Perceived Exercise Barriers and Odds of Exercise Participation Among Persons With SCI Living in High-Income Households

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Objective: To define the prevalence of and the degree to which exercise barriers decrease odds of exercise participation among persons with SCI reporting annual household income greater than \$50,000. **Method:** In this cross-sectional study, 180 individuals completed a Web survey of personal characteristics and exercise barriers. Over half (n=89) reported annual household incomes greater than \$50,000. Chi-square and Mann-Whitney *U* identified personal characteristic differences between exercisers and nonexercisers. Odds ratios (OR) determined barriers that decreased odds of exercise participation. Significance was set at $\alpha < 0.05$. **Results:** Eighty-seven percent of respondents were currently exercising (n=61). No differences discriminated exercisers and nonexercisers by gender, age, race, age at injury, injury level or completeness, education level, and total comorbidities or medications. A higher percentage of exercisers were full-time employed or married. Nonexercisers reported more barriers (4.9 ± 2.4 vs 2.21 ± 1.8). Only one barrier was highly prevalent and impactful (lack of motivation). The most impactful barrier, "too lazy to exercise," was the 9th most prevalent barrier (14%). Persons reporting this as a barrier were 19 times less likely to be exercising. **Conclusion:** Among high-income households, highly prevalent barriers may not decrease odds of exercise participation. Knowledge and psychological barriers had the greatest impact on odds of exercise participation. **Key words:** exercise, barriers, odds ratios, prevalence, spinal cord injury

Most persons, with spinal cord injury (SCI) or not, would tell you that exercise is important and is something that would benefit them to do more of. However, it is well acknowledged that exercise participation rates among persons with SCI are low. The question is why? What barriers prevent persons with SCI from exercising? If we want to raise exercise participation rates, what barriers should we focus on removing? Previous research has focused on which barriers are the most common (ie, prevalence) and whether nonexercisers report more barriers than exercisers.^{1,2} This is a very valid approach. Yet, just because a barrier is common, does that mean it has a strong influence on the likelihood of exercise participation?

To help answer this question and to expand previous work, as a part of National Institute on Disability and Rehabilitation Research (NIDRR) field-initiated research project, we surveyed persons with SCI living in the United States. We generated a short Web-based survey (<20 minutes) that included the Barriers to Physical Exercise and Disability (B-PED) questionnaire.¹ The current abstract and presentation is restricted to 14 questions that directly ask whether a certain item

is a barrier. In addition, this abstract focuses on persons who reported annual household incomes exceeding \$50,000 (n=89), a subset of our final sample (N=180). The purpose of this analysis is (a) to define exercise barrier prevalence and (b) to determine the degree to which exercise barriers decrease the odds of exercise participation among persons with SCI reporting annual household incomes exceeding \$50,000. We computed barrier prevalence and compared exercisers (n=61) versus nonexercisers (n=28) regarding demographics and total number of barriers (chi-square and Mann-Whitney *U* as appropriate, $\alpha < 0.05$). To determine how each barrier impacted likelihood of exercise participation, we computed odds ratios (OR). Odds ratio 95% confidence intervals that did not include 1.0 were considered to have a significant impact on likelihood of exercise participation.

Our sample was predominantly male (63%) and white (87%). Less than one-fourth of participants were unemployed (13%), over half had a college

degree (64%), and most were married (70%). They were on average middle aged (47 ± 10 years) and had been injured over a decade (13 ± 12 years). Slightly less than half had cervical injuries (45%). Less than half reported having anal sensation (32%) or voluntary anal motor control (44%). More than half were currently exercising (69%). Of note, there were no differences between exercisers and nonexercisers in gender, age, race, age at injury, injury level or completeness, education level, and total comorbidities or medications.

There are 3 key findings from this analysis. First, we confirm previous research from Scelza and colleagues,² namely that nonexercisers report a greater total number of barriers than exercisers (4.9 ± 2.4 vs 2.21 ± 1.8 ; $P < .05$). We suggest that the total number of barriers persons report may be far more important than which barriers they report.

In our second finding, we confirm and contrast the findings of Scelza et al.² Among our sample, the top 5 barriers were lack of time (43%), lack of motivation (41%), lack of energy (37%), don't know where to exercise (32%), and program cost (29%). Four of these were among the top 5 barriers reported by Scelza et al.² The one difference was our top barrier, lack of time, was not among the top 5 reported by Scelza et al. These results suggest 2 points to be considered. The first is that, even in this sample of persons who reported annual household incomes exceeding \$50,000, cost of the program was considered a barrier by nearly a third. The second point concerns lack of time as the most prevalent barrier. This barrier is very common among nondisabled persons who are employed and otherwise have very full lives. The prevalence of this barrier in our sample may indirectly indicate that this sample has achieved a certain degree of normalcy. However, lack of time might also reflect how living with SCI increases the time to complete many daily activities, which is added to the time demands of a job and other traditional life roles.

Our third and perhaps most interesting finding is that the most common barriers may not have an

impact on the likelihood of exercise participation. The 5 most impactful barriers were too lazy to exercise (OR, 19.0), lack of motivation (OR, 8.9), don't know how to exercise (OR, 8.3), lack of interest (OR, 5.7), and exercise is boring/do not know where to exercise (tie; OR, 4.3). The most highly prevalent barrier, lack of time, had no effect on the likelihood of exercise participation. In contrast, the most impactful barrier, too lazy to exercise, was the 9th most prevalent barrier (prevalence, 14%). Persons indicating that this was a barrier to exercise were 19 times less likely to be exercising than persons who indicated it was not a barrier. However, 2 barriers, lack of motivation and do not know where to exercise, were among the most prevalent and impactful barriers. These 2 barriers were also among the 5 most prevalent reported by Scelza and colleagues.² As stated initially, these results suggest that not all barriers affect the likelihood of exercise participation.

Our findings can be summarized as follows: first, nonexercisers perceived a greater number of barriers than exercisers. We thus suggest the total number of perceived barriers may be more important than any individual barrier. Second, even in this relatively financially well-off sample, costs were perceived as a barrier. In addition, lack of time emerged as a highly prevalent barrier. This is a new finding, which may be unique to well-educated, highly engaged persons with SCI. Finally, and perhaps most important, barrier prevalence is not indicative of how strongly a barrier impacts exercise participation. Some barriers may be uncommon but are very important if they occur. It may be that our efforts to improve exercise participation will be most effective if we target barriers that are both highly prevalent and impactful or that have a low prevalence but a strong impact when they are perceived.

Acknowledgments

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