td>
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<tr>
<td>Independent Website</td>
<td>10 (33.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Targeting Strategies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injury Levels &amp; Completeness of Injury*</td>
<td>24 (80)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration of Injury*</td>
<td>11 (37)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care-Providers*</td>
<td>10 (33)</td>
<td></td>
<td></td>
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</tbody>
</table>
## Results

### Theoretical Quality

<table>
<thead>
<tr>
<th>Knowledge Dissemination</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aids &amp; Assistive Devices</strong></td>
<td>24 (80)</td>
</tr>
<tr>
<td><strong>PA Instruction</strong></td>
<td>23 (77)</td>
</tr>
<tr>
<td><strong>Accessibility Information</strong></td>
<td>10 (33)</td>
</tr>
<tr>
<td><strong>Cognitive</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Perceived Benefits</strong></td>
<td>26 (87)</td>
</tr>
<tr>
<td>Perceived Barriers</td>
<td>17 (57)</td>
</tr>
<tr>
<td>Perceived Risks</td>
<td>14 (47)</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>12 (40)</td>
</tr>
<tr>
<td>Self-Talk</td>
<td>8 (27)</td>
</tr>
<tr>
<td>Perceived Social Norms</td>
<td>7 (23)</td>
</tr>
<tr>
<td><strong>Behavioural</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Modeling</strong></td>
<td>22 (73)</td>
</tr>
<tr>
<td>Social Support</td>
<td>17 (57)</td>
</tr>
<tr>
<td>Realistic Goal Setting</td>
<td>12 (40)</td>
</tr>
<tr>
<td>Motivational Readiness</td>
<td>6 (20)</td>
</tr>
<tr>
<td>Self-Monitoring</td>
<td>5 (17)</td>
</tr>
</tbody>
</table>

### Technical Quality

<table>
<thead>
<tr>
<th>Technical Quality</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Information</td>
<td>29 (97)</td>
</tr>
<tr>
<td>Website Disclosure</td>
<td>24 (80)</td>
</tr>
<tr>
<td>Currency</td>
<td>21 (70)</td>
</tr>
<tr>
<td>References</td>
<td>20 (66)</td>
</tr>
<tr>
<td>Authorship</td>
<td>15 (50)</td>
</tr>
<tr>
<td>Endorsement</td>
<td>15 (50)</td>
</tr>
</tbody>
</table>
Results

Figure 1: Use of behaviour change strategy in the promotion of physical activity on SCI websites.
## Results

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specific PA Recommendations</strong></td>
<td>6 (20)</td>
</tr>
<tr>
<td><strong>Aerobic Exercise</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>4 (13)</td>
</tr>
<tr>
<td>Intensity</td>
<td>5 (17)</td>
</tr>
<tr>
<td>Duration</td>
<td>5 (17)</td>
</tr>
<tr>
<td><strong>Resistance Exercise</strong></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>2 (7)</td>
</tr>
<tr>
<td>Intensity</td>
<td>1 (3)</td>
</tr>
<tr>
<td>Duration</td>
<td>1 (3)</td>
</tr>
</tbody>
</table>
Discussion

• PA information on the Internet directed at people with spinal cord injury is widely available, easily accessible and of high technical quality.

• **Accuracy and theoretical quality of PA information may be less than optimal**
  
  • The evaluated websites did not adapt messages for all potential recipients.
  
  • Perceived benefits and strategies for overcoming perceived barriers.
  
  • Behavioral strategies (e.g. goal-setting, self-monitoring and motivational readiness) were not widely utilized to promote PA.
  
  • Few website provided specific accurate recommendations on frequency, intensity and duration of aerobic and resistance exercise.
Limitations

• A majority of the websites evaluated were developed by community-based organizations and independent sources

• PA recommendations which exist for people with SCI are relatively new and may not be widely known and utilized by health promotion websites

• Challenges in assessing a dynamic medium with a static assessment tool

• Other features may be just as important
  • presentation, understandability and interactivity of a website may prove to be equally important
Conclusion

• The results of this evaluation highlight the need to improve the accuracy and theoretical quality of existing websites

• Improving PA messages on the Internet may contribute to the enhancement of the overall health and well-being of the SCI population

Future Directions:

• Incorporate accepted PA recommendations

• Behavior change theories can be accessed to improve health messages

• Tailor messages to different recipients

• Create a new website
Acknowledgement
Works Cited

Questions

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