

# Sexual Esteem, Sexual Satisfaction, and Sexual Behavior Among People With Physical Disability

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This study investigated the association between the severity and duration of physical disability and sexual esteem, sexual depression, sexual satisfaction, and the frequency of sexual behavior. A total of 1,196 participants completed the study. There were 748 participants (367 males, 381 females) who had a physical disability and 448 participants (171 males, 277 females) who were able-bodied. The age range of participants was 18–69 years, with a mean age of 36.39 years ( $SD = 10.41$ ). The results demonstrated that people with more severe physical impairments experienced significantly lower levels of sexual esteem and sexual satisfaction and significantly higher levels of sexual depression than people who had mild impairments or who did not report having a physical impairment. The study also found that people with more severe physical disabilities engaged in mutual sexual activity significantly less frequently. Women with physical disabilities had significantly more positive feelings about their sexuality and significantly more frequent mutual sexual experiences than their male counterparts. For people with physical disabilities, the frequency of oral sex and nude cuddling were significant predictors of sexual satisfaction in men, while the frequency of deep kissing predicted sexual satisfaction in women. Furthermore, the viewing of erotica was significantly related to sexual dissatisfaction in men. Finally, it was found that people who had experienced their physical impairment for a longer period of time reported significantly more positive feelings about their sexuality. Implications of these findings are discussed and suggestions are made for future research.

**KEY WORDS:** physical disability; sexual esteem; sexual satisfaction; sexual behavior.

## INTRODUCTION

The aim of this study was to examine the sexual behavior, sexual esteem, and sexual satisfaction of people with a broad range of physical disabilities with varying levels of both severity and duration. Physical disability is defined as a condition where a person experiences significant deviation or loss in their body function or structure that results in limitations in the physical activity (World Health Organization, 2001). Some conditions that result in physical disability, such as spinal cord injuries and multiple sclerosis, can result in difficulty achieving and maintaining an erection, impaired vaginal lubrication, and re-

duced sensation, sexual pleasure, and orgasm (e.g., McCabe, McDonald, Deeks, Vowels, & Cobain, 1996; Sipski, 1991). These problems in sexual response can have an impact on sexual behavior, sexual esteem (confidence in experiencing sexuality in a satisfying and enjoyable way), and sexual satisfaction, at least for some individuals (Donelson, 1998; Nosek et al., 1996). There has been no large-scale study that has examined a large range of sexual responses among people with physical disability, and compared these findings to a nondisabled control group.

There are also many practical and social barriers that impede the sexual expression of people with physical disabilities. For example, reduced mobility has been reported as interfering with sexual expression in people with physical impairments (Taleporos, 2001). Some people with physical disability may also risk spontaneous bladder and bowel emptying during sexual activity (Teal & Athelstan, 1975). People with disabilities that cause

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physical weakness, such as spinal muscular atrophy and other neuromuscular conditions, may not have sufficient motor strength to masturbate to orgasm or to sufficiently pleasure a sexual partner (Taleporos, 2001). Dependence on others for care can also seriously restrict an individual's opportunities to freely express their sexuality, because of a lack of privacy and overprotective parents or caregivers (Bach & Bardach, 1997; Knight, 1983; Taleporos, 2001). For those people with physical disabilities who reside in supported accommodation, social isolation and a lack of privacy can also present limitations in sexual expression (Daniels, 1978). The impact of these social and practical barriers to sexual expression and sexual esteem requires further investigation.

A number of studies have suggested that people with physical disabilities have more limited sexual and romantic lives. For example, MacDougall and Morin's survey of the sexual attitudes and self-reported behavior of 45 congenitally disabled adults revealed that nearly all of the participants were unmarried (MacDougall & Morin, 1979). Further, nearly half of the participants had never had an intimate sexual experience with another person. Rintala et al. (1997) also found that women with physical disabilities were less satisfied than were an able-bodied control group with their dating frequency, they perceived more constraints in attracting partners, and they also perceived more societal and personal barriers to their dating. Nosek et al. (1996) found that although severity of disability was not significantly related to level of sexual activity, women with physical disabilities had lower levels of sexual activity and sexual satisfaction compared to women without disabilities.

Research by Taleporos and McCabe (2001) suggested that people with physical disabilities struggled with many social and sexual barriers that were associated with having a physical impairment. This appeared to lead to lower sexual esteem in many participants. Donelson's study of spinal cord injured people found that participants with a more severe injury were more likely to have lower levels of sexual esteem (Donelson, 1998). Similarly, Silvers (1997) found that people with disabilities reported lower sexual esteem and higher sexual depression (negative mood state due to sexual functioning) than persons without disabilities. Physical disability appears to lead to increased feelings of negativity in many individuals, including a belief that they are less sexually desirable than an able-bodied person and that having a disability seriously limits their sexual expression (Taleporos, 2001; Taleporos & McCabe, 2001, 2002a). Mona, Gardos, and Brown (1994) suggested that sexual esteem warranted special attention in people with disabilities.

A number of studies have suggested, however, that physical disability does not have a significant impact on sexual behavior. For example, White, Rintala, Hart, and Fuhrer's (1993) sample of 40 spinal cord injured women revealed that 83% had engaged in physical relationships postinjury and 65% had within the preceding 12 months (physical relationships did not necessarily involve intercourse). This figure of 65% is only slightly lower than the figure of 72% that had been reported among women in the general population (Smith, Hamilton, & Granger, 1990); however, spinal cord injury is an acquired disability and these women may have already been in a sexual relationship prior to the injury. It may therefore not be necessary for them to establish a new sexual relationship after becoming physically disabled.

Despite some conflicting findings, the weight of evidence indicates that it is likely that the sexual behavior, sexual esteem, and sexual satisfaction of people with physical disability will be limited. Some authors have argued that physical disability poses more difficulties for the sexual adjustment of men, highlighting how the loss of ability for a "normal" sexual performance can have a devastating, emasculating effect because of the strong association between masculinity and sexual performance (Drench, 1992; Erikson & Erikson, 1992; Teal & Athelstan, 1975; Tepper, 1997, 1999). Other authors have highlighted the difficulties that are specific to disabled women. Tilley (1996) emphasized the pressure that women experience to have the "perfect" body and to fit into their gender role, which is "... defined by a traditional, heterosexual marriage complete with children and probably a job" (p. 140). Chenoweth (1993) concluded that women with disabilities face a "double strike": being a woman and being disabled.

This study aimed to investigate aspects of the sexuality of people with physical disability. The novel aspects of this study were that it included people with a range of disabilities, a large sample was recruited to participate, it included a comparative group of nondisabled respondents, it investigated the role of severity and duration of disability on sexuality, it examined the responses of both men and women, and it examined a broad range of sexual behaviors. It was predicted that participants with more severe physical disabilities (both in terms of self-rated severity as well as functional abilities), would have less frequent sexual activity and lower levels of sexual esteem and sexual satisfaction. It was further predicted that people who had experienced their impairment for a longer period of time would have adjusted to the associated barriers and so would report higher levels of sexual esteem and sexual satisfaction and lower levels of sexual depression, although their sexual frequency was expected to be the same as participants who had experienced their disability for a shorter

period of time. Comparison was made with an able-bodied population of men and women, and it was predicted that people with physical disabilities would demonstrate lower levels of sexual esteem, sexual satisfaction, and sexual activity but higher levels of sexual depression, than people who were able-bodied.

## METHOD

### Participants

Participants were recruited from the International Conference on Sexuality, Disability, and Culture held in San Francisco ( $n = 35$  people with physical disability,  $n = 11$  people without a physical disability) and over the Internet by accessing several disability sites ( $n = 713$  people with a physical disability,  $n = 437$  people without a physical disability). A total of 1,196 participants took part in this study, with a mean age of 36.39 years ( $SD = 10.41$ ; range 18–69). There were 748 participants (367 men, 381 women) who identified as having a physical disability and 448 participants (171 men, 277 women) who identified as not having a physical disability.

### Procedure and Measures

Participants completed an anonymous and confidential questionnaire. The questionnaire took between 10 and 30 min to complete. The online version was completed and returned online, and the printed version was returned in a reply paid envelope. People without disability completed the sections on demographic characteristics and scales 1–3 from the sexual variables. People with physical disability completed these measures as well as scales 4 and 5 from the sexual variables and the measures of physical disability.

The printed version of the disability survey was launched in San Francisco at the International Conference on Sexuality, Disability, and Culture in 2000 via an audio-visual poster presentation. This is a conference where both people with physical disability as well as able-bodied people present research papers and personal perspectives on issues related to sexuality and disability. Delegates at the conference were asked to take copies of the plain language statement and survey to distribute them among people with disabilities and disability organizations in their local area.

The online version of the disability survey was distributed via several disability-related e-mail lists. They included “OZADVOCACY,” “Disability Research,” and

“Sexuality and Disability Research.” A short message was posted to these lists explaining the nature of the research and directing readers to the plain language statement and the online survey. This message was subsequently posted in other areas of the World Wide Web, including disability-related “Yahoo! Clubs,” and disability-related websites, such as “Cando.com” and “Disabled Persons International.”

The survey for people without disabilities was launched several months later. The website was posted on the same disability related lists, clubs, and bulletin boards mentioned above and readers were asked to pass the information on to their able-bodied friends and colleagues. A printed version of the survey was also publicized and made available.

### Demographic Variables

Demographic questions sought information on the participants’ gender, age, relationship status, sexual orientation, country of origin, and level of education. The questionnaire for people with disabilities also asked what the participants’ disability was called.

### Sexual Variables

1. Sexual esteem and sexual depression were measured with a short form of the Sexual Esteem and Sexual Depression subscales in Snell and Papini’s (Snell & Papini, 1989) Multidimensional Sexual Self-Concept Questionnaire (Wiederman & Allgeier, 1993). The subscales contained five items each and participants were asked to respond on a 5-point Likert scale from (1) *strongly agree* to (5) *strongly disagree*. Examples of items in the two subscales are “I derive a sense of self-pride from the way I handle my own sexual needs and desires” for the Sexual Esteem subscale, and “I am depressed about the sexual aspects of my life” for the Sexual Depression subscale. Snell (1998) reported an  $\alpha$  of .78 for the Sexual Esteem subscale and .72 for the Sexual Depression subscale. This study obtained  $\alpha$  of .92 for the Sexual Esteem subscale and .87 for the Sexual Depression subscale.
2. A Sexual Frequency Scale asked participants to indicate whether they had engaged in a list of six sexual activities on a 5-point scale (*never, one time, 2–5 times, 6–20 times, or 20+ times*) over the past 6 months. Scores for each item ranged from 1 to 5. The items fell into either the “solo” category (masturbation by yourself, viewing erotic movies/magazines) or “mutual sexual activity” category (deep kissing, nude cuddling,

oral sex, sexual intercourse) and separate totals were obtained for both of these categories.

3. Sexual satisfaction was measured using a single item that asked, "Looking back over the past 6 months, how sexually satisfied do you feel overall?" The possible responses ranged from 1 (*extremely dissatisfied*) to 5 (*extremely satisfied*).
4. Physical disability specific attractiveness to others was measured using the relevant subscale of the Physical Disability Sexual and Body Esteem (PDSBE) scale that contained three items with a 5-point Likert scale from 1 (*strongly agree*) to 5 (*strongly disagree*) (Taleporos & McCabe, 2002b). The subscale's internal consistency in this study was .80. The scale has been subject to exploratory and confirmatory factor analysis and has a test-retest score of .78 (Taleporos & McCabe, 2002b). An example of a scale item is "It is hard to find a sexual partner when you have a disability."
5. Physical disability specific sexual esteem was measured using the relevant subscale of the PDSBE scale that contained four items with a 5-point Likert scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*) (Taleporos & McCabe, 2002b). An example of a scale item is "I envy people with 'normal' bodies." The subscale's internal consistency in this study was .81. The scale has been subject to both exploratory and confirmatory factor analyses and has a test-retest score of .80 (Taleporos & McCabe, 2002b).

#### *Disability Variables*

1. Severity of disability was measured subjectively by a question that asked participants "How severe is your disability?" Responses were reported on a 3-point scale with the following options: *mild*, *moderate*, and *severe*, and responses to this scale allowed respondents to be classified as *mild* ( $n = 135$ ), *moderate* ( $n = 389$ ), or *severely* ( $n = 224$ ) disabled.
2. Severity of disability was measured objectively by a measure that asked participants "In the previous 2 days, please indicate if you were "able" or "not able" to complete the following tasks without assistance." The tasks were: getting dressed; brushing teeth; bathing/showering; and getting out of bed. The need for assistance was defined as low if participants did not require assistance with any of these tasks, and 62% ( $n = 460$ ) fitted this category. The need for assistance was defined as high if participants required assistance with one or more of these tasks, and 37% ( $n = 274$ ) fitted this category. A number of respondents 1% ( $n = 14$ ) did not provide information on these questions.

3. Duration of disability was measured using a question that asked: "For how long has your disability interfered with your ability to walk?" Responses were made on a 6-point scale with the following options: *My disability does not affect my ability to walk*; *Less than a year*; *1–3 years*; *4–10 years*; *11–18 years*; and *over 19 years*. All respondents who chose *My disability does not affect my ability to walk* were removed from the analysis and the remaining responses were merged into one of two groups, those who had experienced their physical disability for more than 10 years ( $n = 434$ ) and those who had experienced their physical disability for 10 years or less ( $n = 224$ ).

## RESULTS

The demographic characteristics of the sample are summarized in Table I. The two groups of participants evidenced some differences in their demographic characteristics. Chi-square tests were calculated to determine differences between the disabled and nondisabled group. These results showed significant differences in the relationship status ( $\chi^2 = 53.47$ ,  $p < .001$ ) and educational levels ( $\chi^2 = 116.10$ ,  $p < .001$ ) of the two groups. The sample with physical disability had more single people and had less formal education. Thus, these two variables were included as covariates in subsequent MANCOVA analyses. The physical disability group was also dominated by people from the United States, whereas the sample without physical disability had a larger proportion of Australians. The two samples were similar in age (see Table I).

The nature, duration, and severity of physical disability are summarized in Table II. The most common type of physical disability in this sample was spinal cord injury. Most of the respondents had experienced their disability for more than 18 years, and there was a broad spread of the severity of the disability from mild to severe.

Table III shows the five measures of sexual behavior as a function of sex and disability status (none, mild, moderate, severe). A 2 (sex)  $\times$  4 (disability status) MANCOVA (with relationship status and education as covariates) revealed main effects for sex,  $F(5, 1108) = 24.26$ ,  $p < .001$ , and disability,  $F(15, 3330) = 9.06$ ,  $p < .001$ . The interaction effect for severity of disability and sex was not significant,  $F(15, 3330) < 1$ .

Univariate tests showed that there was a significant effect of disability on sexual esteem,  $F(3, 1112) = 35.63$ ,  $p < .001$ , sexual satisfaction,  $F(3, 1112) = 41.85$ ,  $p < .001$ , sexual depression,  $F(3, 1112) = 56.54$ ,  $p < .001$ , mutual sexual activity,  $F(3, 1112) = 29.69$ ,  $p < .001$ , and

**Table I.** Demographic Characteristics of Disabled and Control Population

	Disabled group ( <i>n</i> = 748)		Control group ( <i>n</i> = 448)	
	<i>n</i>	%	<i>n</i>	%
Gender				
Male	367	49	171	38
Female	381	51	277	62
Age				
Mean ( <i>SD</i> ; range)	37.73 (10.34, 18–69)		35.83 (10.49, 18–64)	
Partner status				
No partner	351	47	134	30
Partner lived separately	120	16	81	18
Defacto	75	10	99	22
Married	202	27	134	30
Sexual orientation				
Exclusively heterosexual	531	71	269	60
Mainly heterosexual	97	13	81	18
Bisexual	45	6	31	7
Mainly homosexual	30	4	18	4
Exclusively homosexual	45	6	49	11
Place of residence				
United States of America	553	74	166	37
Australia	75	10	175	39
United Kingdom	45	6	54	12
Canada	45	6	27	6
New Zealand	15	2	13	3
Other	15	2	13	3
Education				
Completed graduate studies	120	16	183	41
Completed University degree	262	35	139	31
Completed secondary school	321	43	93	21
No completed secondary school	45	6	13	3

solo sexual activity,  $F(3, 1112) = 35.63$ ,  $p < .001$ . There were significant differences between none (no disability) and the mild, moderate, and severe groups for all variables except solo sexual activity, with the disabled groups demonstrating lower levels of sexual esteem, sexual satisfaction, and mutual sexual activity, but higher levels of sexual depression. The mild and severe groups were also significantly different on all measures except solo sexual activity, with the severe group obtaining lower scores on sexual esteem, sexual satisfaction, and mutual sexual activity, and higher scores on sexual depression. The mild and moderate groups were significantly different on mutual sexual activity and sexual satisfaction, with the moderate group obtaining lower scores on both mutual sexual activity and sexual satisfaction.

The univariate tests also revealed sex differences in levels of sexual satisfaction,  $F(1, 1112) = 4.12$ ,  $p < .05$ , mutual sexual activity,  $F(1, 1112) = 8.16$ ,  $p < .01$ ,

**Table II.** Nature, Duration, and Severity of Disability (*n* = 748)

	Number	%
Nature of physical disability		
Spinal cord injury	172	23
Cerebral palsy	90	12
Acquired brain injury	90	12
Multiple sclerosis	52	7
Spina bifida	52	7
Spinal muscular atrophy	45	6
Muscular dystrophy	37	5
Amputation	37	5
Polio myelitis	30	4
Achondroplasia	30	4
Arthrogryposis	22	3
Osteogenesis imperfecta	15	2
Arthritis	15	2
Filromyalia	7	1
Duration of physical disability		
Not affected ability to walk	90	12
<1 year	15	2
Between 1 and 3 years	75	10
Between 4 and 10 years	135	18
Between 11 and 18 years	97	13
>18 years	336	45
Severe	224	30
Moderate	389	52
Mild	135	18
Assistance to dress	224	30
Assistance to bathe	239	32
Assistance to get out of bed	195	26
Assistance to brush teeth	90	12

and solo sexual activity,  $F(1, 1112) = 98.54$ ,  $p < .001$ . Females were significantly more sexually satisfied than males, had significantly more frequent mutual sexual activity but less frequent solo sexual activity.

In order to determine the magnitude of the effects outlined in the analyses above, effect sizes (Cohen's *d*) were calculated to compare the nondisabled group with each of the disabled groups, as well as comparing the disabled groups with each other, on each of the sexual variables (see Table IV). There were large effect sizes between no disability and each of the disability groups in sexual esteem, sexual depression, sexual satisfaction, and mutual sexual activity, but not solo sexual activity.

Participants with physical activity were divided into two groups using an objective measure of disability. The group with a high need for assistance (*n* = 274) could not perform one or more of four daily tasks (getting dressed, brushing teeth, showering/bathing, or getting out of bed) while the group labeled as having a low need for assistance

**Table III.** Mean Scores for Sexual Esteem, Sexual Depression, Sexual Satisfaction, and the Frequency of Sexual Behaviour by Severity of Disability

	Severity of disability				
	None	Mild	Moderate	Severe	Total
Sexual esteem					
Male	20.08 (3.78)	17.53 (5.45)	16.79 (4.83)	16.36 (5.64)	17.84 (5.04)
Female	19.50 (4.24)	17.85 (4.73)	16.97 (5.54)	15.35 (5.88)	17.90 (5.21)
Total	19.72 <sup>a</sup> (4.08)	17.72 <sup>bc</sup> (5.02)	16.89 <sup>b</sup> (5.21)	15.91 <sup>bd</sup> (5.76)	17.87 (5.13)
Sexual depression					
Male	11.95 (4.97)	15.17 (5.86)	16.69 (5.40)	17.41 (5.68)	15.13 (5.84)
Female	11.95 (4.93)	14.39 (5.72)	15.58 (5.78)	16.77 (5.92)	14.07 (5.77)
Total	11.95 <sup>a</sup> (4.94)	14.72 <sup>bc</sup> (5.77)	16.10 <sup>b</sup> (5.62)	17.12 <sup>bd</sup> (5.79)	14.54 (5.82)
Sexual satisfaction					
Male	4.68 (1.65)	3.87 (2.06)	3.24 (1.94)	3.03 (2.06)	3.73 <sup>a</sup> (2.01)
Female	4.78 (1.75)	4.22 (2.19)	3.69 (2.03)	3.35 (2.12)	4.16 <sup>b</sup> (2.03)
Total	4.74 <sup>a</sup> (1.71)	4.07 <sup>bce</sup> (2.13)	3.48 <sup>bf</sup> (2.00)	3.18 <sup>bd</sup> (2.09)	3.97 (2.03)
Mutual sexual activity					
Male	10.56 (5.21)	7.89 (6.27)	6.17 (5.76)	6.79 (5.86)	7.91 <sup>a</sup> (5.96)
Female	10.60 (5.29)	9.68 (5.82)	8.22 (5.73)	6.98 (5.94)	9.21 <sup>b</sup> (5.75)
Total	10.58 <sup>a</sup> (5.25)	8.91 <sup>bce</sup> (6.06)	7.26 <sup>bf</sup> (5.83)	6.87 <sup>bd</sup> (5.88)	8.63 (5.88)
Solo sexual activity					
Male	5.54 (2.28)	5.29 (2.80)	5.18 (2.52)	4.36 (2.57)	5.12 <sup>a</sup> (2.52)
Female	3.61 (2.09)	3.82 (2.44)	3.21 (2.50)	2.87 (2.67)	3.40 <sup>b</sup> (2.37)
Total	4.35 (2.36)	4.44 (2.69)	4.12 (2.69)	3.70 (2.71)	4.16 (2.58)

*Note.* The superscripts indicate the groups that are significantly different from one another. Values represent mean (SD).

could perform all of these tasks ( $n = 460$ ). Table V shows the means and *SDs* for the two groups on sexual esteem, sexual depression, sexual satisfaction, physical disability specific attractiveness to others, physical disability spe-

cific sexual esteem, and the frequency of mutual and solo sexual behavior.

A 2 (sex)  $\times$  2 (disability level) MANOVA revealed main effects for sex,  $F(7, 660) = 16.54$ ,  $p < .001$ , and

**Table IV.** Effect Sizes for Contrasts Between Different Levels of Disability and Sexual Variables

Sexuality variables	Contrasts between different levels of disability					
	None/mild	None/moderate	None/severe	Mild/moderate	Mild/severe	Moderate/severe
Sexual esteem						
Male	0.67	0.87	0.98	0.15	0.24	0.14
Female	0.39	0.60	0.98	0.17	0.45	0.16
Total	0.49	0.70	0.93	0.16	0.35	0.15
Sexual depression						
Male	0.65	0.95	1.10	0.27	0.41	-0.28
Female	0.50	0.74	0.98	0.20	0.41	-0.20
Total	0.56	0.84	1.05	0.24	0.43	-0.24
Sexual satisfaction						
Male	0.49	0.87	1.00	0.32	0.43	0.32
Female	0.32	0.62	0.81	0.25	0.42	0.26
Total	0.39	0.74	0.92	0.29	0.45	0.29
Mutual sexual activity						
Male	0.51	0.84	0.72	0.29	0.19	0.30
Female	0.17	0.45	0.68	0.25	0.47	0.25
Total	0.32	0.63	0.71	0.28	0.35	0.28
Solo sexual activity						
Male	0.11	0.16	0.52	0.04	0.37	0.05
Female	0.10	0.19	0.36	0.24	0.38	0.24
Total	0.04	0.10	0.28	0.12	0.27	0.12

**Table V.** Mean Scores for Sexual Esteem, Sexual Depression, Sexual Satisfaction, and the Frequency of Behavior by Objective Level of Disability and Years Since Onset

	Need for disability			Onset		
	Low ( <i>n</i> = 460)	High ( <i>n</i> = 274)	Total ( <i>n</i> = 734)	≤10 Years ( <i>n</i> = 224)	>10 Years ( <i>n</i> = 434)	Total ( <i>n</i> = 748)
Sexual esteem (range: 5–25)						
Male	17.25 (5.01)	15.82 (5.44)	16.69 (5.22)	16.59 (5.18)	16.59 (5.19)	16.59 (5.18)
Female	17.46 (5.41)	15.25 (5.50)	16.68 (5.54)	15.81 (5.88)	16.98 (5.40)	16.52 (5.62)
Total	17.36 (5.22)	15.54 (5.47)	16.69 (5.38)	16.15 (5.59)	16.77 (5.29)	16.56 (5.40)
Sexual depression (range: 5–25)						
Male	16.23 (5.43)	17.43 (5.68)	16.70 (5.55)	16.97 (5.56)	16.79 (5.63)	16.84 (5.60)
Female	15.05 (5.68)	16.75 (6.06)	15.64 (5.86)	17.07 (5.38)	15.14 (6.06)	15.89 (5.87)
Total	15.60 (5.59)	17.10 (5.87)	16.15 (5.73)	17.03 (5.45)	16.00 (5.89)	16.36 (5.76)
Sexual satisfaction (range: 1–5)						
Male	3.36 (1.95)	3.11 (2.07)	3.26 (2.00)	3.11 (2.08)	3.27 (1.99)	3.22 (2.02)
Female	3.92 (2.07)	3.28 (2.09)	3.69 (2.10)	3.22 (2.00)	3.87 (2.14)	3.62 (2.11)
Total	3.65 (2.03)	3.19 (2.08)	3.48 (2.06)	3.17 (2.03)	3.55 (2.08)	3.42 (2.07)
Mutual sexual activity (range 3–15)						
Male	7.30 (6.03)	5.67 (5.58)	6.66 (5.90)	6.56 (6.03)	6.34 (5.81)	6.41 (5.87)
Female	8.82 (5.76)	6.98 (5.95)	8.16 (5.89)	7.93 (5.66)	7.89 (6.03)	7.91 (5.89)
Total	8.10 (5.93)	6.31 (5.79)	7.43 (5.94)	7.31 (5.86)	7.08 (5.96)	7.16 (5.92)
Solo sexual activity (range: 2–10)						
Male	5.05 (2.62)	4.68 (2.55)	4.90 (2.60)	4.37 (2.61)	4.96 (2.59)	4.78 (2.60)
Female	3.40 (2.54)	2.98 (2.50)	3.25 (2.53)	2.97 (2.50)	3.27 (2.58)	3.15 (2.55)
Total	4.18 (2.70)	3.85 (2.66)	4.06 (2.69)	3.59 (2.63)	4.15 (2.71)	3.96 (2.70)
PDSBE sexual esteem (range: 4–20)						
Male	10.79 (4.55)	9.55 (4.21)	10.30 (4.45)	9.24 (4.48)	10.41 (4.26)	10.05 (4.36)
Female	12.44 (4.61)	10.39 (4.82)	11.70 (4.78)	10.55 (4.43)	11.94 (4.74)	11.41 (4.66)
Total	11.66 (4.65)	9.96 (4.53)	11.02 (4.67)	9.97 (4.49)	11.13 (4.55)	10.73 (4.56)
PDSBE attractiveness to others (range: 3–15)						
Male	6.44 (2.98)	5.76 (3.10)	6.17 (3.04)	6.39 (3.04)	6.01 (3.13)	6.13 (3.10)
Female	7.62 (3.34)	6.50 (2.95)	7.22 (3.25)	7.30 (3.15)	6.82 (3.20)	7.01 (3.18)
Total	7.06 (3.23)	6.12 (3.05)	6.71 (3.19)	6.90 (3.13)	6.40 (3.18)	6.57 (3.17)

disability level,  $F(7, 660) = 5.44$ ,  $p < .001$ . The interaction effect between sex and disability level was not significant,  $F(7, 660) < 1$ . Univariate tests showed that there was a significant effect of disability on sexual esteem,  $F(1, 666) = 20.63$ ,  $p < .001$ , sexual satisfaction,  $F(1, 666) = 6.68$ ,  $p < .01$ , physical disability specific sexual esteem,  $F(1, 666) = 21.21$ ,  $p < .001$ , physical disability specific perceived attractiveness to others,  $F(1, 666) = 13.87$ ,  $p < .001$ , sexual depression,  $F(1, 666) = 11.07$ ,  $p < .001$ , and mutual sexual activity,  $F(1, 666) = 16.10$ ,  $p < .001$ . Participants who needed assistance with at least one daily task reported significantly lower levels of sexual esteem, sexual satisfaction, physical disability specific sexual esteem, physical disability specific perceived attractiveness to others, higher levels of sexual depression, and less frequent mutual sexual activity.

The univariate tests also showed significant sex differences in levels of sexual depression,  $F(1, 666) = 3.92$ ,  $p < .05$ , sexual satisfaction,  $F(1, 666) = 5.19$ ,  $p < .05$ , physical disability specific sexual esteem,  $F(1, 666) = 10.15$ ,  $p < .01$ , perceived attractiveness to others,  $F(1, 666) = 12.67$ ,  $p < .001$ , mutual sexual activity,  $F(1, 666) = 12.36$ ,  $p < .001$ , and solo sexual activity,  $F(1, 666) = 68.79$ ,  $p < .001$ . Men had significantly higher levels of sexual depression, and significantly lower levels of sexual satisfaction, physical disability, specific sexual esteem, and perceived attractiveness to others. In contrast, females had significantly more frequent mutual sexual activity but less frequent solo sexual activity.

Mean scores on the sexual variables were compared between participants who had experienced difficulty walking for 10 years or less and those who had experienced

difficulty walking for more than 10 years. The period of 10 years was chosen, as this would seem to be an adequate length of time after the onset of the disability for the person to have acknowledged the fact that they have a disability.

Table V shows the means and *SDs* for the two groups. A 2 (sex)  $\times$  2 (disability duration) MANOVA, with age covaried, revealed main effects for sex,  $F(7, 587) = 13.32$ ,  $p < .001$ , and disability duration,  $F(7, 587) = 6.16$ ,  $p < .001$ . The interaction effect between sex and disability duration was not significant,  $F(7, 587) < 1$ .

Univariate tests revealed that there was a significant effect of disability duration on sexual esteem,  $F(1, 593) = 4.02$ ,  $p < .05$ , sexual satisfaction,  $F(1, 593) = 5.98$ ,  $p < .01$ , physical disability specific sexual esteem,  $F(1, 593) = 10.62$ ,  $p < .001$ , sexual depression,  $F(1, 593) = 5.09$ ,  $p < .05$ , physical disability specific perceived attractiveness to others,  $F(1, 593) = 3.82$ ,  $p < .05$ , and solo sexual activity,  $F(1, 593) = 4.08$ ,  $p < .05$ . Participants who had experienced difficulty walking for more than 10 years had significantly higher levels of sexual esteem, sexual satisfaction, physical disability, specific sexual esteem, and more frequent solo sexual activity and significantly lower levels of sexual depression and of physical disability specific perceived attractiveness to others.

The univariate tests also showed a significant sex difference in levels of mutual sexual activity,  $F(1, 593) = 8.89$ ,  $p < .05$ , solo sexual activity,  $F(1, 593) = 25.68$ ,  $p < .001$ , physical disability specific sexual esteem,  $F(1, 593) = 12.21$ ,  $p < .001$ , and physical disability specific perceived attractiveness to others,  $F(1, 593) = 6.81$ ,  $p < .01$ . Females demonstrated significantly more frequent mutual sexual activity and less frequent solo sexual activity, but significantly higher levels of physical disability specific sexual esteem and physical disability specific perceived attractiveness to others.

In order to determine if the improvement in sexual adjustment among participants who had experienced their physical disability for more than 10 years was the result of a lessening in the severity of disability, two separate analyses were conducted. Firstly, an ANOVA was used to compare the mean scores on the perceived severity of the disability for the two groups. Overall, participants who had experienced their disability for 10 years or less perceived that they had a slightly less severe physical disability ( $M = 1.15$ ) compared to participants who had experienced their physical disability for more than 10 years ( $M = 2.24$ ). However, this difference was not significant,  $F(1, 649) = 2.69$ ,  $p > .05$ . Secondly, to use an objective measure of disability severity, the percentages of people in the high or low need for assistance categories were compared between the two duration groups. Of the partic-

ipants who had experienced their disability for 10 years or less, a higher percentage (67%) fell into the low support category compared to 54% of people falling into the low support category who had their disability for more than 10 years. A significant chi-square goodness-of-fit statistic was computed,  $\chi^2 = 10.41$ ,  $p < .001$ .

To examine the relationship between sexual satisfaction and the frequency of deep kissing, nude cuddling, sexual intercourse, viewing erotic movies or magazines, and lone masturbation in men and women with physical disabilities, these behaviors were entered into separate multiple regression equations for both men and women with physical disabilities, with sexual satisfaction as the dependent variable. In men,  $F(6, 348) = 31.41$ ,  $p < .001$ , with 35% of the variance in sexual satisfaction being predicted by the frequency of these sexual behaviors. However, only three of these behaviors were significant predictors of sexual satisfaction. The frequency of oral sex was the strongest predictor of sexual satisfaction,  $\beta = .28$  ( $p < .001$ ), followed by nude cuddling,  $\beta = .22$  ( $p < .05$ ), and viewing erotica,  $\beta = -.15$  ( $p < .01$ ). In women,  $F(6, 357) = 31.19$ ,  $p < .001$ , with 34% of the variance in sexual satisfaction being predicted by the frequency of these sexual behaviors. However, only deep kissing was a significant predictor of women's sexual satisfaction,  $\beta = .24$  ( $p < .001$ ).

In order to determine the relative contribution of disability on sexual response, a composite measure of sexual functioning was created for the physically disabled group. This involved converting scores on all the measures of sexual functioning for the physically disabled group (sexual esteem, sexual depression, sexual satisfaction, mutual sexual activity, solo sexual activity, PDSBE sexual esteem, PDSBE attractiveness to others) into *z* scores, and summing these scores to obtain a total. A standard multiple regression analysis was then conducted, with gender, perceived severity of disability, objective measure of disability severity (support needs), and age at onset of disability as the independent variables, and the composite sexuality variable as the dependent variable. The results indicated that sexuality was significantly predicted by the independent variables,  $F(4, 584) = 9.68$ ,  $p < .001$ ,  $R^2 = .06$ . All variables contributed significant unique variance to the composite measure of sexuality (gender,  $\beta = .09$ ,  $p < .05$ ; severity of disability,  $\beta = -.09$ ,  $p < .05$ ; objective disability,  $\beta = -.16$ ,  $p < .001$ ; age of onset,  $\beta = .11$ ,  $p < .01$ ).

## DISCUSSION

The current study found that people with more severe physical impairments had lower levels of sexual esteem



and sexual satisfaction and higher levels of sexual depression than people who experienced mild impairments or the able-bodied population. The study also found that people with a severe physical disability engaged in mutual sexual activity less frequently.

These findings support the qualitative data from previous studies that have demonstrated that people with physical disabilities commonly believe that they are less sexually desirable than able-bodied people and that their disability seriously limits their sexual life (Taleporos, 2001; Taleporos & McCabe, 2001, 2002a). The results are also consistent with the proposal that people with physical disabilities experience difficulties in their sexual lives (Bach & Bardach, 1997; Crabtree, 1997; Donelson, 1998; Earle, 1999; Gill, 1996; Knight, 1983; Saad, 1997; Tepper, 1997). In the present study, both high subjective and objective measures of disability predicted low levels of sexuality among the disabled population. Low levels of sexual esteem and low sexual satisfaction in people with severe physical disabilities are also consistent with the previous studies that have found that the romantic lives of people with physical disabilities were limited or less active than those of able-bodied people (MacDougall & Morin, 1979; Nosek et al., 1996; Page et al., 1987; Rintala et al., 1997; Romeo, Wanlass, & Arenas, 1993), although their sexual needs were high (McCabe, Cummins, & Deeks, 2000).

The current study did not separate the participants with physical disability into different disability groups, but instead examined the sexuality of respondents according to both subjective and objective levels of functional impairment. It was anticipated that this would provide a more meaningful and accurate representation of the sexuality of people with physical disability, since people with the same disability (e.g., multiple sclerosis, cerebral palsy) can vary substantially in their level of impairment. However, future studies should also include an analysis of the effect of different types of physical impairment (e.g., mobility, congenital vs. acquired disability) on sexuality.

Women reported more mutual sexual experiences, higher sexual satisfaction, higher perceived attractiveness to others, higher sexual esteem, and lower levels of sexual depression than their male counterparts. These empirical data support the assertions of Drench (1992), who stated that sexual adjustment is easier for women because they traditionally place more emphasis on interpersonal aspects of sexuality, such as tenderness and emotional sharing, and so less focus is directed to their genital function. We found that oral sex and nude cuddling appeared to be more important to men with physical disabilities, whereas deep kissing was more important to women, indicating that men were more focused on genitally focused activity than women. Furthermore, since the viewing of erotica was related to sexual dissatisfaction in men, it would appear that men

may use erotica as a sexual outlet when other, more satisfying outlets, are not available to them. Interestingly, the frequency of sexual intercourse did not predict sexual satisfaction in either gender. This challenges the emphasis placed by researchers and clinicians on the achievement of coitus (Rivas & Chancellor, 1997), and suggests that for people with physical disability, other types of sexual activities may be more closely related to sexual satisfaction. These data suggest that it is important to affirm nonpenetrative sexual behaviors as healthy and valid expressions of the individual's or couple's sexuality, whereas recognizing that men may have a stronger need than women for genitally focused activities such as oral sex or nude cuddling.

Although previous studies have discussed the difficulties of sexual adjustment at the onset of physical disability (Alexander, Sipski, & Findley, 1993; Drench, 1992), this study demonstrated that people who had experienced their physical impairment for a longer period of time reported more positive feelings about their sexuality, even though their physical impairment may have become more severe. In fact, the regression analysis that examined the impact of the disability measures on a composite measure of sexuality demonstrated that the longer the person had experienced the disability, the more positive their level of sexuality. It would appear that there is an adjustment process that takes place as people accept and overcome the new sexual barriers that are put before them. It is possible that during this time individuals meet sexual partners who accept their physical difference, and that this sense of acceptance is subsequently internalized by the person with the physical disability. They may also learn to express and experience their sexuality in a more enjoyable way by learning new techniques that are suited to their physical limitations.

A novel aspect of this study was the use of the Internet to obtain the sample and administer the survey. A positive outcome of this was a large sample from across the English speaking world. The success in obtaining such a broad-based sample would suggest that the World Wide Web is an efficient and effective tool for conducting research on people with physical disabilities. It is especially useful in surveying participants with severe physical impairments who are unable to complete a paper and pencil test or who would find this physically taxing. Clearly, there may be some biases with a sample dominated by Internet users, and so it is essential to also publicize and provide a printed version of the survey. However, as Internet technology becomes more widely available, this limitation will be less relevant.

There may also have been some bias in the respondents who were drawn from the International Conferences on Sexuality, Disability, and Culture, as these respondents

may be more vocal and active in their defense of the rights of people with disability than people from the general community. A comparative group of able-bodied people that is more closely matched to the physically disabled group in terms of relationship status and educational achievement will also provide more information on the specific effect of physical disability on the sexuality variables included in this study. The manner of recruiting some of the above-bodied people in this study (friends or colleagues of people in the disability group) may also have led to a nonrepresentative able-bodied sample in this study.

Finally, although it is evident that physical disability is associated with lower levels of sexual esteem, sexual satisfaction, and sexual frequency, especially when the physical limitation is severe, there appears to be a process of sexual adjustment that takes place after the onset of physical impairment. Future studies need to more closely examine the sexual adjustment process that has been suggested here. Researchers also need to investigate the nature of the psychological, social, and environmental factors that assist people with physical disabilities to develop more positive feelings about their sexual selves.

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