



## The role of third-wave cognitive-behavioural factors on the sexual functioning of people with and without physical disabilities

Raquel Pereira, Pedro M. Teixeira & Pedro J. Nobre

To cite this article: Raquel Pereira, Pedro M. Teixeira & Pedro J. Nobre (2022) The role of third-wave cognitive-behavioural factors on the sexual functioning of people with and without physical disabilities, *Psychology & Sexuality*, 13:2, 165-181, DOI: [10.1080/19419899.2020.1754280](https://doi.org/10.1080/19419899.2020.1754280)

To link to this article: <https://doi.org/10.1080/19419899.2020.1754280>



Published online: 26 Apr 2020.



Submit your article to this journal [↗](#)



Article views: 137



View related articles [↗](#)



View Crossmark data [↗](#)



# The role of third-wave cognitive-behavioural factors on the sexual functioning of people with and without physical disabilities

Raquel Pereira <sup>a</sup>, Pedro M. Teixeira <sup>b</sup> and Pedro J. Nobre <sup>a</sup>

<sup>a</sup>Research Group in Human Sexuality, Center of Psychology, Faculty of Psychology and Educational Sciences, University of Porto, Porto, Portugal; <sup>b</sup>Life and Health Sciences Research Institute ICVS/3B's, PT Government Associate Laboratory, Braga/Guimarães, School of Medicine, University of Minho, Braga, Portugal

## ABSTRACT

The sexuality of people with disabilities is still poorly understood. Research has shown the role of mindfulness and self-compassion in promoting resilience, but little is known on the influence of these variables on sexual functioning in people who may experience physical disability. This study explored how mindfulness, self-compassion, and acceptance may predict sexual functioning of people with and without physical disability. A sample of 377 participants answered a survey (189 with a physical disability). Results showed that, regardless of the physical condition, self-compassion and acceptance were significant predictors of sexual functioning, but only for the male subsample ( $\Delta R^2 = .093$  and  $.031$ ,  $ps < .05$ ). Particularly, lower levels of isolation were significantly associated with better sexual functioning in men, above and beyond the effects of the impairment ( $\beta = .413$ ,  $p < .001$ ). Findings also showed moderating effects of physical condition for the association between male sexual functioning and self-kindness ( $\Delta R^2 = .021$ ,  $p = .038$ ). This study sheds light into psychological mechanisms that may be equally or differently involved in the sexual functioning of people with and without physical disability, particularly for men. Findings suggest the importance of Third-Wave cognitive-behavioural strategies for sexual functioning and overall sexual health.

## ARTICLE HISTORY

Received 29 August 2019  
Accepted 6 April 2020

## KEYWORDS

Acceptance; mindfulness; physical disabilities; self-compassion; sexual functioning

## Introduction

Around 15% of the world population lives with some kind of disability (World Health Organization, 2011). Despite the increasing recognition of sexual health and sexual rights, myths around the sexuality of people with disabilities prevail, leading to continuous misunderstanding and discrimination (Esmail et al., 2010; Lottes, 2013; Rohleder et al., 2018). Some health conditions might bring difficulties achieving and maintaining an erection, impaired vaginal lubrication and ejaculation, and reduced sensation, sexual pleasure or orgasm (Cole, 1975; Cole & Cole, 1993). However, people with physical disabilities may develop a sexual response that is more flexible and adaptive to his or her needs and circumstances than people without disabilities (DiGiulio, 2003). Third-Wave Cognitive-Behavioural strategies are targeted at dealing with the individual's relationship with one's thoughts and emotions, and how it influences the person's interaction with his/her own experience (Lucena-Santos et al., 2015). Variables such as mindfulness, self-compassion and acceptance have shown consistent benefits in dealing with pain, fatigue, and emotional regulation in disability and chronic

**CONTACT** Raquel Pereira  [arlpereira.rp@gmail.com](mailto:arlpereira.rp@gmail.com)  Grupo De Investigação Em Sexualidade Humana Do Centro De Psicologia Da Universidade Do Porto, Faculdade De Psicologia E Ciências Da Educação, Universidade Do Porto, Rua Alfredo Allen 4200-135, Portugal

illness samples (Hocaloski et al., 2016; Kabat-Zinn & Burney, 1981). However, little is known about the contribution of these variables for the sexual health of people living with a physical disability. As such, this study explores how psychological factors like mindfulness, self-compassion and acceptance may contribute to the scientific knowledge of the sexual functioning of people who may experience physical disabilities.

When a person lives with a physical disability, he/she usually experiences mild to severe deviation or loss in a body function or structure that limits or changes their physical activity (World Health Organization, 2001b). Physical disability may be defined as congenital or acquired and varies according to the nature of the impairment: motor disability (e.g. paraplegia, tetraplegia, amputation); sensorial disability (e.g., visual or hearing impairments); neurological disability (e.g., multiple sclerosis, cerebral palsy, muscular dystrophy), etc (Rowen et al., 2015). Different impairments may result in partial or total restriction of daily activities, which may imply constraints regarding their sexual functioning (World Health Organization, 2001b). In fact, studies had shown a slightly higher prevalence of sexual dysfunction in disabled women (between 65.7% and 72.8%) than in disabled men (between 64.4% and 65.9%) (Amidu et al., 2010; Owiredo et al., 2015). Research in this domain is highly heterogeneous, reflecting not only the diversity of conditions but also the diversity of theoretical and methodological perspectives underlying studies' designs (Darija et al., 2015; Verschuren et al., 2016; J. E. Verschuren et al., 2015; Garrett et al., 2009; Gava et al., 2019; Lew-Starowicz & Rola, 2013). However, research tends to focus on differences between people with and without physical disabilities, under-looking the factors that may contribute to explain the sexual response, above and beyond the effects of the impairment (Beckwith & Yau, 2013; Javier et al., 2013; Linsenmeyer, 2009; Othman & Engkasan, 2011).

Several issues may contribute to explain sexual response of people with disabilities: socio-sexual isolation (due to architectural or economic restrictions); family overprotection and lack of privacy; bodily perfection ideals; lack of sex education; internalisation of normative models; lack of awareness and empowerment (Ahumuza et al., 2014; García & Álvarez, 2014). These factors entail not only a structural disableism that carries social oppression of the sexual expression of people with physical disabilities, but also the psycho-emotional disableism that leads to a process of internalised oppression over one's body and sexuality (Reeve, 2004). By increasing one's awareness of the context of thoughts and emotions and promoting a holistic view of the person, Third-Wave Cognitive-Behavioural Therapy may help people with physical disabilities to cope with internalised processes involved in sexual adjustment.

Mindfulness is a central construct of the Third Wave therapies that can be defined as 'awareness that arises through paying attention, on purpose, in the present moment, non-judgementally' (Kabat-Zinn & Burney, 1981). Thus, Mindfulness can be conceptualised as a dispositional or trait-like characteristic, but it can also be cultivated as a skill (Baer, 2003). Mindfulness' strategies have been recently applied in sex therapy, with benefits concerning satisfaction and sexual pain (Brotto et al., 2015; Kocsis & Newbury-Helps, 2016). In the field of disability, Mindfulness therapy has been applied to several health issues, like patients with multiple sclerosis or spinal cord injury, and research has largely shown its role in dealing with pain and increasing quality of life, emotional regulation, and resilience (Senders et al., 2012). Concerning sexual functioning, recent research has documented the benefits of a psychoeducational group approach that includes mindfulness in improving the sexual adjustment of women with multiple sclerosis and spinal cord injury (Hocaloski et al., 2016). Despite the small sample, this research found improvements in sexual desire and arousal, as women became less judgemental of their inner experiences (Hocaloski et al., 2016). Nevertheless, a different study with women with multiple sclerosis indicated that patients who performed the combined therapies (i.e. mindfulness and pelvic floor exercises) did not experience additional benefits on sexual functioning when compared to those who performed either mindfulness or pelvic floor exercises, which were equally beneficial (Mosalannejad et al., 2018).

Regarding self-compassion, this construct integrates mindfulness rationale and pertains to the capacity to be open to one's suffering (Neff & Dahm, 2015). Similarly, it can be conceptualised as a trait-like modifiable characteristic as well as developmental skill, and is based on three components: self-kindness (i.e. being warm and understanding towards ourselves when we suffer, fail, or feel inadequate), common humanity (i.e. recognising that suffering and personal inadequacy is part of the shared human experience) and mindfulness (i.e. being receptive and non-judgemental of one's thoughts and feelings) (Neff, 2003a; Neff & Dahm, 2015). By decreasing self-criticism, self-compassion has been established as an important aspect of resilience and self-empowerment, and interventions based on mindfulness and self-compassion have proven effective at follow-up moments (Neff & Germer, 2013; Stuntzner & Hartley, 2015). For example, a study with 19 adults with spina bifida found positive and significant correlations between participants' resilience, self-esteem and self-compassion (Hayter & Dorstyn, 2014). Additionally, interventions aimed at increasing self-compassion combined with mindfulness have shown decreased functional disability in war veterans (Dahm et al., 2015). Regardless of the lack of research on self-compassion applied to sexuality, there is literature discussing the potential benefits of teaching women with disabilities how to be self-compassionate when coping with their sexual issues and improving their sexual identity (Stuntzer, 2014).

Lastly, acceptance is a construct introduced by the Acceptance and Commitment Therapy that can be defined as a capacity to act towards one's goals with a non-judgemental attitude (Hayes et al., 1999). The greater capacity of acceptance would correlate with greater psychological flexibility or lower experiential avoidance in the face of negative events (Hayes et al., 1999). There is broad evidence of the efficacy of acceptance approaches on health condition, mainly on pain conditions, with improvements in physical and social functioning. Research has also documented the importance of acceptance in pain management, in correlation with variables such as affection, attention and catastrophizing (McCracken & Vowles, 2014). However, literature is scarce in establishing the link between acceptance and sexuality, although a study showed that acceptance and commitment therapy is effective in increasing sexual satisfaction in couples (Nezhad & Shamel, 2017).

In conclusion, the variability of the sexual response and sexual functioning of people who may have physical disabilities needs clarification, and psychological dimensions that could influence internalised processes of sexual adjustment may be under looked in this context. The current study integrates a larger mixed-methods research project which focuses on understanding the role of psychological factors in influencing the sexual health of people who may experience physical disabilities. The vulnerability and resilience factors being studied here refer to skills and attitudes that may increase the acceptance and appreciation of one's experience of sexual participation, regardless of the actual physical conditions (Brotto et al., 2015; Hocaloski et al., 2016). The aim of this study was to assess the relationships between Third Wave Cognitive-Behavioural variables (i.e. mindfulness, self-compassion and acceptance) and sexual functioning in men and women with and without physical disabilities. We expected that, after controlling for physical condition (i.e. having a physical disability or not), higher levels of mindfulness, self-compassion and acceptance would predict better sexual functioning. Furthermore, we examined possible moderating effects of physical condition on the relationship between Third Wave Cognitive-Behavioural variables and sexual functioning.

## Method

### Participants

This study was conducted in Portugal. An initial sample of 479 individuals enrolled in this study. However, due to an over-representation of non-disabled women ( $n = 198$ ), 96 of them were randomly selected, showing no statistical significant differences with non-selected women regarding

age ( $F_{(1,194)} = 1.830$ ;  $p = .178$ ), education ( $\chi^2_{(4)} = 3.287$ ;  $p = .511$ ) and marital status ( $\chi^2_{(4)} = 3.857$ ;  $p = .426$ ). The final sample consisted of 377 participants. Of these, 189 had a physical disability (96 men and 93 women) and 188 had no disability (92 men and 96 women).

Participants were included in the study according to the following criteria: (i) age between 18 and 55 years old; (ii) have a physical disability, or no disability; (iii) capacity to read Portuguese and provide informed consent. Regarding physical disability criteria, we included people with different physical conditions in order to diversify our sample accounting for the psychosocial dimensions of disability, namely the stigma regarding their sexuality. Nonetheless, participants with moderate to severe cognitive conditions were excluded, since they are often incapable of providing informed consent. Also, participants older than 55 years were excluded as age is often a variable that has a negative impact over sexual functioning.

Participants were included in the study once they fulfilled all the sociodemographic, medical and disability details and at least one of the psychological measures (58.6% completed all the questionnaires). Men and women answered either a male or female version of the questionnaires, which could be fulfilled online or in paper format. Most participants took the online format (85.9%), managed with the Limesurvey template (<https://www.limesurvey.org>), which is stored in a server from the University of Porto. The study was publicised on several social networks and mailing lists, blogs and websites dedicated to sexuality and disability, and on electronic newspapers. Participants were also recruited from a professional rehabilitation facility. Also, a pilot study was conducted in order to test the adequacy and clarity of the language and instructions, to identify possible technical errors, and to estimate the total response time (approximately 30 minutes).

## Main outcome measures

### Descriptive measures

Participants completed a self-report Introductory Questionnaire that assesses several sociodemographic, intimacy, and sexual questions. This questionnaire also addresses medical history and disability characteristics, with questions adapted from the Lifestyle and Medical History Questionnaire and the Disability Assessment Schedule (World Health Organization, 2001a). Furthermore, this questionnaire examined self-perceived sexual difficulties, using questions adapted from the Self-perceived Sexual Problems Questionnaire, from Peixoto and Nobre (2015a, 2015b).

### Mindfulness

The capacity to be self-conscious and regulate the attention towards the present moment was measured through the Five Facets of Mindfulness Questionnaire (FFMQ; Baer et al., 2006; Gregório & Pinto-Gouveia, 2011). This is a 39-item measure adapted from other scales and has five factors: Observe (e.g., *'When I take a shower or bath, I stay alert to the sensations of water on my body'*), Describe (e.g., *'It's hard for me to find words to describe what I'm thinking'*), Act with Awareness (e.g., *'I find it difficult to stay focused on what's happening in the present'*), Non-judge (e.g., *'I tell myself I shouldn't be feeling the way I'm feeling'*) and Non-react (e.g., *'I perceive my feelings and emotions without having to react to them'*) (Baer et al., 2006). Participants answer in a 5-point Likert scale. The measure allows for the computation of specific indexes, as well as an overall score. Higher scores mean overall higher mindfulness qualities. The validity and reliability of the Portuguese version are well documented (Gregório & Pinto-Gouveia, 2011). In the current study, the scale showed good internal consistency overall ( $\alpha = .84$ ) and for each dimension ( $\alpha$  between .77 and .90). Focusing on the subsamples, the scale showed good internal consistency for both people with physical disabilities ( $\alpha = .84$ ; subscales between .74 and .90) and people without physical disabilities ( $\alpha = .88$ ; subscales between .81 and .91). Moreover, language changes were implemented for inclusivity (e.g., *'When I'm moving ...'* instead of *'When I'm walking ...'*).

### Self-compassion

The Self-Compassion Scale (SCS) was administered in order to measure the participants' ability to bear one's feelings of suffering using a sense of warmth, connection and concern (Castilho & Pinto-Gouveia, 2011; Neff, 2003b). This is a 26-item self-report scale subdivided into 6 factors: Self-Kindness (e.g., *'When I'm going through a very hard time, I give myself the caring and tenderness I need'*), Self-Judgement (e.g., *'I'm disapproving and judgmental about my own flaws and inadequacies'*), Common Humanity (e.g., *'I try to see my failings as part of the human condition'*), Isolation (e.g., *'When I fail at something that is important to me, I tend to feel alone in my failure'*), Mindfulness (e.g., *'When something upsets me I try to keep my emotions in balance'*) and Over-identification (e.g., *'When I fail at something important to me I become consumed by feelings of inadequacy'*) (Neff, 2003b). Answers are rated on a 5-point Likert scale. Specific indexes may be computed, as well as an overall score. Higher values equal to higher self-compassion. The Portuguese version of the scale also demonstrated good internal consistency, validity and reliability (Castilho & Pinto-Gouveia, 2011). In the current study, the scale showed good internal consistency overall ( $\alpha = .92$ ) and for each of the six original dimensions ( $\alpha$  between .72 and .82). Focusing on the subsamples, the scale showed good internal consistency for both people with physical disabilities ( $\alpha = .91$ ; subscales between .63 and .81) and people without physical disabilities ( $\alpha = .93$ ; subscales between .74 and .87).

### Acceptance

The second version of the Acceptance and Action Questionnaire (AAQ-II) was used to analyse participants' psychological inflexibility or experiential avoidance in the face of negative events (Bond et al., 2011; Pinto-Gouveia et al., 2012). This is a 7-item self-report questionnaire that is rated according to a 7-point Likert-type scale ranging between 1 ('never true') and 7 ('always true') (e.g., *'My experiences and painful memories prevent me from living a life that I value.'*; *'It seems that most people run their lives better than I do.'*). This scale has a one-factor structure with higher scores indicating greater psychological inflexibility or experiential avoidance. The psychometric properties of the Portuguese version are reported elsewhere (Pinto-Gouveia et al., 2012). In the current study, the scale showed good internal consistency ( $\alpha = .92$ ). Focusing on the subsamples, the scale showed good internal consistency for both people with physical disabilities ( $\alpha = .92$ ) and people without physical disabilities ( $\alpha = .91$ ).

### Male sexual functioning

The sexual functioning of the male participants was assessed through a version of the International Index of Erectile Function adapted for men who have sex with men (Coyne et al., 2010; Peixoto, 2014). This self-report scale has 22 Likert-type questions and was adapted from the original questionnaire in order to include other sexual practices such as anal intercourse, masturbation, oral sex and morning erections. Nevertheless, the same five domains of functioning were found: (i) erectile function (e.g., *'How often were you able to obtain an erection during sexual activity?'*); (ii) orgasmic function (e.g., *'When you had sexual stimulation or intercourse, how often did you have an orgasm sensation, with or without ejaculation?'*); (iii) sexual desire (e.g., *'How often did you had sexual desire?'*); (iv) intercourse satisfaction (e.g., *'How satisfied are you with your current sexual relationship with your partner?'*); and (v) overall satisfaction with sex (e.g., *'How satisfied are you with your sex life?'*) (Rosen et al., 1997). This measure accounts for the sexual functioning in the past 4 weeks and allows for the computation of specific indexes, as well as a score for overall sexual function (minimum = 5 and maximum = 75, with higher values indicating better sexual functioning). The scale was properly adapted into Portuguese (Quinta Gomes & Nobre, 2012). However, this version needs further validation (Peixoto, 2014). In this study, the scale showed good internal consistency overall ( $\alpha = .91$ ), and for each dimension ( $\alpha$  between .62 and .85). Focusing on the subsamples, the scale showed adequate internal consistency for both men with physical disabilities ( $\alpha = .90$ ; subscales between .63 and .90) and men without physical disabilities ( $\alpha = .89$ ; subscales between .57 and .86). Finally, after pilot testing, the language was adapted in several options (e.g., *'I had no sexual activity and/or have no erection.'* instead of *'I had no sexual activity'*) due to the impact of certain disabilities in sexual functioning, for some participants.



### Female sexual functioning

In order to be more inclusive, an adapted version of the Female Sexual Function Index for women who have sex with women was used to assess sexual functioning of female participants (Peixoto, 2014). This is a 20 item self-report scale developed from the original FSFI and assesses key dimensions of the female sexual functioning: sexual desire (e.g., 'How do you rate your sexual desire?'), arousal lubrication (e.g., 'How difficult was for you to maintain your lubrication until the end of any sexual activity or intercourse?'), orgasm (e.g., 'When you had sexual stimulation or intercourse, how often did you reach orgasm (climax)?'), satisfaction (e.g., 'How satisfied are you with your overall sex life?') and pain (e.g., 'How often did you feel pain or discomfort after sexual intercourse?') (Wiegel et al., 2005). Questions refer to the past 4 weeks and rating scores allow for the computation of an overall index and specific indexes (minimum = 5 and maximum = 75, with higher scores meaning better sexual functioning). The questionnaire was properly validated into Portuguese (Pechorro & Almeida, 2009). However, this version still needs validation (Peixoto, 2014). In this study, the scale showed good internal consistency overall ( $\alpha = .94$ ), and for each dimension ( $\alpha$  between .80 and .97). Focusing on the subsamples, the scale showed good internal consistency for both women with physical disabilities ( $\alpha = .96$ ; subscales between .80 and .98) and women without physical disabilities ( $\alpha = .87$ ; subscales between .73 and .95). Finally, after pilot testing, the language was adapted in several options (e.g., 'I had no sexual activity and/or have no sensation.' instead of 'I had no sexual activity') due to the impact of certain disabilities in sexual functioning, for some participants.

### Ethics

This study was performed according to the 1964 Helsinki declaration. Informed consent was obtained from all the participants included in the study. In order to guarantee the participants' anonymity and confidentiality, no personal data (e.g., name, birthday) was asked. Although their participation was voluntary, participants would be entitled to enrol in a prize draw and win 20€, as an incentive for taking the survey. Previous approval of the procedures was obtained from the University Ethics Committee and from the Portuguese National Commission for Data Protection.

### Statistical analysis

Statistical analysis was performed using the Statistical Package for Social Sciences software (SPSS version 25.0; Chicago, Inc, IL). Missing values were not treated except for the sexual functioning questionnaires (i.e. substituted by mean). Descriptive characteristics of the sample were analysed with percentages, means, and standard deviations. Study variables were also described with means and standard deviations and were analysed with bivariate correlations. Before conducting inferential analyses, participant's scores on the study variables were transformed into z-scores.

To examine the potential contribution of Third Wave Cognitive-Behavioural variables to the sexual functioning, several hierarchical multiple regression analyses were computed. As there were significant statistical differences between participants with and without disabilities regarding age ( $F_{1,369} = 66.046, p < .001$ ), this variable was used as a control variable and was entered in the first step of the models. Afterwards, physical condition (i.e. having a physical disability or not) was entered in the second step of the models. In the third step, one of the following variables was entered: (i) participants' scores of the five facets of mindfulness – Observe, Describe, Act with Awareness, Non-judge and Non-react; (ii) participants' scores of the six factors of self-compassion – Self-kindness, Self-judgement (reversed), Common Humanity, Isolation (reversed), Mindfulness and Over-identification (reversed); (iii) participants' total score of acceptance (AAQ-II). Then, the total scores of sexual functioning (IIEF and FSFI) were used as criterion variables individually.

To examine the moderating effects of physical condition on the relationship between Third Wave Cognitive-Behavioural variables and sexual functioning variables, moderation analyses were conducted using PROCESS v. 3.0 for SPSS. After selecting Model 1 of the application, physical condition

was entered as dichotomous moderators. For each analysis, the scores of the five facets of mindfulness, the six factors of self-compassion, and the total score of acceptance were entered as independent variables separately. Accordingly, the scores of the sexual functioning (IIEF and FSFI) were entered as dependent variables. The regression's simple slopes graphics were analysed as a moderating post hoc probing technique.

Regarding skewness, variables were symmetrically distributed, except for acceptance (.569). Regarding kurtosis, variables were almost normally distributed (between .261 and .303). Furthermore, preliminary analyses were conducted to ensure all of the assumptions of regression analysis, namely: normality, linearity, multicollinearity, and homoscedasticity. Finally, for all analyses, two-sided tests were used, and a  $p$ -value less than .05 was considered statistically significant.

## Results

### *Sample characteristics*

Mean age of the participants was 32.80 years ( $SD = 9.5$ ). However, people with physical disabilities were older ( $M = 36.54$ ;  $SD = 9.43$ ) than people without disabilities ( $M = 29.12$ ;  $SD = 8.11$ ). A percentage of 42.1% of the participants had, at least, 12 years of education, and most participants were either employed (38%) or studying (29.2%). Regarding marital status, while most participants reported not being married (66.5%), 64.5% of the sample was in a relationship for an average of 7 years. Most participants were heterosexual (77.4%), and 38.5% reported self-perceived sexual difficulties in the past six months. For men, the most common sexual problems related to erectile difficulties (21.4%), lack of sexual desire (19.4%) and delayed ejaculation (16.7%). For women, lack of sexual desire was the most frequent sexual difficulty (27.8%).

Of the 189 participants with physical disabilities, most of them had an acquired disability (62.8%) for an average of 12 years, and most of the conditions were caused by disease (62.2%). The most frequent kinds of disability were neuromuscular conditions (e.g., – multiple sclerosis, acquired brain injuries – 37.3%) and motor impairments (e.g., – spinal cord injuries, amputations – 32.8%). Furthermore, much of these participants required some kind of aid in mobility, such as crutches (23.4%), manual wheelchair (23.4%) or electric wheelchair (15.2%). Nevertheless, 75.5% of the subsample was autonomous in daily-life activities (e.g., eating, dressing, taking a bath) (see [Table 1](#)).

Means, standard deviations and bivariate correlations of the study variables are displayed in [Table 2](#). There were significant associations of the Describe facet of mindfulness and the Isolation dimension of self-compassion with male sexual functioning ( $r = -.18$  and  $.193$ ;  $p < .05$ ), as well as a negative association between Acceptance and male sexual functioning ( $r = -.21$ ;  $p < .01$ ). For women, Describe, Act with awareness and Non-Judge facets of mindfulness were positively associated with female sexual functioning ( $r$  between  $.214$  and  $.279$ ;  $p < .05$ ). Also, the Self-judgement, Isolation and Over-identification dimensions of Self-compassion were significantly correlated with female sexual functioning ( $r$  between  $.329$  and  $.340$ ;  $p < .05$ ). Higher levels of acceptance were significantly associated with better male sexual functioning ( $r = -.210$ ;  $p < .01$ ) and female sexual functioning ( $r = -.196$ ;  $p < .05$ ). Finally, physical condition was significantly correlated with male ( $r = .348$ ;  $p > .01$ ) or female sexual functioning ( $r = -.236$ ;  $p > .01$ ), but not age ( $r = -.116$  and  $-.006$ ;  $p < .05$ ).

### *Associations between sexual functioning and mindfulness*

Overall, the independent variables did not explain a significant amount of variance of male sexual functioning. At Step 1, age did not explain a significant amount of variance of sexual satisfaction ( $R^2 = .004$ ;  $F_{1,110} = .493$ ,  $p = .493$ ;  $\Delta R^2 = .484$ ). The inclusion of physical condition at Step 2 explained a significant amount of the variance of the model ( $\Delta R^2 = .210$ ;  $R^2 = .214$ ;  $F_{1,109} = 29.086$ ,  $p = .000$ ). At Step 3, the inclusion of the mindfulness facets did not explain a significant amount of variance ( $\Delta R^2 = .051$ ;



**Table 1.** Participants' sociodemographic, sexual health and disability characteristics (N = 377).

	Men with Physical Disabilities (n=96)		Women with Physical Disabilities (n=93)		Men without Physical Disabilities (n=92)		Women without Physical Disabilities (n=96)	
Age								
M	35.43		37.64		30.18		28.09	
Range	18-54		19-55		18-50		18-48	
SD	9.57		9.2		8.31		7.82	
	N	%	N	%	N	%	N	%
Marital Status								
Married/CL	27	30	39	32.6	19	21.6	29	32.6
Single	55	61.1	51	57.3	65	73.9	51	57.3
Divorced	8	8.9	9	10.1	4	4.5	9	10.1
Educational level								
Basic education – 1 <sup>st</sup> stage	1	1.1	3	3.6	-	-	-	-
Basic education – 2 <sup>nd</sup> stage	17	19.1	4	4.8	-	-	-	-
Basic education – 3 <sup>rd</sup> stage	13	14.6	8	9.5	1	1.2	1	1.1
Secondary education	34	38.2	31	36.9	17	20.2	16	17.8
Under graduation	16	18	32	38.1	32	38.1	40	44.4
Graduation	8	9	6	7.2	34	40.4	33	36.6
Self-perceived Sexual Problems								
With Sexual Problems	38	40	33	36.3	35	38	38	39.6
Without Sexual Problems	57	60	58	63.7	57	62	58	60.4
Onset of disability								
Congenital	25	34.2	26	40.6	-	-	-	-
Acquired	48	65.8	38	59.4	-	-	-	-
Kind of disability								
Motor	29	31.5	29	34.1	-	-	-	-
Neuromuscular	41	44.6	25	29.4	-	-	-	-
Sensorial	4	4.3	8	9.4	-	-	-	-
Other*	18	19.6	23	27.1	-	-	-	-
Cause of disability								
Accident	26	44.8	12	22.6	-	-	-	-
Disease	30	51.7	39	73.6	-	-	-	-
Other**	2	3.4	2	3.8	-	-	-	-

\*Conditions such as cancer, chronic pain, fibromyalgia, etc.

\*\*E.g. Birth complications.

CL = Common Law

$R^2 = .265$ ;  $F_{5, 104} = 1.448$ ,  $p = .213$ ) (see Table 3). Moreover, no moderating effects of physical condition explained the relationship between the facets of mindfulness and male sexual functioning.

Likewise, the regression models did not explain a significant amount of variance of female sexual functioning. At Step 1, age did not explain a significant amount of variance of the model ( $R^2 = .001$ ;  $F_{1,82} = .050$ ,  $p = .824$ ;  $\Delta R^2 < .001$ ). At Step 2, the inclusion of physical condition explained an additional 6.7% of the variance of the model ( $\Delta R^2 = .067$ ;  $R^2 = .045$ ;  $F_{1, 81} = 5.820$ ,  $p = .018$ ). With the inclusion of the five facets of mindfulness at Step 3, the model was not significant ( $\Delta R^2 = .113$ ;  $R^2 = .105$ ;  $F_{5, 76} = 2.093$ ,  $p = .075$ ). Furthermore, no moderation effects of physical condition were found.

### Associations between sexual functioning and self-compassion

Overall, the independent variables accounted for 20% of the variance of male sexual functioning. At Step 1, age explained 2.6% of the amount of the variance ( $R^2 = .033$ ;  $F_{1,138} = 4.734$ ,  $p = .031$ ;  $\Delta R^2 = .033$ ). At Step 2, the inclusion of physical condition explained an additional 11.9% of the variance of male sexual functioning ( $\Delta R^2 = .119$ ;  $R^2 = .153$ ;  $F_{1,137} = 19.312$ ,  $p < .001$ ). At Step 3, the inclusion of the six dimensions of self-compassion explained an additional 9.3% of the variance ( $\Delta R^2 = .093$ ;  $R^2 = .246$ ;  $F_{6, 131} = 2.701$ ,  $p = .017$ ). Specifically, lower levels of isolation were significantly associated with better sexual functioning, regardless of physical condition and after controlling for age ( $\beta = .413$ ,  $\Delta F < .001$ ) (see Table 4). Furthermore, a moderating effect for the interaction term

Table 2. Bivariate correlations and descriptive statistics of the study variables in the total sample (N = 377) and in the male (n = 188) and female (n = 189) sub-samples.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. FFMQ Observe	-	.179*	-.107	-.225**	.371**	.303**	-.128*	.264**	-.010	.306**	-.051	.105	.083	.132	.024	.014
2. FFMQ Describe		-	.126*	.166**	.390**	.301**	.208**	.289**	.255**	.331**	.151**	-.272**	-.180*	.279**	.165*	.010
3. FFMQ Act with Awareness			-	.423**	-.113	.144*	.433**	.132*	.357**	.140*	.422**	-.380**	-.090	.292**	.230	.323
4. FFMQ Non-Judge				-	-.140*	.232**	.577**	.147**	.441**	.237**	.502**	-.571**	-.066	.214*	-.055	.097
5. FFMQ Non-React					-	.410*	.055	.409**	.030	.449**	.144*	-.024	.144	.055	.036	.027
6. SCS Self-Kindness						-	.357**	.707**	.306**	.287**	.380**	-.344**	.051	.136	-.014	.050
7. SCS Self-Judgment							-	.222**	.706**	.287**	.753**	-.640**	.007	.340**	.047	.103
8. SCS Common Humanity								-	.261**	.651**	.265**	-.299**	.052	.177	.001	.042
9. SCS Isolation									-	.347**	.711**	-.674**	.193**	.329**	.080	.042
10. SCS Mindfulness										-	.408**	-.372**	.044	.109	.013	.033
11. SCS Over-identification											-	-.640**	.001	.333**	-.043	.103
12. AAQ-II												-	-.210**	-.196*	-.070	-.062
13. IIEF													-	-	.348**	-.116
14. FSFI														-	-.236**	-.006
15. Physical Condition															-	-.390**
16. Age																-
M	25.25	27.61	27.56	27.15	20.91	15.14	16.40	13.21	13.36	13.51	13.10	22.02	74.09	28.28	1.50	32.80
SD	7.05	6.28	6.92	7.03	5.09	4.30	4.21	3.36	3.91	3.33	3.66	10.20	13.02	5.77	.501	9.5
Range	8-40	9-40	8-40	8-40	7-35	5-25	5-25	4-20	4-20	4-20	4-20	7-49	25-95	3-35	1-2	18-55

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

In the total sample, N's range from 206 to 377 due to occasional missing data. In the male sub-sample, n's range from 110 to 188 due to occasional missing data. In the female sub-sample, n's range from 105 to 189 due to occasional missing data. M = Mean. SD = Standard Deviation. FFMQ Observe = Observe dimension the Five Facets Mindfulness Questionnaire. FFMQ Describe = Describe dimension the Five Facets Mindfulness Questionnaire. FFMQ Act with Awareness = Act with Awareness dimension the Five Facets Mindfulness Questionnaire. FFMQ Non-Judge = Non-Judge dimension the Five Facets Mindfulness Questionnaire. FFMQ Non-React = Non-React dimension the Five Facets Mindfulness Questionnaire. SCS Self-Kindness = Self-Kindness dimension of the Self-Compassion. SCS Self-Judgment = Self-Judgment dimension of the Self-Compassion. SCS Common Humanity = Common Humanity dimension of the Self-Compassion. SCS Isolation = Isolation dimension of the Self-Compassion. SCS Mindfulness = Mindfulness dimension of the Self-Compassion. SCS Over-identification = Over-identification dimension of the Self-Compassion. AAQ-II = Total score of the Acceptance and Action Questionnaire (version2). IIEF = Total score of the International Index of Erectile Dysfunction. FSFI = Total score of the Female Sexual Functioning Index. Physical condition = having or not physical disability (1 = with disability; 2 = without disability)

**Table 3.** Hierarchical linear regression analyses of the five facets of mindfulness as predictors of male sexual functioning (n = 188) and female sexual functioning (n = 189).

Variable	B	SE B	$\beta$	t	$\Delta R^2$
<b>IIEF</b>					
Step 1					.004
Age	-.075	.106	-.067	-.702	
Step 2					.210
Age	.080	.099	.071	.805	
<b>Physical condition</b>	<b>.499</b>	<b>.093</b>	<b>.478</b>	<b>5.39***</b>	
Step 3					.051
Age	.032	.101	.028	.315	
Physical condition	.492	.097	.471	5.08***	
FFMQ Observe	.099	.111	.089	.896	
FFMQ Describe	.174	.101	.170	1.72	
FFMQ Act with Awareness	.101	.106	.092	.955	
FFMQ Non-Judge	-.032	.107	-.030	-.300	
FFMQ Non-react	.006	.115	.006	.053	
<b>FSFI</b>					
Step 1					.001
Age	-.023	.102	-.025	-.223	
Step 2					.067
Age	.073	.099	.074	.644	
<b>Physical Condition</b>	<b>.253</b>	<b>.105</b>	<b>.277</b>	<b>2.41*</b>	
Step 3					.113
Age	.019	.107	.021	.183	
Physical Condition	.216	.111	.236	1.94	
FFMQ Observe	.175	.107	.185	1.63	
FFMQ Describe	.094	.113	.101	.833	
FFMQ Act with Awareness	.121	.109	.127	1.11	
FFMQ Non-Judge	.124	.119	.124	1.04	
FFMQ Non-React	.059	.108	.061	.543	

\* $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Male n's range from 101 to 188 due to occasional missing data. Female n's range from 84 to 189 due to occasional missing data.

All variables were computed into z-scores. IIEF = Total score of International Index of Erectile Function. FSFI = Total score of Female Sexual Functioning Index. FFMS Observe = Observe dimension the Five Facets Mindfulness Questionnaire. FFMS Describe = Describe dimension the Five Facets Mindfulness Questionnaire. FFMS Act with Awareness = Act with Awareness dimension the Five Facets Mindfulness Questionnaire. FFMS Non-Judge = Non-Judge dimension the Five Facets Mindfulness Questionnaire. FFMS Non-React = Non-React dimension the Five Facets Mindfulness Questionnaire. Physical condition = having or not physical disability

between physical condition and self-kindness dimension was found ( $\beta = -.151$ ,  $t_{163} = -2.09$ ,  $p = .038$ ;  $R^2 = .152$ ;  $F_{3,159} = 8.03$ ,  $p < .001$ ), which accounted for 2.1% of the variance of male sexual functioning ( $\Delta R^2 = .021$ ;  $\Delta F = .038$ ). As depicted in Figure 1, the association between male sexual functioning and self-kindness was positive for men with physical disabilities and negative for men without physical disabilities.

Regarding female sexual functioning, at Step 1, age did not explain a significant amount of the variance ( $R^2 = .000$ ;  $F_{1,88} = .031$ ,  $p = .860$ ;  $\Delta R^2 < .000$ ). At Step 2, the model was significant, and the inclusion of physical condition explained an additional 8.5% of the variance of the model ( $\Delta R^2 = .085$ ,  $R^2 = .085$ ;  $F_{1,87} = 8.057$ ,  $p = .006$ ). The insertion of the six dimensions of self-compassion at Step 3 did not explained a significant amount of the variance of the model ( $\Delta R^2 = .096$ ,  $R^2 = .100$ ;  $F_{6,81} = 1.573$ ,  $p = .166$ ) (see Table 4). Nevertheless, no moderating effects were found over the relationships between female sexual functioning and the dimensions of self-compassion.

### Associations between sexual functioning and acceptance

Overall, the independent variables accounted for 14.1% of the variance of male sexual functioning. At Step 1, age did not explain a significant amount of variance ( $R^2 = .014$ ;  $F_{1,163} = 2.373$ ,  $p = .125$ ;  $\Delta R^2 = .014$ ). The model was significant at Step 2, with the insertion of physical condition, which

**Table 4.** Hierarchical linear regression analyses of self-compassion dimensions as predictors of male sexual functioning (n = 188) and female sexual functioning (n = 189).

Variable	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	$\Delta R^2$
IIEF					
Step 1					.033
Age	-.189	.087	-.182	-2.17	
Step 2					.119
Age	-.069	.086	-.067	-.805	
Physical condition	.376	.086	.364	4.39***	
Step 3					.093
Age	-.076	.085	-.073	-.899	
Physical condition	.337	.085	.327	3.98***	
SCS Self-Kindness	.037	.112	.036	.331	
SCS Self-Judgment	-.193	.125	-.185	-1.54	
SCS Common Humanity	.078	.115	.074	.678	
SCS Isolation	.425	.119	.413	3.58***	
SCS Mindfulness	.023	.116	.022	.194	
SCS Over-identification	-.152	.129	-.145	-1.17	
FSFI					
Step 1					.000
Age	.018	.104	.019	.177	
Step 2					.085
Age	.139	.109	.142	1.27	
Physical Condition	.294	.104	.316	2.83**	
Step 3					.096
Age	.069	.112	.071	.618	
Physical Condition	.203	.108	.218	1.88	
SCS Self-Kindness	-.088	.176	-.085	-.497	
SCS Self-Judgment	.113	.188	.118	.602	
SCS Common Humanity	.151	.158	.147	.956	
SCS Isolation	.084	.161	.087	.520	
SCS Mindfulness	-.095	.168	-.090	-.566	
SCS Over-identification	.163	.165	.163	.991	

\**p* <.05. \*\* *p* <.01. \*\*\* *p* <.001.  
Male n's range from 140 to 188 due to occasional missing data. Female n's range from 90 to 189 due to occasional missing data.  
All variables were computed into z-scores. IIEF = Total score of International Index of Erectile Functioning. FSFI = Female Sexual Functioning Index. SCS Self-Kindness = Self-Kindness dimension of the Self-Compassion. SCS Self-Judgement = Self-Judgement dimension of the Self-Compassion. SCS Common Humanity = Common Humanity dimension of the Self-Compassion. SCS Isolation = Isolation dimension of the Self-Compassion. SCS Mindfulness = Mindfulness dimension of the Self-Compassion. SCS Over-identification = Over-identification dimension of the Self-Compassion. Physical condition = having or not physical disability



**Figure 1.** Simple Slopes for the moderation effect of physical condition on the relationship between male sexual functioning and the Self-Kindness dimension of Self-compassion (n = 188). Variables' scores are unstandardised.

explained an additional 11.1% of the variance ( $\Delta R^2 = .111$ ;  $R^2 = .125$ ;  $F_{1,162} = 20.470$ ,  $p < .001$ ). With the inclusion of the total score of acceptance at Step 3, the amount of added explained variance was 3.1% ( $\Delta R^2 = .031$ ;  $R^2 = .156$ ;  $F_{1,161} = 5.979$ ,  $p = .016$ ). This result indicates that lower psychological inflexibility or experiential avoidance was associated with better sexual satisfaction, above and beyond having a physical disability and after controlling for age ( $\beta = -.179$ ,  $\Delta F < .016$ ) (see Table 5). However, no moderating effect of physical condition was found on the relationship between acceptance and male sexual functioning.

Finally, regarding female sexual functioning, age was included in the first step of the model and did not explain a significant amount of the variance ( $R^2 = .001$ ;  $F_{1,105} = .130$ ,  $p = .720$ ;  $\Delta R^2 = .001$ ). With the insertion of physical condition at Step 2, the model explained an additional 9.7% of the variance ( $\Delta R^2 = .097$ ;  $R^2 = .099$ ;  $F_{1,104} = 11.250$ ,  $p = .001$ ). With the inclusion of the total score of acceptance at Step 3 the model did not explain a significant amount of the variance ( $\Delta R^2 = .021$ ;  $R^2 = .120$ ;  $F_{1,103} = 2.451$ ,  $p = .121$ ) (see Table 5). Moreover, no moderating effect of physical condition was found.

Discussion

This study explored the additional contribution of Third Wave Cognitive-Behavioural variables in explaining the sexual functioning of men and women with and without physical disability. The effects of age were assessed and introduced as a control variable of the hierarchical multiple regressions, albeit not significantly predicting sexual functioning in the final models. Overall, findings showed that mindfulness was not significantly associated with the variability of sexual functioning of men or women. However, self-compassion and acceptance were significant predictors of sexual functioning in men, regardless of the effects of the physical condition. Moreover, findings showed moderating effects of the physical condition for the relationship between male sexual functioning and self-compassion.

Contrary to our expectations, mindfulness was not a significant predictor of the variability of sexual functioning. As reported in the introduction, there is previous evidence of the benefits of

Table 5. Hierarchical linear regression analyses of acceptance as predictor of male sexual functioning (n = 188) and female sexual functioning (n = 189).

Variable	B	SE B	$\beta$	t	$\Delta R^2$
IIEF					
Step 1					.014
Age	-.120	.078	-.120	-1.54	
Step 2					.111
Age	-.016	.077	-.016	-.207	
Physical condition	.351	.078	.348	4.52***	
Step 3					.031
Age	-.033	.076	-.033	-.434	
Physical condition	.329	.077	.326	4.27***	
AAQ-II	-.180	.073	-.179	-2.44*	
FSFI					
Step 1					.001
Age	.034	.094	.035	.360	
Step 2					.097
Age	.164	.098	.171	1.68	
Physical Condition	.325	.097	.340	3.35**	
Step 3					.021
Age	.137	.099	.143	1.39	
Physical Condition	.272	.102	.285	2.66**	
AAQ-II	-.156	.100	-.154	-1.56	

\* $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . Male n's range from 165 to 188 due to occasional missing data. Female n's range from 107 to 189 due to occasional missing data. All variables were computed into z-scores. GMSEX = Total Score Global Measure of Sexual Satisfaction. GMREL = Total score of Global Measure of Relationship Satisfaction. AAQ-II = Total Score of Acceptance and Action Questionnaire (version 2). Physical condition = having or not physical disability

mindfulness techniques for the sexual well-being in women with multiple sclerosis and spinal cord injury (Hocaloski et al., 2016). Such research highlights the role of cognitive distraction, as literature points out that the lack of attention during sexual activity is related to decreased sexual satisfaction and orgasm difficulties (Dove & Wiederman, 2000). Mindfulness may help in preventing cognitive distraction by over-identifying with negative thoughts and feelings, promoting greater awareness of the experience of the present moment as it is (Hocaloski et al., 2016). Nonetheless, in this study, findings did not support these hypotheses, indicating that, despite the physical condition, the overall capacity to be fully present may not be directly involved in the functional aspect of sexual health.

Furthermore, the findings indicated that, regardless of the physical condition, self-compassion was associated with the variance of sexual functioning, but only in men. This partially corroborates the previous hypotheses and suggests that the capacity to be aware of one's unique experience with a kind and warm attitude, particularly in the context of sexuality, was associated with a perception of better sexual functioning for men who may or may not experience physical disabilities. Evidence is scarce, but this result is consistent with the existing literature and emphasises the potential role of self-compassion as an aspect of resilience, which could be enhanced by disability and/or sexual difficulties (Dahm et al., 2015; Hayter & Dorstyn, 2014; Stuntzner & Hartley, 2015). In particular, the isolation dimension was a significant predictor of male sexual functioning. The results suggest that the more a man feels separated or isolated from the rest (which can arise from the experience of disableism and/or sexual distress), the more likely he may experience sexual dysfunction. Taking into account a cognitive-affective approach of sexuality, this alludes to the impact of sexual dysfunctional beliefs in sexual response. In fact, research in this topic has shown that, for men, 'macho' beliefs were related to decreased sexual functioning (Nobre & Pinto-Gouveia, 2006). These ideas (e.g., '*A real man is always ready for sex and should be able to please the partner*' or '*A man who is not able to penetrate can't satisfy the partner*') promote unrealistic and inflexible beliefs about sexual performance and may perpetuate feelings of inadequacy (Nobre & Pinto-Gouveia, 2006). On the contrary, cultivating a notion that one's experience is part of the larger human diversity may lead to changing the subjective experience of sexual (in)adequacy or (un)adjustment, which could result in reporting better sexual functioning.

The results of the moderation analysis further contribute to the understanding of the relationship between self-compassion and sexual functioning, particularly for men. The only moderating effect that was found was an effect of the physical condition over the relationship between the self-kindness dimension and male sexual functioning. As demonstrated, for men with physical disabilities, higher levels of self-kindness were correlated with better sexual functioning, while for men without disabilities the increase in self-kindness would decrease sexual functioning. This finding may appear controversial since worse sexual functioning seems to be associated with a kind and loving attitude. It is hard to find a robust explanation for these results, although some insights may arise from the nature of the concept of self-compassion (Neff, 2003a). Self-compassion focuses on the experience of suffering and attached feelings of inadequacy and failure, with a loving and warm attitude. This capacity is likely to be developed over time as a person confronts with challenging experiences, such as disableism. In this context, self-compassion may become an adaptive strategy for sexual response and well-being for men with physical disabilities, facilitating awareness of the current circumstances (Dahm et al., 2015; Hayter & Dorstyn, 2014; Stuntzner & Hartley, 2015). But this might not be the case of non-disabled men, in the face of a negative sexual event. As suggested by the literature on the cognitive and affective factors of sexual dysfunction, it is common to experience negative thoughts and emotions that perpetuate sexual difficulties. By activating feelings of inadequacy, it is more likely that these men are kept in a vicious cycle that prevents them from enduring the current sexual situation (Nobre & Pinto-Gouveia, 2006).

Lastly, findings showed that higher levels of acceptance were significantly correlated with better sexual functioning of men with and without physical disabilities. This partially confirmed the established hypothesis and is congruent with the literature demonstrating the importance of acceptance in the management of health conditions (Hayes et al., 1999; McCracken & Vowles,



2014). Although no significant results were found for women, these findings suggest that higher psychological flexibility is involved with the individuals' sexual adjustment in the face of negative events, regardless of the physical condition. In fact, psychological flexibility is interconnected with mindfulness and the experience of the present moment with active awareness (McCracken & Vowles, 2014). Psychological flexibility may help with reducing experiential avoidance, promoting coping mechanisms that disentangle cognitive fusion with thoughts and feelings of sexual inadequacy (Dove & Wiederman, 2000; Hocaloski et al., 2016). Thus, this result further reinforces the subjective dimensions involved in sexual response and sheds light into psychological factors of sexual adjustment.

There are some limitations that must be taken into account in the interpretation of these findings. This study used a convenience sample, which may have compromised the representativeness of the data. We may also acknowledge the small number of participants, which may hamper the generalisation of these findings. The self-reported nature of the survey may have also added some bias to our results, which compromises the assessment of the physical condition. Nevertheless, the regression results indicate that, in the second steps, better physical condition (i.e. having no disability) was associated with better sexual functioning, which is consistent with the literature and reassures the trust in the data. Likewise, in the first steps of the regression models, higher age was associated with worse sexual functioning, which is also consistent with the sociodemographic characteristics of the sample. Moreover, being a cross-sectional study also limited the establishment of causal relationships between the variables. Finally, some effect sizes were very low (e.g.,  $R^2 = .094$  and  $.216$ ). This may indicate the influence of possible mediators that were not evaluated in this study (e.g., life satisfaction).

For future research, replication of this study in a larger sample is much needed, also to allow the analysis of more complex structural equation models. Future studies should address these limitations and include other variables that may be confounding the results (e.g., sexual beliefs, sexual inhibition). A longitudinal design could also be implemented in order to properly evaluate causal hypotheses.

## Conclusion

This study shed light into psychological mechanisms that may be equally or differently associated with sexuality and intimacy of people with and without physical disabilities. In fact, findings suggested that, while mindfulness as a trait may not be directly involved in sexual functioning, other related attitudes such as acceptance and self-compassion may facilitate sexual functioning of people with physical disability and/or facing sexual negative events. Findings also revealed gender differences, as results were only significant for the male subsample. Nonetheless, further research would be needed to assess the consistency of these gender differences. Overall, these factors seem to have a contribution to explain the functional aspects of sexual health. Therefore, this study may have clinical implications, suggesting the contribution of Third-Wave cognitive-behavioural strategies and techniques to improve sexual response, according to a holistic and flexible view of the human experience and sexual health.

## Acknowledgments

The authors would like to thank Centro de Reabilitação Profissional de Gaia (Professional Rehabilitation Centre of Gaia), for the help in the recruitment procedures. We would also like to thank to all the institutions and associations that shared our study and helped us reach more participants. Finally, a special thank you to all the volunteers and their willingness in participating in the survey.

## Disclosure statement

No potential conflict was reported by the authors.

## Funding

This work was funded by the Portuguese Scientific Foundation for Science and Technology [grant: SFRH/BD/112168/2015]. The funding source had no influence in the study design, collection, analysis, interpretation of the data and writing of the report, nor the decision to submit the article for publication.

## Notes on contributors

**Raquel Pereira**, MD, is a psychologist, sexologist and a research member at the Research Group in Human Sexuality (SexLab) at the University of Porto. She is currently finishing her PhD project in the field of sexuality and disability.

**Pedro M. Teixeira**, PhD, is a psychologist and researcher at the School of Medicine of the University of Minho. His work spans across various topics from the disability studies, community health, statistics and review methodologies.

**Pedro J. Nobre**, PhD, is a psychologist and professor at the Faculty of Psychology and Educational Sciences of the University of Porto. He is the Coordinator of the Research Group in Human Sexuality (SexLab) and the Director of the Doctoral Programme in Human Sexuality at the University of Porto. He is the current President of the World Association of Sexual Health (WAS). His work covers different kinds of methodologies in the field of sex research, from experimental to clinical research, with topics such as sexual dysfunctions and sexual health. His focus is on the cognitive and emotional dimensions of sexual response.

## ORCID

Raquel Pereira  <http://orcid.org/0000-0002-1268-0184>

Pedro M. Teixeira  <http://orcid.org/0000-0001-6322-4923>

Pedro J. Nobre  <http://orcid.org/0000-0003-2571-6972>

## References

- Ahumuza, S. E., Matovu, J. K. B., Ddamulira, J. B., & Muhanguzi, F. K. (2014). Challenges in accessing sexual and reproductive health services by people with physical disabilities in Kampala, Uganda. *Reproductive Health*, 11(1), 1–9. <https://doi.org/10.1186/1742-4755-11-59>
- Amidu, N., Owiredo, W. K. B. A., Woode, E., Addai-Mensah, O., Gyasi-Sarpong, K. C., & Alhassan, A. (2010). Prevalence of male sexual dysfunction among Ghanaian populace: Myth or reality? *International Journal of Impotence Research*, 22(6), 337–342. <https://doi.org/10.1038/ijir.2010.24>
- Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice*, 10(2), 125–143. <https://doi.org/10.1093/clipsy/bpg015>
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, 13(1), 27–45. <https://doi.org/10.1177/1073191105283504>
- Beckwith, A., & Yau, M. K. (2013). Sexual recovery: experiences of women with spinal injury reconstructing a positive sexual identity. *Sexuality and Disability*, 31(4), 313–324. <https://doi.org/10.1007/s11195-013-9315-7>
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., ... Zettle, R. D. (2011). Preliminary psychometric properties of the acceptance and action questionnaire-II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy*, 42(4), 676–688. <https://doi.org/10.1016/j.beth.2011.03.007>
- Brotto, L. A., Basson, R., Smith, K. B., Driscoll, M., & Sadownik, L. (2015). Mindfulness-based group therapy for women with provoked Vestibulodynia. *Mindfulness*, 6(3), 417–432. <https://doi.org/10.1007/s12671-013-0273-z>
- Castilho, P., & Pinto-Gouveia, J. (2011). Auto-Compaixão: Estudo da validação da versão portuguesa da Escala da Auto-Compaixão e da sua relação com as experiências adversas na infância, a comparação social e a psicopatologia. *Psychologica*, (54), 203–230. Retrieved from [http://98.130.112.242/index.php/psychologica/article/view/1106.10.14195/1647-8606\\_54\\_8](http://98.130.112.242/index.php/psychologica/article/view/1106.10.14195/1647-8606_54_8)
- Cole, S. S., & Cole, T. M. (1993). Sexuality, disability, and reproductive issues through the lifespan. *Sexuality and Disability*, 11(3), 189–205. <https://doi.org/10.1007/BF01102578>
- Cole, T. M. (1975). Sexuality and physical disabilities. *Archives of Sexual Behavior*, 4(4), 389–403. <https://doi.org/10.1007/BF01541723>
- Coyne, K., Mandalia, S., McCullough, S., Catalan, J., Noestlinger, C., Colebunders, R., & Asboe, D. (2010). The international index of erectile function: Development of an adapted tool for use in HIV-positive men who have sex with men. *The Journal of Sexual Medicine*, 7(2), 769–774. <https://doi.org/10.1111/j.1743-6109.2009.01579.x>

- Dahm, K. A., Meyer, E. C., Neff, K. D., Kimbrel, N. A., Gulliver, S. B., & Morissette, S. B. (2015). Mindfulness, self-compassion, posttraumatic stress disorder symptoms, and functional disability in U.S. Iraq and Afghanistan war veterans. *Journal of Traumatic Stress*, 28(5), 460–464. <https://doi.org/10.1002/jts.22045>
- Darija, K.-T., Tatjana, P., Goran, T., Nebojsa, S., Irena, D., Sarlota, M., & Jelena, D. (2015). Sexual dysfunction in multiple sclerosis: A 6-year follow-up study. *Journal of the Neurological Sciences*, 358(1–2), 317–323. <https://doi.org/10.1016/j.jns.2015.09.023>
- DiGiulio, G. (2003). Sexuality and people living with physical or developmental disabilities: A review of key issues. *The Canadian Journal of Human Sexuality*, 12(1), 53–68.
- Dove, L., & Wiederman, N. M. (2000). Cognitive distraction and women's sexual functioning. *Journal of Sex & Marital Therapy*, 26(1), 67–78. <https://doi.org/10.1080/009262300278650>
- Esmail, S., Darry, K., Walter, A., & Knupp, H. (2010). Attitudes and perceptions towards disability and sexuality. *Disability and Rehabilitation*, 32(14), 1148–1155. <https://doi.org/10.3109/09638280903419277>
- García, A. G., & Álvarez, C. D. (2014). Sexuality and functional diversity: An analysis from a gender perspective. *Procedia - Social and Behavioral Sciences*, 161, 299–305. <https://doi.org/10.1016/j.sbspro.2015.01.078>
- Garrett, A., Martins, F., & Teixeira, Z. (2009). Sexual activity after spinal cord injury—therapeutic help. *Acta Médica Portuguesa*, 22(6), 821–826. <https://doi.org/10.20350466>
- Gava, G., Visconti, M., Salvi, F., Bartolomei, I., Seracchioli, R., & Meriggiola, M. C. (2019). Prevalence and psychopathological determinants of sexual dysfunction and related distress in women with and without multiple sclerosis. *The Journal of Sexual Medicine*, 16(6), 1–10. <https://doi.org/10.1016/j.jsxm.2019.03.011>
- Gregório, S., & Pinto-Gouveia, J. (2011). Facetas de mindfulness: Características psicométricas de um instrumento de avaliação. *Psychologica*, (54), 259–280. [https://doi.org/doi:10.14195/1647-8606\\_54\\_10](https://doi.org/doi:10.14195/1647-8606_54_10)
- Hayes, S. C., Strosahl, K., & Wilson, K. G. (1999). *Acceptance and Commitment Therapy: An experiential approach to behavior change*. Guilford Press. Retrieved from [https://contextualscience.org/publications/hayes\\_strosahl\\_wilson\\_1999](https://contextualscience.org/publications/hayes_strosahl_wilson_1999)
- Hayter, M. R., & Dorstyn, D. S. (2014). Resilience, self-esteem and self-compassion in adults with spina bífida. *Spinal Cord*, 52(2), 167–171. <https://doi.org/10.1038/sc.2013.152>
- Hocaloski, S., Elliott, S., Brotto, L. A., Breckon, E., & McBride, K. (2016). A mindfulness psychoeducational group intervention targeting sexual adjustment for women with multiple sclerosis and spinal cord injury: A pilot study. *Sexuality and Disability*, 34(2), 183–198. <https://doi.org/10.1007/s11195-016-9426-z>
- Javier, S. J., Perrin, P. B., Snipes, D. J., Olivera, S. L., Perdomo, J. L., Arango, J. A., & Arango-Lasprilla, J. C. (2013). The influence of health related quality of life on sexual desire in individuals with spinal cord injury from Colombia, South America. *Sexuality and Disability*, 31(4), 325–335. <https://doi.org/10.1007/s11195-013-9320-x>
- Kabat-Zinn, J., & Burney, R. (1981). The clinical use of awareness meditation in the self-regulation of chronic pain. *Pain*, 11, S273. [https://doi.org/10.1016/0304-3959\(81\)90541-8](https://doi.org/10.1016/0304-3959(81)90541-8)
- Kocsis, A., & Newbury-Helps, J. (2016). Mindfulness in sex therapy and intimate relationships (MSIR): Clinical protocol and theory development. *Mindfulness*, 7(3), 690–699. <https://doi.org/10.1007/s12671-016-0506-z>
- Lew-Starowicz, M., & Rola, R. (2013). Prevalence of sexual dysfunctions among women with multiple sclerosis. *Sexuality and Disability*, 31(2), 141–153. <https://doi.org/10.1007/s11195-013-9293-9>
- Linsensmeyer, T. A. (2009). Treatment of erectile dysfunction following spinal cord injury. *Current Urology Reports*, 10(6), 478–484. <https://doi.org/10.1007/s11934-009-0076-x>
- Lottes, I. L. (2013). Sexual rights: Meanings, controversies, and sexual health promotion. *Journal of Sex Research*, 50(3–4), 367–391. <https://doi.org/10.1080/00224499.2013.764380>
- Lucena-Santos, P., Pinto-Gouveia, J., & Silva Oliveira, M. (2015). *Terapias Comportamentais de 3ª Geração: Guia para profissionais*. Synopsis Editora. Retrieved from [https://www.sinopsyseditora.com.br/upload/produtos\\_pdf/370.pdf](https://www.sinopsyseditora.com.br/upload/produtos_pdf/370.pdf)
- McCracken, L. M., & Vowles, K. E. (2014). Acceptance and commitment therapy and mindfulness for chronic pain: Model, process, and progress. *American Psychologist*, 69(2), 178–187. <https://doi.org/10.1037/a0035623>
- Mosalanejad, F., Afrasiabifar, A., & Zoladl, M. (2018). Investigating the combined effect of pelvic floor muscle exercise and mindfulness on sexual function in women with multiple sclerosis: A randomized controlled trial. *Clinical Rehabilitation*, 32(10), 1340–1347. <https://doi.org/10.1177/0269215518777877>
- Neff, K. (2003a). Self-compassion : An alternative conceptualization of a healthyattitudetoward oneself. *Self and Identity*, 2(August2002), 85–101. <https://doi.org/10.1080/15298860390129863>
- Neff, K. D. (2003b). The development and validation of a scale to measure self-compassion. *Self and Identity*, 2(3), 223–250. <https://doi.org/10.1080/15298860390209035>
- Neff, K. D., & Dahm, K. A. (2015). Self-compassion: What it is, what it does, and how it relates to mindfulness. In B. O. M. Robinson & B. Meier (Eds.), *Handbook of mindfulness and self-regulation* (pp. 121–140). Springer. [https://doi.org/10.1007/978-1-4939-2263-5\\_10](https://doi.org/10.1007/978-1-4939-2263-5_10)
- Neff, K. D., & Germer, C. K. (2013). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of Clinical Psychology*, 69(1), 28–44. <https://doi.org/10.1002/jclp.21923>
- Nezhad, M. S., & Shameli, L. (2017). The effect of acceptance and commitment therapy on sexual satisfaction of couples in Shiraz. *International Journal of Medical Research & Health Sciences*, 6 (1), 58–65. Retrieved from [www.ijmrhs.com](http://www.ijmrhs.com)
- Nobre, P., & Pinto-Gouveia, J. (2006). Dysfunctional sexual beliefs as vulnerability factors for sexual dysfunction. *Journal of Sex Research*, 43(1), 68–75. <https://doi.org/10.1080/00224490609552300>

- Othman, A. S., & Engkasan, J. P. (2011). Sexual dysfunction following spinal cord injury: The experiences of Malaysian women. *Sexuality and Disability*, 29(4), 329–337. <https://doi.org/10.1007/s11195-011-9207-7>
- Owiredo, W. K. B. A., Owusu, A. O., Amidu, N., Quaye, L., Gyasi-Sarpong, C. K., Dapare, P. P. M., & Alidu, H. (2015). Sexual dysfunction and sexual quality of life among the physically challenged in the Kumasi metropolis, Ghana. *Health and Quality of Life Outcomes*, 13(1), 3. <https://doi.org/10.1186/s12955-015-0206-8>
- Pechorro, P., & Almeida, S. (2009). Validação de uma versão feminina do Índice de Satisfação Sexual (ISS). *Laboratório de Psicologia*, 7(1), 45–56.
- Peixoto, M. M. (2014). *Sexual dysfunctions in gay men and lesbian women: Evidence for a cognitive-affective approach*. (Unpublished Doctoral Thesis) Faculdade de Psicologia e Ciências da Educação da Universidade do Porto, Porto.
- Peixoto, M. M., & Nobre, P. (2015a). Prevalence of sexual problems and associated distress among gay and heterosexual men. *Sexual and Relationship Therapy*, 30(2), 211–225. <https://doi.org/10.1080/14681994.2014.986084>
- Peixoto, M. M., & Nobre, P. (2015b). Prevalence of sexual problems and associated distress among lesbian and heterosexual women. *Journal of Sex & Marital Therapy*, 41(4), 427–439. <https://doi.org/10.1080/0092623X.2014.918066>
- Pinto-Gouveia, J., Gregório, S., Dinis, A., & Xavier, A. (2012). Experiential avoidance in clinical and non-clinical samples: AAQ-II Portuguese version. *International Journal of Psychology and Psychological Therapy*, 12(2), 139–156.
- Quinta Gomes, A. L., & Nobre, P. (2012). The international index of erectile function (IIEF-15): psychometric properties of the portuguese version. *Journal of Sexual Medicine*, 9(1), 180–187. <https://doi.org/10.1111/j.1743-6109.2011.02467.x>
- Reeve, D. (2004). Psycho-emotional dimensions of disability and the social model. In C. Barnes & G. M. Eds., *Implementing the social model of disability: Theory and research* (pp. 83–100). The Disability Press. Retrieved from <http://pf7d7vi404s1dxh27mla5569.wpengine.netdna-cdn.com/files/library/Barnes-implementing-the-social-model-chapter-6.pdf>
- Rohleder, P., Braathen, S. H., Hunt, X., Carew, M. T., & Swartz, L. (2018). Sexuality erased, questioned, and explored: The experiences of South Africans with physical disabilities. *Psychology & Sexuality*, 9(4), 369–379. <https://doi.org/10.1080/19419899.2018.1500935>
- Rosen, R. C., Riley, A., Wagner, G., Osterloh, I. H., Kirkpatrick, J., & Mishra, A. (1997). The international index of erectile function (IIEF): A multidimensional scale for assessment of erectile dysfunction. *Urology*, 49(6), 822–830. [https://doi.org/10.1016/S0090-4295\(97\)00238-0](https://doi.org/10.1016/S0090-4295(97)00238-0)
- Rowen, T. S., Stein, S., & Tepper, M. (2015). Sexual Health Care for People with Physical Disabilities. *Journal of Sexual Medicine*, 12(3), 584–589. <https://doi.org/10.1111/jsm.12810>
- Senders, A., Wahbeh, H., Spain, R., & Shinto, L. (2012). Mind-body medicine for multiple sclerosis: A systematic review. *Autoimmune Diseases*, 1(1), 1–12. <https://doi.org/10.1155/2012/567324>
- Stuntzner, S. (2014). Self-compassion and sexuality : A new model for women with disabilities. *Ideas and Research You Can Use: VISTAS 2014*, 67 (August).
- Stuntzner, S., & Hartley, M. T. (2015). Balancing self-compassion with self-advocacy: A new approach for persons with disabilities. *Annals of Psychotherapy & Integrative Health*, 12–28. Retrieved from [http://self-compassion.org/wp-content/uploads/2015/08/Stuntzner\\_Hartley.pdf](http://self-compassion.org/wp-content/uploads/2015/08/Stuntzner_Hartley.pdf)
- Verschuren, J. E., Geertzen, J. H., Enzlin, P., Dijkstra, P. U., & Dekker, R. (2015). People with lower limb amputation and their sexual functioning and sexual well-being. *Disability and Rehabilitation*, 37(3), 187–193. <https://doi.org/10.3109/09638288.2014.913704>
- Verschuren, J. E. A., Geertzen, J. H., Enzlin, P., Dijkstra, P. U., & Dekker, R. (2016). Sexual functioning and sexual well-being in people with a limb amputation: A cross-sectional study in the Netherlands. *Disability and Rehabilitation*, 38(4), 368–373. <https://doi.org/10.3109/09638288.2015.1044029>
- Wiegel, M., Meston, C., & Rosen, R. (2005). The Female Sexual Function Index (FSFI): Cross-validation and development of clinical cutoff scores. *Journal of Sex & Marital Therapy*, 31(1), 1–20. <https://doi.org/10.1080/00926230590475206>
- World Health Organization. (2001a). *Disability assessment schedule 2.0 (WHODAS 2.0)*. WHO. Retrieved from <http://www.who.int/classifications/icf/whodasii/en/>
- World Health Organization. (2001b). *International classification of functioning, disability and health*. Retrieved from [http://psychiatr.ru/download/1313?view=name=CF\\_18.pdf](http://psychiatr.ru/download/1313?view=name=CF_18.pdf)
- World Health Organization. (2011). *What do we know about disability?* Retrieved from: [https://doi.org/http://www.who.int/disabilities/world\\_report/2011/report/en/](https://doi.org/http://www.who.int/disabilities/world_report/2011/report/en/)