Understanding Barriers and Motivators to Exercise Among People with Spinal Cord Injury (SCI)

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Background:
- Mortality rates for people with SCI are declining; life expectancy continues to increase (Stilarski et al 2006); focus shifts to rehabilitation, self-management and prevention of secondary conditions
- People with SCI are more susceptible to secondary and chronic conditions like osteoporosis, cardiovascular disease, diabetes and arthritis (Graob 2002; DeVivo 1999; Karlsson 1999; Bauman 2000)
- Physical activity and exercise among this population can help prevent secondary conditions (Jacobs & Nash 2001) and increase functionality, quality of life and social integration (Duran 2001; Nonsau 1993; Manns 1999)
- As a group, people with SCI are less likely to be physically active and are rarely targeted for health promotion

Objective:
To understand what deters, motivates and facilitates exercise among people with a spinal cord injury (SCI)

Methods:
Sample: 26 adults with SCI (15 “exercisers”, 11 “non-exercisers” randomly recruited from a pool of 592 survey participants for in-depth phone interviews

Defining “Exercise”: The survey instrument used in our survey study, from which these participants were randomly selected, allowed participants to self define “exercise”. Those reporting no exercise were identified as “non-exercisers”.

Semi-structured interview:
Phone interviews, recorded with permission, were 20-30 minutes & focused on:
- Experiences with exercise before injury
- Experiences with exercise since injury
- Logistics of current exercise regimen
- Barriers and facilitators of exercise
- Perceived benefits of exercise
- Perceived impact of exercise on secondary conditions
- Experiences with pain management
- Future plans for exercise

Analysis:
- Bi-variate, non-parametric analysis for demographic differences: Mann-Whitney U tests for continuous data & χ² tests for independent samples for categorical data; Fisher’s Exact Test when cell sizes were ≤ 5
- Transcripts of interviews analyzed by two analysts independently; initial thematic categories coded, coded, discussed and refined

Results:

Participant characteristics:

<table>
<thead>
<tr>
<th>Variable</th>
<th>“Exercisers” Median (min, max)</th>
<th>“Non-exercisers” Median (min, max)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>32 (23, 74)</td>
<td>46 (34, 54)</td>
<td>.171</td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
<td>Female</td>
<td>.228</td>
</tr>
<tr>
<td></td>
<td>4 (26.7%)</td>
<td>6 (54.5%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11 (33.3%)</td>
<td>6 (18.8%)</td>
<td></td>
</tr>
<tr>
<td>Caucasion/White Non-Caucasion</td>
<td>12 (80%)</td>
<td>11 (100%)</td>
<td>.238</td>
</tr>
<tr>
<td>Education &gt; 12 years</td>
<td>9 (66.7%)</td>
<td>8 (66.7%)</td>
<td>.560</td>
</tr>
<tr>
<td>Income &lt; $22K - $50k</td>
<td>4 (26.7%)</td>
<td>2 (16.7%)</td>
<td>.456</td>
</tr>
<tr>
<td></td>
<td>$51K - $80k</td>
<td>2 (16.7%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; $100k</td>
<td>1 (8.3%)</td>
<td></td>
</tr>
<tr>
<td>Working Full/Part-time</td>
<td>6 (40%)</td>
<td>5 (40%)</td>
<td>.781</td>
</tr>
<tr>
<td>Not working</td>
<td>9 (60%)</td>
<td>6 (50%)</td>
<td></td>
</tr>
<tr>
<td>Nervous state</td>
<td>Marries/Cohabitating</td>
<td>Single/Living alone</td>
<td>.462</td>
</tr>
<tr>
<td></td>
<td>9 (63.3%)</td>
<td>6 (50%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 (40%)</td>
<td>6 (50%)</td>
<td></td>
</tr>
<tr>
<td>Duration (Weeks)</td>
<td>1 (1, 32)</td>
<td>0 (0, 29)</td>
<td>.029</td>
</tr>
<tr>
<td>Injury Level</td>
<td>4 (66.7%)</td>
<td>3 (25%)</td>
<td>.462</td>
</tr>
<tr>
<td></td>
<td>1 (16.7%)</td>
<td>2 (16.7%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 (33.3%)</td>
<td>2 (16.7%)</td>
<td></td>
</tr>
<tr>
<td>Complete/Incomplete</td>
<td>5 (33.3%)</td>
<td>3 (25%)</td>
<td>.399</td>
</tr>
<tr>
<td></td>
<td>10 (66.7%)</td>
<td>7 (50%)</td>
<td></td>
</tr>
</tbody>
</table>

Significant difference only in “duration of injury”

What participants said about their experiences with exercise:
- Most participants, regardless of exercise group, were physically active prior to injury.
- Many indicated that it took time after injury to adjust expectations and adapt to new exercise regimens.
- The rehabilitative process was cited for helping participants identify feasible exercise routines that matched their post-injury lifestyle.

1. “I got hurt in 1999 and I didn’t start working out until the summer of 2002. All that I was in the therapy and all that time I was working part-time and going to school part-time for full time and it was just a really hard struggle. Around that time it just wasn’t in my mind. I didn’t think about it much.” ¹Exercise male, 55, T12 incomplete
2. “I think the exercise that I do is so different from the exercise I did before my injury in so many ways that it is also a psychological obstacle to exercise. It doesn’t feel good at all. I don’t even want to do it. I don’t even want to think about it. So just a little makes me anxious in a little or it just...wears me out.” ¹Exercise female, 55, C5 incomplete
3. “I have always been trying to find a really good exercise routine with light weights for someone in a chair. They come out with exercise videos but they don’t have the balance issues that people in chairs have... I can’t find it, whether it’s out there, I don’t know.” ¹Non-exerciser, female, 45, T7 complete
4. “The other reason I don’t walk more than I do is because I get nervous that with my abnormal gate I might wear out my arms, my arms and my hands. And it right in my paraplegic I have a hand cycle, and I fear.” ¹Exercise male, 66, T7 incomplete

What participants said about barriers to exercise:
- The most common barrier cited was a limited return on investment; it was perceived by several that the amount of time and energy required to reach the perceived beneficial level of activity was too demanding or unrealistic.
- “Yeah, it’s just too much work for too little benefit. I’ve tried for a few hours here and there, but I just take a break and then I’m back at it.” ¹Exercise male, 52, C5 incomplete

What participants said about facilitators to exercise:
- Stress management and general good feelings were mentioned.
- Desire to be independent and a reduction in personal assistance.
- Accessibility was a facilitator for those who were active.
- Medication, mostly to control pain, was also offered.
- Some “non-exercisers” saw “social support” as a possible facilitator for being active.

“I think I would probably need to be in something more structured where I would have to go and do it with someone else. To really just push myself to do it at this age.” ¹Non-exerciser female, 45, C5 incomplete

What participants perceived as a benefit of exercise:
- The majority of “exercisers” completed their routines at home, compared to a gym.
- Stretching and muscle strengthening were the most frequently reported activities; aerobic activities were more problematic to perform (particularly for tetraplegics).
- Physical activities included both daily activities, such as gardening and mopping the floor, as well as formalized activities, such as aerobic activities, cycling, swimming, weight lifting and range of motion.
- Participants used a range of equipment, including customized bi- and tricycles, stretch bands, braces, free weights, gym-based machines, treadmills and recumbent bikes.
- Although some noted their independence when exercising, most respondents required at least some assistance from professionals or family members to transfer to equipment or for stretching.

Conclusion:
Most people with SCI are principally motivated to engage in exercise to maintain their health and prevent secondary conditions. Pre-injury exercise levels are not good predictors of post-injury activity. A better understanding of pre-injury experiences and the removal of socio-environmental barriers to exercise, such as access to affordable resources, personal assistance and knowledge is essential to increasing the number of exercise active people after SCI. Understanding, and incorporating, the experiences of people in the community can help tailor exercise and health promotion programs aimed at teaching newly injured patients to successfully pursue healthy living and self-management strategies. It is also important to address early on any obstructive thinking by their patients.

*This project is funded by NIDRR grant #H133B031114