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Average-Size Erect Penis: Fiction, Fact, and the Need for Counseling

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ABSTRACT

Most men believe that the average length of an erect penis is greater than 6 inches (15.24 cm). This belief is due, in part, to several often-cited studies that relied on self-reported measurements, with means of about 6.2 inches (15.75 cm) for heterosexual men and even greater for gay men. These studies suffered from both volunteer bias and social desirability bias. In this review, the combined mean for 10 studies in which researchers took measurements of erect penises was 5.36 inches (13.61 cm; $n = 1,629$). For 21 studies in which researchers measured stretched penises, the mean was approximately 5.11 inches (12.98 cm; $n = 13,719$). Based on these studies, the average length of an erect penis is between 5.1 and 5.5 inches (12.95–13.97 cm), but after taking volunteer bias into account, it is probably toward the lower end of this range. Studies show that a majority of men wish they were larger, with some choosing penile lengthening surgery. These surgeries are considered by the American Urological Association to be risky. Most men seeking surgery have normal sized penises. Counseling with factual information about penis size might be effective in alleviating concerns for the majority of men who worry about having a small penis.

Studies find that many men have concerns that their penis is not large enough and that they are smaller relative to other men (Johnston, McLellan, & McKinlay, 2014; Lee, 1996; Lever, Frederick, & Peplau, 2006; Morrison, Bearden, Ellis, & Harriman, 2005; Tiggemann, Martins, & Churchett, 2008). They equate penis size with sexual competence and masculinity (Morrison et al., 2005; Tiggemann et al., 2008; Wylie & Eardley, 2007). As a result, 45–68.3% of men wish they had a larger penis (Lever et al., 2006; Tiggemann et al., 2008). Most men believe that the average erect penis is over 6 inches (15.24 cm) in length, and for many their ideal penis length is considerably longer than that (Johnston et al., 2014).

This paper reviews all known studies of measurements of erect or stretched penis length. The review includes 10 studies that relied on self-reported measurements, 11 studies in which researchers measured erect penises, and 22 studies in which researchers measured stretched penises (see Table 1). Only studies of abnormalities of the penis, or of children, were excluded. The purpose of not excluding other studies is two-fold: (1) to point out the methodological flaws in many studies that contributed to men's false beliefs that the average-size erect penis is 6+ inches (15.24+ cm) in length, and (2) based on better conducted studies, to estimate within a small range of values the actual mean length of an erect penis. By including flawed studies, therapists may better address false beliefs by clients based on those studies. The primary sources for the review were Medline and Social Sciences with Full Text (1975 to present), using "penis" as the key search word.

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Studies of penis length that relied on self-reports

There are several influences on men's beliefs about penis size. These include a focus on the penis throughout history as the symbol of masculinity (Friedman, 2001), the popular media (Lehman, 1993; Owen & Campbell, 2018), pornography and erotic literature with their emphasis on large penises (Brennan, 2018; Cranney, 2015; Mondaini et al., 2002; Sharp & Oates, 2019; Zilbergeld, 1978, pp. 21–31), and in recent years, science.

It began with data collected by Alfred Kinsey and colleagues (Kinsey, Pomeroy, & Martin, 1948), who asked men to measure the length of their erect penis (on the top from the abdomen to the tip) and then mail the results to the researchers. Kinsey did not include these data in his 1948 book. Colleagues at the Kinsey Institute later published frequency distributions for the data (Gebhard & Johnson, 1979), and in 1988 Jamison and Gebhard published descriptive statistics for 2,770 Caucasian men aged 20–59. The mean erect length was 6.21 inches (15.77 cm).

Three studies published in the 1990s that also relied on self-reported measurements seemed to confirm the Kinsey Institute data. Richters, Gerofi, and Donovan (1995) found a mean length of 6.299 inches (16.0 cm; $n = 156$), Smith, Jolley, Hocking, Benton, and Gerofi (1998) found a mean length of 6.185 inches (15.71 cm; $n = 194$), and Bogaert and Hershberger (1999) reported a mean length of 6.14 inches (15.6 cm) for heterosexual men ($n = 3,417$). In two studies for which homosexual men self-reported their erect penis lengths the mean lengths were even greater: 6.46 inches (16.41 cm), $n = 813$ (Bogaert & Hershberger, 1999) and 6.52 inches (16.56 cm), $n = 118$ (Coxon, 1996). The myth had begun. In a 2014 study, men were asked to estimate the average length of an erect penis; the mean estimate was 6.22 inches (15.8 cm) (Johnston et al., 2014).

There are some major problems with men's self-reports of erect penis length. First, it is likely that self-reports are unreliable, as low test-retest reliability was found even when gay men's sexual partners took the measurements (Harding & Golombok, 2002). Second, for several studies there was a likely possibility of volunteer bias. For example, in the Kinsey Institute study only about one-half of the men surveyed agreed to participate and return (by mail) their penile measurements (Jamison & Gebhard, 1988). In another study in which 64.8% of gay and bisexual men self-reported erect penis lengths of 6 to 10+ inches (15.24 to 25.4+ cm), the researchers obtained their sample by approaching men as they walked by a booth on the street (Groves, Wells, & Parsons, 2013). Even studies that did not rely on self-reports sometimes had obvious volunteer bias. One study recruited 81 volunteers from newspaper advertisements and gay naturist meetings to have their erect penises photographed with a background measurement scale (Sparling, 1997). Participants in sex surveys tend to be more sexually liberal and permissive, and less sexually inhibited than individuals who choose not to participate (see Catania, Gibson, Chitwood, & Coates, 1990). Could it be that men who agree to report the size of their penis have larger penises than those who do not volunteer?

Perhaps the most serious concern about the self-reported data is social desirability bias, i.e., “the need of [individuals] to obtain approval by responding in a culturally appropriate manner” (Crowne & Marlowe, 1960, p. 353). Individuals who are influenced by social desirability tend to under-report undesirable behaviors and over-report desirable behaviors and traits (Paulhus, 1984). For example, research in the field of nutrition has relied heavily on self-reported information, but when self-reported energy intake and body weights are compared to factual data (the gold standard) misreporting in a socially desirable direction is found to be pervasive and often extreme (see Archer, Pavea, & Lavie, 2015; Burke & Carman, 2017; Ioannidis, 2013). The degree of misreporting is correlated with social desirability (e.g., Hébert et al., 2001; Scagliusi, Polacow, Artioli, Benatti, & Lancha, 2003; Taren et al., 1999; Tooze et al., 2004).

Sex researchers are rarely able to verify self-reported information with factual data, but there is evidence that social desirability influences some men's self-reports of penis size. In a sample of 130 sexually experienced college men, 30.8% reported erect penis lengths of 7 inches (17.78 cm) or more, and there was a significant correlation between self-reported lengths and social

desirability scores (King, Duncan, Clinkenbeard, Rutland, & Ryan, 2019). Sexual imagery of penises is common in gay culture (Drummond & Filiault, 2007), thus social desirability bias may be another reason (in addition to volunteer bias) that in one study 64.8% of gay and bisexual men self-reported penis lengths of 6 to 10+ inches (15.24 to 25.4+ cm) (Groves et al., 2013). In a study designed to get men to honestly self-report the length of their erect penis, Herbenick, Reece, Schick, and Sanders (2014) asked 1,661 men to measure their erect penis in order to receive condoms that fit them. The mean self-reported length was 5.57 inches (14.15 cm).

Studies in which researchers measured erect penis length

In studies of penis size, most researchers use a standard procedure to measure the length of the dorsal surface (Wessells, Lue, & McAninch, 1996). Nevertheless, there is not a consensus on methodology and some of the difference in results is probably due to procedural differences (see Greenstein, Dekalo, & Chen, 2020). For example, see the discussion by Şengezer, Öztürk, and Deveci (2002) comparing their procedure and results with those of Wessells et al. (1996). Greenstein et al. (2020) have recently made recommendations for future studies of penis size.

In eight studies in which measurements were done by researchers, the mean erect penis lengths were found to be 5.01 inches (12.73 cm; $n = 200$, erections induced by self-stimulation) (Şengezer et al., 2002), 5.07 inches (12.89 cm; $n = 80$, erections induced pharmacologically) (Wessells et al., 1996), 5.09 inches (12.93 cm; $n = 41$, self-stimulation) (Promodu, Shanmughadas, Bhat, & Nair, 2007), 5.35 inches (13.6 cm; $n = 55$, pharmacologically) (Chen, Gefen, Greenstein, Matzkin, & Elad, 2000), 5.41 inches (13.73 cm; $n = 278$, pharmacologically) (Yafi et al., 2018), 5.70 inches (14.48 cm; $n = 111$, self-stimulation) (Schneider, Sperling, Lümmer, Syllwasschy, & Rübber, 2001), 5.71 inches (14.5 cm; $n = 150$, pharmacologically) (da Ros et al., 1994), and 5.92 inches (15.04 cm; $n = 105$, pharmacologically) (Salama, 2018).

Each study reported the mean (sum of the scores divided by sample size) and sample size, thus allowing this author to calculate sum of the scores for each study. Adding sum of the scores and sample size for all eight studies revealed a combined mean for 1020 men of 5.42 inches (13.76 cm).

The calculated combined mean length of 5.42 inches (13.76 cm) excluded three other studies in which researchers took measurements. A study of 309 Korean military men found the mean erect penis length (induced by self-stimulation and pharmacological injection) to be 4.68 inches (11.88 cm) (Park et al., 1998). Near the other extreme, a study of 300 men conducted by Ansell Research (2001) found a mean erect penis length of 5.88 inches (14.98 cm; induced by self-stimulation). This latter study has been criticized for its obvious volunteer bias (Herbenick et al., 2014). The men were at a bar in Cancun and volunteered to have themselves measured. However, even if these two studies are included, the overall combined mean erect penis length (again, taking sample size into account) for 1,629 men is 5.36 inches (13.62 cm). (The study by Sparling, 1997, was excluded because of an unconventional measurement technique.)

In the only study that compared self-reported erect penis length with actual measurements, mean lengths were 5.12 inches (13.01 cm) and 5.09 inches (12.93 cm), respectfully (Promodu et al., 2007). However, in this study, the men likely knew that they would be measured by the researchers and this would have minimized over-reporting (on the self-reports) due to social desirability. Interestingly, in the same study in which men's mean estimate of average penis length was 6.22 inches (15.8 cm), the mean for women's estimate of average erect penis length was 5.29 inches (13.44 cm) (Johnston et al., 2014).

Studies in which researchers measured stretched penises

In 22 studies, researchers measured penis size using a stretch technique, i.e., fully stretching a flaccid penis. However, the stretch technique tends to underestimate full erect length (e.g.,

Habous et al., 2015; Şengezer et al., 2002), and inter-observer variability is about 27% (Habous et al., 2015).

In a study of 3,300 young Italian men (none with abnormalities of the penis), the median length was 4.92 inches (12.5 cm) (Ponchiatti et al., 2001). Ten other studies similarly reported mean stretched lengths of less than 5 inches (12.7 cm) (Chen et al., 2000; Choi et al., 2011; Chrouser et al., 2013; Mehraban, Salehi, & Zayeri, 2007; Promodu et al., 2007; Şengezer et al., 2002; Siminoski & Bain, 1993; Son, Lee, Huh, Kim, & Paick, 2003; Spyropoulos et al., 2002; Wessells et al., 1996), while 10 others reported mean lengths of 5.08 to 5.63 inches (12.9 to 14.3 cm) (Aslan et al., 2011; Awwad et al., 2005; Kamel, Gadalla, Ghanem, & Oraby, 2009; Khan, Somani, Lam, & Donat, 2012; Savoie, Kim, & Soloway, 2003; Schonfeld & Beebe, 1942; Shah & Christopher, 2002; Shalaby, Almohsen, El Shahid, Abd Al-Sameaa, & Mostofa, 2015; Söylemez et al., 2012; Yafi et al., 2018).

In a review of studies using the stretch technique, Dillon, Chama, and Honig (2008) concluded that the maximum stretched length is 5.71 to 5.91 inches (14.5 to 15.01 cm). One study reported a mean length of 6.59 inches (16.74 cm) (Bondil, Costa, Daures, Louis, & Navratil, 1992), but their stretch technique has been criticized by other researchers who used the technique (Wessells et al., 1996; Shah & Christopher, 2002). Excluding this last study, if one assumes that for two studies that reported the median (Ponchiatti et al., 2001; Shah & Christopher, 2002) those values were close to the mean, the overall combined mean stretched length for 13,719 men was 5.11 inches (12.98 cm).

It should be noted that some studies have found a positive correlation between penis length and height (Aslan et al., 2011; Mehraban et al., 2007; Ponchiatti et al., 2001; Promodu et al., 2007; Spyropoulos et al., 2002) and index finger length (Mehraban et al., 2007; Spyropoulos et al., 2002), but there is little to no evidence that penis length is correlated with shoe size (Edward, 2002; Shah & Christopher, 2002). The published studies provide no evidence for differences related to race or sexual orientation (Herbenick et al., 2014; Veale, Miles, Bramley, Muir, & Hodsooll, 2015).

Conclusion

With one exception (Herbenick et al., 2014), the studies of erect penis length that relied on self-reported measurements had serious flaws, most notably volunteer bias and social desirability bias. Some of these studies have no doubt contributed to men's insecurities about penis size and should be dismissed and ignored. In 22 studies, researchers measured stretched penises, thus eliminating social desirability bias, but this technique tends to under-report erect penis size (e.g., Habous et al., 2015; Şengezer et al., 2002). In 11 studies, researchers measured erect penises. However, one used an unconventional technique (Sparling, 1997) and this and another study had obvious volunteer bias (Ansell Research, 2001; Sparling, 1997). Based on the other nine studies, the actual average length of an erect penis is probably between 5.1 and 5.5 inches (12.95 to 13.97 cm).

Recall that among the studies in which researchers measured erect penis length, one of the largest reported means was 5.71 inches (14.5 cm) (da Ros et al., 1994). In that study, only 12% of men had an erect penis longer than 6.3 inches (16.0 cm). In the study in which men self-reported erect penis lengths in order to receive correctly-sized condoms (but there still may have been some over-reporting due to social desirability), only 17% of men had penises that were longer than 6.3 inches (16.0 cm) (Herbenick et al., 2014). Mean erect penis lengths in these two studies were at the high end of the many studies in which measurements could be trusted as accurate. Thus, it is likely that even fewer than 12–17% of men have a penis that measures greater than 6.3 (16.0 cm) inches when erect.

In a previous review of studies of penis size, Veale et al. (2015) cautioned that because many of these studies relied on volunteers there is still the possibility of volunteer bias. That is, men with larger penises might have been more likely to volunteer to be measured than men with smaller penises. If true, the estimated average erect penis length of 5.1 to 5.5 inches (12.95 to 13.97 cm) is likely to be toward the lower end of this range.

For a review of flaccid penis length and circumference, see Veale et al. (2015).

Implications for counseling and surgical intervention

Most men underestimate the size of their penises compared to other men (Lee, 1996; Veale et al., 2016). In a nationally representative sample, only 58% of men were satisfied with the length of their erect penis (Gaither et al., 2017). In another survey of 52,031 heterosexual men, 66% considered their penis to be of average size and only 12% as small, yet 45% wished they were larger (Lever et al., 2006). Another study similarly found that men who believed they had an average-sized penis wished they were larger, with a mean ideal length of 7.27 inches (18.47 cm) (Johnston et al., 2014). As stated by Zilbergeld (1978, p. 23), “It is not much of an exaggeration to say that penises in [men’s] fantasyland come in only three sizes—large, gigantic, and so big you can barely get them through the doorway.”

Sexology clinicians commonly see men who worry that their penis is not big enough (Rosso, Ostacoli, Garbolino, & Furlan, 1998). Genital dissatisfaction is associated with lower sexual activity (Gaither et al., 2017). For many men, the major concern is that their sexual partner might think that they are not large enough (Van Driel, Weijmar Schultz, van de Wiel, & Mensink, 1998; Wylie & Eardley, 2007). One study using 3D images found that women preferred an erect penis length of 6.3–6.4 inches (16.0–16.26 cm) (Prause, Park, Leung, & Miller, 2015), and another study (using life-size computer-generated images) found that women’s ratings of male attractiveness increased with flaccid penis size but that the proportional increase in attractiveness declined after 3.0 inches (7.6 cm) (Mautz, Wong, Peters, & Jennions, 2013). However, another study found that women’s self-reported subjective arousal did not differ when reading stories about having sex with men who had small, average, or large penises (Fisher, Branscombe, & Lemery, 1983). Not only are women’s estimates of average erect penis length (5.29 inches; 13.44 cm) close to the actual mean length (Johnston et al., 2014), but another large-scale study found that 84% of women were satisfied with the size of their partner’s penis, and another 2% wished their partner was smaller (Lever et al., 2006). In a study of 174 women, only 21% regarded penis length as being important (Francken, van de Wiel, van Driel, & Weijmar Schultz, 2002). Zilbergeld (1978) asked several hundred women what was important to them during sexual intercourse. None mentioned penis size.

Many of the anxieties men have about the size of their penis could possibly be alleviated if researchers and others would stop quoting average penis lengths based on studies that relied on self-reported measurements. As shown in this paper, mean penis lengths obtained in studies in which researchers took measurements are about one inch (2.54 cm) smaller than mean self-reported penis lengths.

The conclusion of the present review that the mean length of an erect penis is 5.1 to 5.5 inches (12.95 to 13.97 cm) also has important implications for penile lengthening surgery. One study found that 45.5% of men seeking penile lengthening had erect penis lengths (measured by researchers) of 5.12 inches (13.0 cm) or longer, with another 44.5% measuring 3.94–5.12 inches (10.01–13.0 cm) (Shamloul, 2005). Another study similarly found that most men who sought surgical penile lengthening were normal in length (Mondaini et al., 2002). In both studies, the men overestimated the length of a “normal” sized penis. A recent review of 17 studies found that the large majority of “normal men complaining of small penis size” (i.e., men who did not have

Table 1. Summary of studies of penis length (in chronological order).

Authors	Country	Sample	n	Mean	SD
Studies that Relied on Self-Reported Measurements of Erect Penises					
Jamison & Gebhard, 1988	US		2,770	6.21 in. 15.77 cm	0.77 in. 1.96 cm
Richters et al., 1995	Australia		156	6.30 in. 16.0 cm	
Coxon, 1996	England	gay men	118	6.52 in. 16.56 cm	
Smith et al., 1998	Australia		184	6.18 in. 15.71 cm	0.91 in. 2.31 cm
Bogaert & Hershberger, 1999	US	heterosex.	3,417	6.14 in. 15.6 cm	0.74 in. 1.88 cm
		gay men	813	6.46 in. 16.41 cm	0.82 in. 2.08 cm
Harding & Golombok, 2002 (measurements reported by partner)	England	gay men	312	6.0 in. 15.25 cm	0.91 in. 2.31 cm
Promodu et al., 2007	India		93	5.12 in. ¹ 13.01 cm	0.64 in. 1.62 cm
Grov et al., 2013	US	gay & bisex. men	463	not reported	64.8% = 6 – 10+ in. 15 – 25+ cm
Herbenick et al., 2014	US		1,661	5.57 in. ² 14.15 cm	1.05 in. 2.67 cm
King et al., 2019	US		166	6.41 in. 16.28 cm	1.12 in. 2.84 cm
Studies of Erect Penises Measured by Researchers:					
da Ros et al., 1994	Brazil		150	5.71 in. 14.5 cm	
Wessells et al., 1996	US		80	5.07 in. 12.89 cm	1.15 in. 2.91 cm
Sparling, 1997	US		81	6.05 in. ³ 15.37 cm	24.7% > 6.5 in. > 16.51 cm
Park et al., 1998	Korea		309	4.68 in. 11.88 cm	0.52 in. 1.32 cm
Chen et al., 2000	Israel		55	5.35 in. 13.6 cm	0.67 in. 1.70 cm
Schneider et al., 2001	Germany		111	5.70 in. 14.48 cm	0.78 in. 1.99 cm
Ansell Research, 2001	US/Mexico		300	5.88 in. 14.93 cm	0.83 in. 2.10 cm
Şengezer et al., 2002	Turkey		200	5.01 in. 12.73 cm	0.04 in. 0.11 cm
Promodu et al., 2007	India		41	5.09 in. 12.93 cm	0.64 in. 1.63 cm
Salama, 2018	Egypt		105	5.92 in. 15.04 cm	0.59 in. 1.51 cm
Yafi et al., 2018	US	erectile dysfunction	278	5.41 in. 13.73 cm	0.75 in. 1.9 cm
Studies of Stretched Penises Measured by Researchers:					
Schonfeld & Beebe, 1942	US		125	5.15 in. 13.08 cm	
Bondil et al., 1992	France		905	6.59 in. ⁴ 16.74 cm	0.90 in. 2.29 cm
Siminoski & Bain, 1993	US		63	3.70 in. 9.40 cm	0.55 in. 1.40 cm
Wessells et al., 1996	US		80	4.90 in. 12.45 cm	1.07 in. 2.71 cm
Chen et al., 2000	Israel		55	4.92 in. 12.5 cm	0.55 in. 1.4 cm

(continued)

Table 1. Continued.

Authors	Country	Sample	n	Mean	SD
Ponchiatti et al., 2001	Italy		3,300	4.92 in. (median) 12.5 cm	
Şengezer et al., 2002	Turkey		200	3.54 in. 8.98 cm	0.04 in. 0.09 cm
Spyropoulos et al., 2002	Greece		52	4.79 in. 12.17 cm	0.67 in. 1.7 cm
Shah & Christopher, 2002	England		104	5.12 in. (median) 13.0 cm	
Savoie et al., 2003	US		63	5.31 in. 13.49 cm	1.02 in. 2.59 cm
Son et al., 2003	Korea		123	3.78 in. 9.6 cm	0.31 in. 0.79 cm
Awwad et al., 2005	Jordan		271	5.31 in. 13.5 cm	0.91 in. 2.3 cm
Mehraban et al., 2007	Iran		1,500	4.56 in. 11.58 cm	0.57 in. 1.45 cm
Promodu et al., 2007	India		301	4.28 in. 10.88 cm	0.56 in. 1.42 cm
Kamel et al., 2009	Egypt		949	5.08 in. 12.9 cm	0.75 in. 1.9 cm
Aslan et al., 2011	Turkey		1,132	5.39 in. 13.7 cm	0.63 in. 1.6 cm
Choi et al., 2011	Korea		144	4.61 in. 11.7 cm	0.75 in. 1.9 cm
Söylemez et al., 2012	Turkey		2,276	5.50 in. 13.98 cm	0.62 in. 1.58 cm
Khan et al., 2012	Britain		610	5.63 in. 14.3 cm	0.67 in. 1.68 cm
Chrouser et al., 2013	Tanzania		93	4.53 in. 11.5 cm	0.63 in. 1.6 cm
Shalaby et al., 2015	Egypt		2,000	5.45 in. 13.84 cm	0.53 in. 1.35 cm
Yafi et al., 2018	US	erectile dysfunction	278	5.51 in. 14.0 cm	0.75 in. 1.9 cm

¹Men in this study likely knew that the researchers would also be taking measurements.

²In this study, men were told to self-report their erect penis length in order to receive condoms that fit them perfectly.

³Measurements were taken with an unconventional technique: profile photos with a background measurement scale.

⁴The stretch technique used in this early study has been criticized by others who used the stretch technique.

abnormalities of the penis), in fact, had normal size penises (Marra, Drury, Tran, Veale, & Muir, 2020).

Reviews of penile enlargement surgery have deemed it to be “a highly risky procedure” with “documented and significant complications” (Dillon et al., 2008; Furr, Hebert, Wisenbaugh, & Gelman, 2018; Urology Care Foundation, 2019; Wylie & Eardley, 2007). As a result, the American Urological Association’s position is that the stretched penis length must be less than 2.95 inches (7.49 cm) to be considered for elongation surgery (Urology Care Foundation, 2019). Surgery on men with penises longer than this is viewed by many professionals as cosmetic and unnecessary, with serious ethical issues (Dillon et al., 2008; Mondaini et al., 2002; Vardi, 2006; Wylie & Eardley, 2007), yet penile enlargement surgeries for cosmetic purposes are increasing (Littara, Melone, Morales-Medina, Iannitti, & Palmieri, 2019; Wylie & Eardley, 2007). Instead of surgery, psychological counseling and sex education should be offered, with particular emphasis on educating men about the normal range of values for penis size (Dillon et al., 2008; Mondaini et al., 2002; Pastoor & Gregory, 2020; Wylie & Eardley, 2007). A recent review of many studies has found that counseling is often effective in convincing a majority of men who worry about having a small penis that their penis is of normal size (Marra et al., 2020).

Disclosure statement

The author reports no conflicts of interest.

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