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Sleeping and Waking-State Measurement of Erectile Function in an Aging Male Population

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Sleeping and waking-state erectile ability and sexual adjustment in 58 men aged 50 to 79 years was evaluated using the "Snap Gauge" measure of nocturnal penile tumescence (NPT). The data indicated that 50% of the sample failed to demonstrate nocturnal erections of sufficient rigidity to activate the Snap-Gauge. Nevertheless, these men did not differ from those who did activate the device on 11 out of 13 self-report measures of daytime sexual functioning. The two exceptions to the negative findings were significant differences in frequency of morning erections and sexual desire. The findings cast further doubt on the neurophysiological equivalence of sleep and waking-state erections and on the clinical utility of NPT monitoring for differentiating psychogenic from organically based erectile dysfunction in aging men.

In psychological assessment, different measurement methods frequently yield inconsistent results. This is often evident in research on male erectile function, where both self-report and physiological measurements are used and where results from nocturnal penile tumescence (NPT) monitoring can differ from results obtained using measures of waking-state erectile performance (Barry, Blank, & Boileau, 1980; Karacan, 1970; Libman & Fichten, 1987; Marshall, Morales, Phillips, & Fenemore, 1983).

Periodic nocturnal tumescence is a naturally occurring phenomenon associated with the REM stage of the sleep cycle in males of all ages. This fact has led researchers to investigate the usefulness of NPT monitoring as a clinical tool in the evaluation of erectile dysfunction (Karacan, 1970). The procedure is based on the assumption that if erectile impairment is psychogenic, the emotional, interpersonal, and attitudinal factors that impair sexual responding during the waking state should generally be inoperative during sleep, thereby allowing the normal pattern of nocturnal tumescence to occur. In males with an organic basis for erectile dysfunction, a diminished or absent sleep erection response would be expected.

There is some evidence that the duration, frequency, and pattern of the NPT response can differentiate sexually functional from dysfunctional males as well as an organic from a psychogenic etiology for the erectile disorder (e.g., Marshall, Surridge, & Delva, 1981). However, some estimate that up to 20% of patients may be misclassified (Schmidt & Wise, 1981; Wasserman, Pollack, Spielman, & Weitzman, 1980a).

Recently, the assumption that nocturnal and waking erections are neurophysiologically equivalent has come into question (e.g., Bancroft & Wu, 1983; Schiavi, 1988). Extreme differences in erectile capacity during waking and sleep states in some organically impaired patients (Nath et al., 1981; Sakheim, 1985) and different topographical features in REM-related tumescence and in daytime erectile responses (Allen, 1981) have been found. Improvement in waking erectile capacity with no concomittant NPT changes following treatment with an adrenergic blocking agent (Condra, Morales, Surridge, Owen, Marshall, & Fenemore, 1986) and differential effects of androgen on NPT activity and erections evoked by visual stimuli (Bancroft & Wu, 1983) have also been demonstrated. These findings suggest that the processes mediating erotically induced and REM-related erections are not the same.

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It is common knowledge that both quality of sleep and NPT may be disrupted by the testing procedure and that inhibition of penile tumescence has been noted in normal men during REM periods associated with dreams of high anxiety content (Fisher, 1966; Karacan, Goodenough, Shapiro, & Starker, 1966). Various psychiatric states, such as depression, are related to diminished NPT responses, which are reversed when the affective problem is resolved (e.g., Fisher et al., 1979; Roose, Glassman, Walsh, & Cullen, 1982; Thase et al., 1987; Wasserman et al., 1980b). These data suggest that NPT cannot be assumed to bypass psychological impediments to sexual responding.

Penile tumescence monitoring in the waking state is a more recent procedure. Data indicate that men with psychogenic erectile dysfunction achieved a significant degree of tumescence when assessed with a procedure that included viewing an erotic film and self-stimulation (Sakheim, Barlow, & Beck, 1985). Sexually functional, organically impaired, and psychogenically impaired men could be classified correctly with 80% accuracy using this technique (Sakheim, 1985). Because it is known that physiological and psychological factors may affect both sleep and waking-state erections, it appears that waking-state tumescence assessment constitutes a more direct and appropriate measure of actual sexual performance. This conclusion is corroborated by the findings of a recent study by Wincze and his associates, who examined erectile response in relatively homogeneous diagnostic groups of dysfunctional men and in nondysfunctional controls during both sleep and daytime assessment (Wincze et al., 1988). These investigators demonstrated that NPT results are not representative of the maximum erectile response possible and that exposure to erotic stimuli may override organic deficits in some cases.

Older men show significant age-related declines in frequency, duration, and degree of sleep-related erectile episodes (Kahn & Fisher, 1969; Karacan, Hursch, & Williams, 1972). Decrease in peak tumescence and a considerably decreased rate of erectile response to erotic films in aging men have also been documented (Solnick & Birren, 1977). Moreover, a marked increase in response threshold to vibrotactile stimulation administered to the penis in aging (as well as in diabetic) men relative to normal young men has been shown (Rowland, Greenleaf, Mas, & Davidson, 1987), and penile vibratory thresholds were found to be related to sexual activity and erectile capacity. A range of evaluation techniques has indicated increased impairment of erectile function with increasing age (e.g., Libman & Fichten, 1987), although the etiology of the decline in sexual function in aging men remains somewhat mysterious.

Despite interpretational difficulties, NPT monitoring, which requires technical expertise and several nights in costly sleep-laboratory facilities, remains the most frequently used diagnostic test of erectile disorder. A technique for assessment of erections that circumvents many of the problems associated with the popular mercury strain gauge has recently been developed by Dacomed. Marketed as the Snap-Gauge, it is a simple, portable, and inexpensive behavioral measure of erectile functioning.

Although there are some Snap-Gauge data for younger men, neither norms nor concordance with self-report measures of sexual functioning are available for older individuals. Therefore, in the present investigation we evaluated the relation between sleep Snap-Gauge results and self-reports of waking-state erectile ability and sexual adjustment in aging men.

Method

Subjects

Subjects were 58 aging married men (mean age = 64 years, *SD* = 9, range = 50–79) and 19 of their wives. All participants were Caucasian, and there were approximately equal numbers of Christian and Jewish subjects. Because this study forms part of a larger investigation of the psychosexual consequences of transurethral prostatectomy (Libman, Fichten, & Brender, 1987), all male subjects were suffering from benign hypertrophy of the prostate and had been recommended for transurethral prostatectomy by a urologist. Couples had been married for an average of 32 years (*SD* = 12), and the quality of marital relationships was generally satisfactory (mean Locke-Wallace Marital Adjustment Scale score = 110, *SD* = 18). Participants were generally in good physical and psychological health (except for the prostatic symptoms). Subjects had an average of 13 years of education (*SD* = 4) and an average family income of $50,415 (*SD* = $31,485); this information, combined with data on occupation, suggests that the socioeconomic status of the sample was generally middle class.

Measures

In addition to the Snap-Gauge erectile assessment device (and the evaluation of sleep quality) the measures included self-report instruments in a range of areas. Socioeconomic, physical, and psychological status were assessed to provide descriptive data for the sample. Erectile capacity was operationalized as reported erectile performance in a variety of individual and interpersonal sexual situations. Sexual expression was more broadly examined in terms of individual and couple sexual satisfaction and adjustment. These diverse aspects were examined to provide convergent and concurrent validity data for the Snap-Gauge NPT measure. The specific areas investigated and their associated measures were as follows:

1. *Socioeconomic status and personal and demographic variables.* A background information form designed for this study asked for personal and demographic information such as age, years of education, years married, whether retired or working, family income, religion, and whether previous professional help had been sought for emotional, sexual, or marital problems.

2. *Physical status.* A physical symptoms checklist was compiled for this study to evaluate general physical health. Information asked for included the number of past and present illnesses, symptoms, and medications used.

3. *Psychological variables.* These were measured with the Brief Symptom Inventory (BSI; Derogatis, Rickels, & Rock, 1976), a self-report psychological symptom inventory designed for psychiatric and medical patients. Subjects indicate on a 5-point scale the extent to which they are distressed by each of 53 psychological and psychosomatic symptoms. It is a brief version of the Symptom Check List–90 (SCL–90), which is a frequently used instrument with good psychometric properties (Derogatis, 1977).

4. *Marital functioning.* The Kimmel and Van der Veen (1974) version of the Locke-Wallace Marital Adjustment Scale (MAS) was used to evaluate marital satisfaction. The MAS is a highly reliable and well validated measure of marital adjustment (Schiavi, Derogatis, Kuriansky, O'Connor, & Sharpe, 1979). The Kimmel and Van der Veen version contains 23 of the most significant items with scores weighted to reflect current sex differences in patterns of responding.

5. *Sexual functioning.* The following six measures of sexual functioning were used:

Sexual History Form (SHF). The SHF is a self-report sexual history measure that utilizes a fixed alternative format and has been used in sex therapy evaluation research by LoPiccolo and his colleagues. Typically scored on an item-by-item basis, this measure has 28 variables. Some normative data are available (LoPiccolo, Heiman, Hogan, & Roberts, 1985; Nowinski & LoPiccolo, 1979).

Global Sexual Functioning Score. To obtain a global evaluation of male sexual functioning, scores on 12 SHF items (1, 2, 5, 12, 13, 14, 16, 17, 22, 23, 26, 27) that measure male sexual desire, sexual frequency, and ability were proportioned, summed, and divided by 12 to provide a Global Sexual Functioning score. Data indicate that the Global Sexual Functioning score provides a good estimate of overall sexual functioning (Creti, Fichten, Libman, Takefman, & Brender, 1987). The maximum score is 1; thus lower scores indicate better sexual functioning.

Goals for Sex Therapy Scale (GSTS). This 15-item measure (Lobitz & Baker, 1979) uses a 7-point rating scale to evaluate satisfaction with a man's ability to engage in various sexual activities. It yields one score that reflects a man's satisfaction with his sex life. The instrument has been shown to be sensitive to pre–post sex therapy changes (Cohen, Reynolds, Price, Schochet, & Anderson, 1980).

Sexual Self-Efficacy Scale—Erectile Functioning (SSES-E). The SSES-E measures a man's belief that he could perform a variety of sexual behaviors. The scale lists 25 desirable male sexual performance tasks; subjects designate those they judge they could perform. For each designated item, subjects indicate their level of confidence on a 10-point scale ranging from 10 (*quite uncertain*) to 100 (*certain*). The tasks include all 15 items from the Goals for Sex Therapy Scale as well as additional items relevant to erectile functioning. Strength of self-efficacy beliefs is provided by the mean confidence ratings for all 25 tasks. The scale has demonstrated good reliability and validity (Fichten, Rothenberg, & Libman, 1988; Libman, Rothenberg, Fichten, & Amsel, 1985).

Sexual Interaction Inventory (SII). This instrument, compiled by LoPiccolo and Steger (1974), is the most frequently used measure of sexual satisfaction. It consists of a list of 17 heterosexual couple behaviors. For each behavior, subjects answer six questions using a 6-point scale. The scores of each partner are used to derive a profile on five subscales for each partner as well as a couple summary score (Scale 6). In the present investigation only Scale 6 (Total Disagreement) was used; it provides an overall summary score for the couple and measures total disharmony and dissatisfaction in the sexual relationship. The lower the score, the greater the sexual harmony. The test is reliable on test–retest and has good internal consistency; also, all scales have been shown to be correlated with self-report of sexual satisfaction. The measure has been demonstrated to be reactive to treatment and able to discriminate sexually dysfunctional clients from nonclients (LoPiccolo & Steger, 1974).

Dacomed Snap-Gauge Impotence Testing Device (Snap-Gauge). The Snap-Gauge consists of a small velcro band that incorporates three preset plastic snaps with different release-force constants. Penile tumescence and rigidity are determined by whether the subject breaks none, one, two, or all three of the snaps (Ek, Bradley, & Krane, 1983). It measures not only change in penile circumference but also, indirectly, the rigidity of erections. Data indicate that Snap-Gauge results correlate highly with technician-assessed quality of nocturnal tumescence (Ellis, Doghramji, & Bagley, 1988). Satisfactory reliability and validity have been reported for the Snap-Gauge for nonelderly samples (Anders, Bradley, & Krane, 1983; Carter, 1983).

6. *Sleep quality.* A 3-item sleep questionnaire was developed for the present study. It asked subjects to rate (a) how satisfactorily they had slept (*well* or *poorly*), (b) approximately how many hours they had slept, and (c) approximately how many hours they normally sleep.

Procedure

Subjects were recruited through urologists practicing at six Montreal hospitals. A test battery that included the self-report measures listed above was administered to subjects in two sessions as soon as possible after the date for the prostatectomy was set. Subjects were instructed on the Snap-Gauge technique (and given a copy of the instructions to take home) after the first testing session. They were requested to use the device for one night, to complete the sleep questionnaire for the night it was used, and to return both at the second testing appointment.

We discovered during the pilot phase of our study that the terminology used in the Dacomed instructions was somewhat anxiety provoking for our aging male subjects. For example, the term "Snap-Gauge" often elicited an expression of alarm and the question, "Snap what?". The phrase "impotence testing" was used frequently in the Dacomed instructions, and the probability of a physical cause for erectile problems was made fairly salient. Therefore, we modified the terminology somewhat. We called the device an "Expansion Tape" and explained that "sometimes males experience some degree of erection from time to time during the night while they are sleeping. . . . This tape gives us some indication of whether this is happening. . . . We are evaluating whether the tape is useful."

Results

Age and Snap-Gauge Changes

Twenty-nine of the 58 subjects (50%) broke no snaps. Of the remaining subjects, 11 (19%) broke one snap, 9 (16%) broke two snaps, and 9 (16%) broke all three. When subjects were divided into younger (age less than 65) and older (age equal to or greater than 65) groups (mean age of younger subjects = 58; older = 70), results indicated that younger subjects broke more snaps ($M = 1.45$) than did older subjects ($M = 0.41$), $t(56) = 3.89, p < .001$.

t-Test Comparisons

To assess differences between subjects who broke no snaps and those who broke at least one snap, a discriminant analysis on the two groups was carried out. This was done in order to screen for the t tests used to evaluate differences in diverse aspects of sexual adjustment (the SII global summary was excluded because including it would have meant a substantial drop in sample size because it requires a couple score). This showed a significant difference, $\chi^2(16, N = 51) = 27.60, p < .05$ (based on Wilks's lambda). The series of t tests (means are detailed in Table 1) shows that there were no significant differences on nonsexual variables and few significant findings on sexual variables. Before making a Bonferroni adjustment to the alpha levels, we found significant differences on only 3 of the 13 sexual variables: frequency of morning erections, $t(53) = 2.25$, $p < .05$; frequency of sexual arousal, $t(53) = 3.39, p < .001$; and variety in couple sexual repertoire, $t(52) = 2.47, p < .05$. In addition, we found marginally significant differences on sexual self-efficacy, $t(53) = 1.96, p < .10$, and on frequency of intercourse and couple sexual activity, $t(53) = 1.70, p < .10$. After a

Table 1
Snap-Gauge Results and Mean Scores on Other Variables

Variable	Number of snaps broken		
	0	≥1	≥2
Nonsexual variables			
Age			
M	65.31	62.55	61.06
SD	12.76	6.22	5.59
Psychological adjustment (BSI)[a]			
M	0.34	0.28	0.32
SD	0.34	0.26	0.31
Marital adjustment (MAS)			
M	113.73	106.96	113.81
SD	13.36	20.41	14.00
Health (no. of physical symptoms)[a]			
M	1.86	2.38	2.17
SD	2.60	2.85	3.38
Erectile ability			
Difficulty obtaining erections (SHF Item 16)[a]			
M	3.30	2.83	2.83
SD	1.66	1.75	1.82
Difficulty maintaining erection (SHF Item 17)[a]			
M	3.37	2.93	2.72
SD	1.88	1.87	1.93
Frequency of morning erections (SHF Item A30)[a]			
M	4.46	3.66	3.39
SD	1.17	1.45	1.46
Sexual Self-Efficacy: Erectile Functioning (SSES–E)			
M	43.54	55.73	57.54
SD	21.49	24.47	23.30
Satisfaction with sexual (erectile) abilities (GSTS)			
M	56.63	60.82	57.41
SD	16.14	20.31	22.32
Individual sexual adjustment			
Frequency of sexual arousal (SHF Item 26)[a]			
M	5.46	3.86	4.00
SD	1.77	1.73	1.28
Frequency of retrograde ejaculation (SHF Item A29)[a]			
M	1.27	1.52	1.50
SD	0.53	1.12	1.20
Global sexual functioning (SHF)[a]			
M	0.53	0.48	0.48
SD	0.12	0.12	0.12
Couple sexual adjustment			
Frequency of intercourse and couple sexual activity (SHF Item 1)[a]			
M	6.93	6.00	6.06
SD	2.11	1.93	1.92
Desired frequency of intercourse and couple sexual activity (SHF Item 2)[a]			
M	5.26	4.59	4.50
SD	1.68	1.72	1.15
Satisfaction with couple sexual relationship (SHF Item 9)			
M	4.37	4.32	4.35
SD	1.78	1.79	2.03
Couple sexual harmony (SII, Scale 6)[a]			
M	81.88	75.91	76.38
SD	29.75	38.17	44.42
Variety in couple's sexual repertoire (SII)[a]			
M	45.78	56.19	54.81
SD	16.64	14.25	13.26

Note. BSI = Brief Symptom Inventory; MAS = Locke-Wallace Marital Adjustment Scale; SHF = Sexual History Form; SSES–E = Sexual Self-Efficacy Scale–Erectile Functioning; GSTS = Goals for Sex Therapy Scale; SII = Sexual Interaction Inventory.
[a] Lower scores indicate better adjustment.

Bonferroni adjustment, the only significant difference that remained was on the frequency of sexual arousal.

Because such results may have been due to grouping subjects with marginal nocturnal erections (i.e., those who broke only one snap) with those who had better erections (i.e., those who broke two or three snaps), we performed another series of t tests to compare the scores of subjects who broke no snaps and those who broke at least two; the discriminant analysis here was marginally significant, $\chi^2(16, N = 40) = 24.08, p < .10$. As the means in Table 1 and the t-test results show, significant differences before the Bonferroni adjustment were found only on the following variables: frequency of morning erections, $t(42) = 2.70, p < .01$; frequency of sexual arousal, $t(42) = 2.99, p < .01$; and sexual self-efficacy, $t(42) = 2.04, p < .05$. The comparison on variety in couple sexual repertoire was marginally significant, $t(41) = 1.85, p < .10$. As in the previous series of t tests, after the Bonferroni adjustment, only the test on frequency of sexual arousal remained significant.

Chi-Square Comparisons

Because analyses detailed in Table 1 were carried out on mean scores, it was not possible to determine from the data what percentage of the subjects who did break snaps (and what percentage of those who did not break any snaps) were functioning well on the variables of interest. Therefore, a series of chi-square tests was performed to assess the association between breaking snaps and quality of sexual functioning and adjustment. Mean scores were used to split the sample into those who functioned better and worse than average on the variables of interest. Again, we made separate comparisons on subjects who broke at least one snap and on subjects who broke at least two.

Frequencies in Table 2 and the chi-square tests show consistent, significant ($p < .05$) findings only on the following variables: age, frequency of morning erections, and frequency of sexual arousal. After the Bonferroni adjustment to the alpha level, the chi-square test was significant only for age.

Sleep Quality and Quantity

Because sleep quality and quantity may have affected the number of snaps broken, a series of analyses on sleep parameters was carried out. On the night of Snap-Gauge testing, subjects slept an average of 6.7 hours ($SD = 1.6$); the usual number of hours of sleep was 7.1 ($SD = 0.9$). Only 3 of the 36 subjects who provided sleep data slept at least 1 hour less than normal on the Snap-Gauge night. Neither t-test nor chi-square-test results showed a significant relationship between quantity of sleep and number of snaps broken.

To ascertain whether quality of sleep influenced the results, we compared the Snap-Gauge scores of the 6 subjects who "slept poorly" ($M = 1.0$, $SD = 1.3$) with those of the 29 who "slept well" ($M = 1.0$, $SD = 1.2$); again, neither t tests nor chi-square tests revealed any significant differences.

Discussion

The results indicate that (a) only 50% of the sample broke *any* snaps during Snap-Gauge NPT assessment, (b) younger men broke more snaps than older men, (c) men who broke no snaps had consistently worse scores on the self-reported frequencies of sexual arousal and of morning erections than men who did break snaps. These two groups (d) did not differ on physical health or on psychological or marital adjustment. It is noteworthy that they did *not* differ consistently and significantly on most of the sexual variables investigated.

In the present study, NPT was measured by the Snap-Gauge technique administered on only 1 testing night. This represents a departure from the recommended procedure of testing on 2 or 3 nights. One cannot be sure that an optimal measure of sleep erection capacity has been obtained by sampling only 1 night. In addition, it is not possible to obtain detailed information about the number of erections or about their duration using the Snap-Gauge. Nevertheless, it is interesting that our results parallel the age-related impairment of sleep erections measured by polygraphic recording in sleep laboratories (i.e., older men in our sample demonstrated an impaired Snap-Gauge "score" relative to younger men). "Younger" aging men report a higher frequency of morning erections and greater sexual desire than do "older" aging men (Libman, 1989; Libman et al., in press); this provides additional validity for the Snap-Gauge as a measure of *sleep* erectile capacity. Furthermore, performance on the Snap-Gauge was related to reported sexual desire, indicating that Snap-Gauge NPT data are related to at least some aspect of subjective sexual experience in the waking state in our sample of aging men. In view of these results, the present negative findings (which suggest a general lack of concordance between Snap-Gauge NPT results and self-report measures of waking-state erectile ability, sexual performance, and adjustment) assume increased importance.

Data from the present investigation suggest that NPT, as measured by the Snap-Gauge, does not constitute a valid measure of *daytime* erectile ability in the present sample. For example, it is important to note that when waking-state sexual expression was examined more broadly, men who differed in their Snap-Gauge NPT performance showed no consistent differences in (a) global sexual functioning, (b) reported frequency of actual or desired couple sexual activity, (c) variety in couple sexual repertoire, or (d) subjective satisfaction with their own sexual capacities or with the couple sexual relationship. Perhaps most important, they did not differ significantly on (e) self-reported difficulty obtaining or maintaining erections during sexual activities.

The present findings cast further doubt on the assumption that sleep and waking-state erections are "equivalent" and suggest that the use of NPT to evaluate the multidimensional aspects of erectile ability and sexual adjustment in aging men may be questionable. As a measure of general capacity for sexual expression in the older men of our sample, Snap-Gauge NPT certainly did not provide a sufficiently accurate reflection of waking-state adjustment. As the findings of Wincze et al. (1988) demonstrated in a younger sample, it seems that determination of organic versus psychogenic etiology for erectile dysfunction, especially in older men, cannot be based on even a detailed examination of NPT parameters alone. The etiology of "normal" age-related changes in the pattern of sleep-related erections has not yet been identified, and the results of the present study indi-

Table 2
Snap-Gauge Performance and Number of Subjects Functioning Well or Poorly on Other Variables

Variable	Number of snaps broken		
	0	≥1	≥2
Nonsexual variables			
Age			
Younger	8	19	14
Older	21	10	4
Psychological adjustment (BSI)[a]			
Better	16	18	9
Worse	11	10	8
Marital adjustment (MAS)			
Better	19	13	9
Worse	7	14	7
Health (no. of physical symptoms)[a]			
Better	21	16	13
Worse	8	13	5
Erectile ability			
Difficulty obtaining erections (SHF Item 16)[a]			
Better	16	19	12
Worse	11	10	6
Difficulty maintaining erections (SHF Item 17)[a]			
Better	16	18	13
Worse	11	11	5
Frequency of morning erections (SHF Item A30)[a]			
Better	11	19	13
Worse	15	10	5
Sexual Self-Efficacy: Erectile Functioning (SSES–E)			
Better	13	16	10
Worse	14	12	7
Satisfaction with sexual (erectile) abilities (GSTS)			
Better	14	14	8
Worse	13	14	9
Individual sexual adjustment			
Frequency of sexual arousal (SHF Item 26)[a]			
Better	8	19	12
Worse	18	10	6
Frequency of retrograde ejaculation (SHF Item A29)[a]			
Better	20	23	15
Worse	6	6	3
Global sexual functioning (SHF)[a]			
Better	13	18	12
Worse	12	11	6
Couple sexual adjustment			
Frequency of intercourse and couple sexual activity (SHF Item 1)[a]			
Better	11	15	8
Worse	16	13	9
Desired frequency of intercourse and couple sexual activity (SHF Item 2)[a]			
Better	12	13	8
Worse	15	16	10
Satisfaction with couple sexual relationship (SHF Item 9)			
Better	19	17	12
Worse	8	11	5
Couple sexual harmony (SII, Scale 6)[a]			
Better	4	6	4
Worse	4	5	4
Variety in couple's sexual repertoire (SII)[a]			
Better	17	12	8
Worse	10	15	8

Note. Values are frequencies. BSI = Brief Symptom Inventory; MAS = Locke-Wallace Marital Adjustment Scale; SHF = Sexual History Form; SSES–E = Sexual Self-Efficacy Scale–Erectile Functioning; GSTS = Goals for Sex Therapy Scale; SII = Sexual Interaction Inventory.
[a] Lower scores indicate better adjustment.

cate minimal concordance between "impairment" assessed using Snap-Gauge NPT and waking-state sexual adjustment.

Typically, NPT data demonstrate a recognizable and consistent pattern for sexually well functioning men and a more variable pattern for men reporting erectile difficulties (see Anders et al., 1983, for an example using the Snap-Gauge technique). Minimal data exist on concordance between NPT performance and more broadly defined measures of sexual expression for males in any age category.

In order to expand the generalizability of findings from the present study, future research should sample a representative group of "healthy" aging men. It is difficult to locate such a sample in an aging population, because surgeries, illnesses, and frequent medication are common. Moreover, a totally healthy group may constitute an atypical sample of aging individuals. A more appropriate sampling technique might be selecting multiple homogeneous samples, similar to the one used in the present study, but with another commonly experienced and age-related surgery (e.g., hernia repair, cataract surgery).

The Snap-Gauge is suitable for nocturnal or daytime use and can be used in familiar home surroundings as well as in the laboratory. These qualities permit maximum convenience in verifying and amplifying the present preliminary findings. Testing should be carried out on at least 2 consecutive nights for greater reliability. In addition, the technique should be used in the context of exposure to erotic stimuli in the waking state. Finally, data from physiological measures of erectile ability obtained under sleep and waking-state conditions should be examined in relation to more broadly defined aspects of waking-state sexual capacity, expression, and performance. This would allow for comparisons of sleeping and waking-state erectile response and would relate Snap-Gauge performance to other measures of sexual adjustment and expression.

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