

A nudity-based intervention to improve body image, self-esteem, and life satisfaction.

Keon West

Corresponding author: Dr Keon West, Department of Psychology, Goldsmiths, University of London, Lewisham Way, London, UK, SE14 6NW; 020 7717 3103 [keon.west@gold.ac.uk](mailto:keon.west@gold.ac.uk)

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**Abstract**

An individual's body image has profound implications for their self-esteem and overall life-satisfaction, and is a significant predictor of the onset of eating disorders. Recent research suggested that nude activities improved body image, self-esteem, and life-satisfaction among participants who were predisposed to take part in such activities. This current research investigated whether a nudity-based intervention can have similar positive effects among non-nudist participants with low levels of positive body-image, and whether those effects endure. Fifteen participants completed measures of body-image, self-esteem, and life-satisfaction before, immediately after, and one month after participating in a 4-day, nudity-based intervention. Participants reported substantial improvements in all three outcomes that remained one month after the intervention's completion. Results suggest that nudity-based interventions can meaningfully and enduringly improve body image and related outcomes, even among non-nudists.

Negative body image is a problem that occurs across the globe. Surveys of several thousand participants across many countries have reliably found high levels of body dissatisfaction among participants with diverse body types (Al Sabbah et al., 2009; Swami et al., 2010). Poor body image has many negative consequences including substance abuse (Kanayama, Barry, Hudson, & Pope Jr, 2006), eating disorders (Levine & Piran, 2004), and risky sexual behaviour (Littleton, Breitkopf, & Berenson, 2005). Furthermore, levels of *positive* body image should be considered alongside levels of *negative* body image, as these two factors can vary independently (Tylka & Wood-Barcalow, 2015). Measures of positive body image, such as body appreciation, positively predict many aspects of psychological well-being including proactive coping, optimism, and safer sex behaviors (Avalos, Tylka, & Wood-Barcalow, 2005; Grower & Ward, 2018).

Furthermore, body image is an important aspect of one's self-concept, and has a profound influence on both self-esteem (Herbozo & Thompson, 2006; Hesketh, Wake, & Waters, 2004), and overall happiness (Acun-Kapikiran, Korukcu, & Kapikiran, 2014; West, 2018). Prior research has explored many methods of improving body image and related happiness (for a meta-analysis, see Stice, Shaw, & Marti, 2007). For example, weight-inclusive and body-acceptance approaches highlight the diversity of healthy body types, draw attention to the multifaceted nature of physical health, reduce weight stigma, and improve access to healthcare (Tylka et al., 2014). Cognitive dissonance programmes encourage participants to speak out publicly against thin ideals of beauty, creating dissonance with their previously-held beliefs and reducing their acceptance of thin ideals (Halliwell & Diedrichs, 2014). Recent research, however, has suggested another strategy that has thus far been overlooked: nudity-based interventions (West, 2018; *in press*).

### **Nudity and Body Image**

Both the philosophy and practice of nudism (or naturism) can vary substantially

between locations and time periods. However, most nudist subcultures share the central aspects of being nude in a public space without necessarily implying a sexual context, or not wearing clothes in the company of people who are not one's family or intimate partners (Carr-Gomm, 2012; Deschenes, 2016; Smith & King, 2009). It is generally practiced with other members of the public who are not required or expected to attain a particular standard of attractiveness. As such, it involves two important aspects that should improve body image: the exposure of one's own body in a non-judgemental context, (Herbozo & Thompson, 2006; McLaren, Kuh, Hardy, & Gauvin, 2004) and exposure to diverse, non-idealised bodies (Agliata & Tantleff-Dunn, 2004; Grabe, Ward, & Hyde, 2008; Re, Coetzee, & Xiao, 2011; Swami, 2015).

Perhaps due to widespread taboos about nudity (Carr-Gomm, 2012; Ipsos-Mori, 2011), or to assumptions about inherent negativity involved in public nudity (Negy, 2004), very little empirical research has investigated the potential benefits of nude activity. However, past research has not found the assumed negative effects of nude activity on a variety of outcomes such as anti-social behaviour (Okami, Olmstead, Abramson, & Pendleton, 1998), sexual behaviour, and emotional adjustment (Lewis & Janda, 1988). Rather, positive associations have been found between naturist ideology and psychological health, including body image (Negy & Winton, 2008; Story, 1979, 1984). Furthermore, recent research found that participation in naked activities led to large, immediate improvements in body image, self-esteem, and life satisfaction (West, 2018; *in press*).

This research suggested that nudity-based interventions could be used to improve body image and related happiness. However, there are some limitations of that prior research that should be addressed. First, participants in the prior research (e.g., West, 2018) were recruited through involvement in pre-organised nude activities. Thus, all participants were already nudists, or at least had already expressed some interest in public nudity. It is plausible

that participants without this pre-existing interest might experience nude activities differently (e.g., more negatively), and perhaps respond with poorer outcomes. Second, participants in this prior research reported relatively positive body image even prior to the nude activities, making it unclear whether the same effects would occur for participants with less positive body image. Third, while the prior research found immediate positive effects of nude activities, no research has investigated whether, or for how long, these effects endure. This current research was designed to address those limitations, investigating whether nudity-based activities could be used as interventions to alleviate negative body image and two related outcomes; low self-esteem and life satisfaction.

This current research addressed those gaps in prior research by designing a nudity-based body-image intervention and applying it to a non-naturist participant sample with low body image. It is worth noting that the intervention (detailed below) encompassed a number of aspects including seeing others naked, being naked oneself, discussions of comfort with bodies and nudity, and body-oriented artistic activities. As is often the case in intervention-based research, several strategies were applied at once with the goal of achieving a maximum positive effect (Devine, Forscher, Austin, & Cox, 2012). The implications of this strategy are considered further in the discussion section.

### **Current Research**

This research built upon the sparse nudity-related research to date. Using a prospective design, it investigated whether a 4-day nudity-based intervention would lead to improvements in body image, self-esteem, and life satisfaction even for participants with no prior experience of, or interest in, naturist activity. It also investigated whether these improvements endured: specifically, whether they would still be detectable a month after the intervention.

## Method

The necessary sample size was determined using a-priori power analyses conducted with G\*Power 3 (Faul, Erdfelder, Buchner, & Lang, 2009). Assuming a large, within-participants effect size (based on West, 2017) for the effect of the intervention on body image, self-esteem, and life satisfaction – i.e., effect size ( $d_z$ ) = .80,  $\alpha$  = .05, power = .8 – it was found that 15 participants would be sufficient for adequate power. Ethical approval for the research was obtained via the relevant university-based ethics committee.

**Participants.** Fifteen British participants (6 men, 9 women, *mean age* = 27.80, *SD* = 4.11) were recruited via word-of-mouth and advertisements posted on Internet fora specifying that participants with relatively low body image were required. Recruitment materials indicated that participants may experience some benefits from taking part in the research. However, the materials deliberately omitted any information about the specific activities they would be expected to perform or about what the specific benefits of the research may be. One participant did not provide data at the final time-point, and was excluded from the main analyses, bringing the number of participants down to 14 (5 men, 9 women, *mean age* = 28.21, *SD* = 3.83)<sup>i</sup>. Potential participants were informed that they would take part in a 4-day programme with relevance for their body-image, though details of the programme activities and expectations were omitted. During pre-screening, participants were asked about prior experience with nude activities and a range of other, filler activities that distracted them from the hypotheses. No participant had taken part in nude activity prior to the research, or expressed suspicion about the hypotheses. Participants accepted room and board for 4 days, as well as the benefits of the intervention itself, as reimbursement for their time.

**Procedure: The Nudity-Based Intervention.** Prior to the intervention participants were unaware that nudity would be involved; informed consent was maintained by frequently reminding participants of their freedom to withdraw at any point and reminders that they

were not required to participate. Activities were designed to gently acclimatise participants to nudity and encourage them to participate. The intervention took place in a secluded, communal, residential setting. On day 1, participants met 8 hosts with diverse body-types (3 men and 5 women), who were naked except for paint and minimal, pasted, genital coverings. On day 2, participants engaged in collaborative physical activity with the hosts (e.g., stretching, yoga, dancing) and discussed bodies, nudity, and comfort with nudity. On day 3, participants took part in body-oriented artistic activities (i.e., clay sculpting and life-drawing), and were body-painted in a manner similar to the hosts. On day 4, the hosts were completely naked (rather than painted). Each participant was invited to spend 5 minutes naked in the company of a specific host of their choosing (11 out of 14 complied), and to later spend time naked in the company of all the hosts and participants (9 out of 14 complied). All participants also filmed themselves for an hour each evening, naked (and alone), reflecting on their associated thoughts and feelings.

**Measures.** Participants completed measures of body image, self-esteem, and life-satisfaction three times: immediately before, immediately after, and one month after the intervention. Participants also completed filler items that distracted them from the true hypotheses. Participants indicated their responses to all measures by marking points on 5-cm lines, anchored by two extremes (0 = *Not at all*, 5 = *Very much*). As in prior research (Correll, Park, Judd, & Wittenbrink, 2002; West, 2018), this method was used, rather than numerical Likert scales, to limit participants' ability to recall (or replicate) their previous responses. For each participant, scores were computed for each scale by taking the mean of all items in that scale (after reversing necessary items). These measures are identical to those previously used by West (2018). All measures had a minimum score of 0 and a maximum score of 5.

**Positive body image.** Participants completed an 8-item version ( $\alpha_{\text{Time 1}} = .48^{\text{ii}}$ ,  $\alpha_{\text{Time 2}}$

= .93,  $\alpha_{\text{Time 3}} = .93$ ) of the widely-used Body Appreciation Scale (Avalos et al., 2005).

Sample items include, “My feelings toward my body are mostly positive”, and “I do *not* feel good about my body” (reversed). Higher scores indicate more positive body image.

**Self-esteem.** Participants also completed a 4-item version ( $\alpha_{\text{Time 1}} = .70$ ,  $\alpha_{\text{Time 2}} = .69$ ,  $\alpha_{\text{Time 3}} = .76$ ) of the widely-used 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965).

Sample items include, “On the whole, I am satisfied with myself”, and “I feel I do *not* have much to be proud of” (reversed). Higher scores indicated higher self-esteem.

**Life satisfaction.** Participants also completed the 5-item ( $\alpha_{\text{Time 1}} = .85$ ,  $\alpha_{\text{Time 2}} = .89$ ,  $\alpha_{\text{Time 3}} = .78$ ) Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). Sample items include, “In most ways my life is close to ideal”, and “I am satisfied with my life”. Higher scores indicated greater life satisfaction.

## Results

**Preliminary results.** Descriptive statistics for all outcome variables are reported in Table 1. As expected, participants reported low body image scores at Time 1. These scores ranged from .22 to 2.08 (out of a possible total of 5) and the mean score (1.32) was significantly below the midpoint of the scale (i.e., 2.5),  $t(14) = 9.35$ ,  $p < .001$ . Neither age nor gender predicted any of the dependent variables at any of the time points ( $.06 < \text{all } p\text{'s} < .89$ ). Thus, neither is considered further.

**Effects of the intervention.** Differences between scores at the three time points were investigated using a repeated-measures multivariate analysis of variance with time [Time 1 (before) vs. Time 2 (immediately after) vs. Time 3 (1 month after)] as the independent variable and body image, self-esteem and life satisfaction as dependent variables. Differences between specific time-points were investigated using Bonferroni-adjusted paired-samples *t*-tests with a critical *p* value of .017 (i.e.,  $.05/3$ ).

The expected multivariate effect of the intervention was found,  $F(6, 8) = 67.63$ ,  $p <$

.001,  $\eta^2^p = .98$ , as well as univariate effects on body image,  $F(2, 26) = 78.82, p < .001, \eta^2^p = .86$ , self-esteem,  $F(2, 26) = 49.58, p < .001, \eta^2^p = .79$ , and life satisfaction,  $F(2, 26) = 34.65, p < .001, \eta^2^p = .73$ . Compared to T<sub>1</sub>, participants reported more positive body image at T<sub>2</sub>,  $t(13) = 20.53, p < .001$ , and T<sub>3</sub>,  $t(13) = 9.86, p < .001$ , higher self-esteem at T<sub>2</sub>,  $t(13) = 7.91, p < .001$ , and T<sub>3</sub>,  $t(13) = 8.10, p < .001$ , and higher life-satisfaction at T<sub>2</sub>,  $t(13) = 7.58, p < .001$ , and T<sub>3</sub>,  $t(13) = 6.09, p < .001$ . However, between T<sub>2</sub> and T<sub>3</sub>, participants' body image did not change,  $t(13) = .69, p = .50$ . Nor did their self-esteem,  $t(13) = .67, p = .51$ , or life satisfaction,  $t(13) = .37, p = .72$ . In sum, the nudity-based intervention led to large, significant improvements in body image, self-esteem, and life-satisfaction that were both immediate and enduring (see Figure 1).

### Discussion

Recent research has found that nude activity can improve body image and related outcomes (West, 2018; *in press*). This current research extended that scant work, and is the first to find that nudity-based activities led to lasting improvements in body image, self-esteem, and life satisfaction, even for participants with low body image and no prior experience of nudism. These findings are discussed in terms of implications, study design and limitations, and potential future research.

### Implications

The effects of the intervention on body image, self-esteem and life satisfaction found in this study were very large. Effect sizes ranged from  $\eta^2^p = .98$ , to  $\eta^2^p = .73$ . They also endured for a long time. Participants showed immediate improvement in all three outcomes after the intervention, but then no detectable change (i.e., no decline) in these outcomes a month after the intervention. Combined with the facts that nudity requires no cost or equipment, and is a widely (if not universally) available activity, these results argue strongly for the practicality of nudity-based interventions as cheap, effective, and enduring solutions

to problems of body image.

That said, other aspects of practicality must also be considered, specifically those of the participants' willingness to take part in the activity. Given the widespread taboos surrounding public nudity (Carr-Gomm, 2012), suggesting nudity as a widely available, body image improving intervention may seem unrealistic. Following suit, research on communal nudity to date has only ever used participants with a pre-existing interest in naturism, leaving it unclear whether (1) non-naturists could, without prohibitive difficulty, be convinced to try nude activities and (2) whether such activities would have similar positive effects for non-naturists. This current research somewhat undermined both those concerns, finding that all (non-naturist) participants engaged in near-naked activities (e.g., wearing body paint), most participants engaged in nude activities, and all experienced positive effects similar to those of prior research. This, combined with evidence of a general softening of attitudes toward nudity (Ipsos-Mori, 2011), suggests that nudity-based interventions may be more viable than previously believed.

### **Study Design and Future Research**

This research has a number of strengths: a somewhat bold design involving a risky intervention; data collection at three dispersed time points; a reasonably gender-balanced, non-student sample of varying ages that improved the generalizability of the findings; and a within-participants design that revealed changes in participants during the intervention.

However, there were also a number of important limitations. This current research was a prospective study, meaning that it was a study that used data from a single group of participants *over time* to determine the effects of an intervention or event of note. Prospective studies have certain advantages over correlational studies (which use data from a single group of participants at a single time-point). Most notably, the collection of data over time helps to rule out reverse-causation as an explanation of the findings. Relating that to this specific case,

these data cannot be interpreted as indicating that higher levels of body image caused participation in the nudity-based intervention.

However, it is also widely known that prospective studies have certain disadvantages when compared to genuinely experimental studies, most notably a lack of a control condition, which is useful for ruling out potential confounds, placebo effects, or self-presentation biases. In this current research efforts were made to minimise those concerns by restricting participants' information about their specific activities and expected outcomes, and including irrelevant, filler items in the study meant to distract participants from the true hypotheses. And it is worth noting that, despite their acknowledged limitations, prospective studies are published regularly and make their own useful contributions to the larger body of knowledge (see, e.g., Dohnt & Tiggemann, 2006; Killen et al., 1996; Swami, 2015, 2017; West, 2018). Still, further research involving other study designs, particularly experimental designs, would be very useful for clarifying the nature of these effects. Given the practical difficulties involved with sensitive topics like nudity, this current research remains a useful starting point.

Related to study design, it is also worth noting (as mentioned in the introduction) that the intervention entailed a number of aspects including seeing others naked, being naked oneself, and body-oriented artistic activities. This is not unusual in intervention-based research, where several strategies are applied simultaneously to maximize positive effects (Devine, Forscher, Austin, & Cox, 2012). Nonetheless, while the effects of the intervention as a whole appear to be quite strong and positive, future, genuinely experimental research with more complex and more focused designs could also untangle the effects of the different aspects of the intervention (e.g., seeing non-idealised naked bodies *versus* being seen naked by non-judgemental others) to investigate whether some are more crucial for improving body image, and whether the aspects interact. Such research would help clarify the theoretical

mechanisms behind the intervention's effects. Future research with larger samples of participants, and participants from a variety of national and cultural backgrounds, would improve the generalizability of the findings. Also, future research could include measures of weight or body mass index, investigating whether the effectiveness of such interventions varies for individuals with different body types.

Finally, the possibility of some negative effects should not be discounted. It is worth noting that previous research has looked for negative effects of nudity and failed to find them (Lewis & Janda, 1988; Okami et al., 1998). However, a sensitivity to the possibility of negative effects should be maintained, particularly considering the possibility of prior negative experiences, or the possibility of abuse through non-consensual distribution of nude images (Ruvalcaba & Eaton, 2019). Future research that continued to show no negative effects of nakedness, and guidelines to prevent potential abuse, would further strengthen the practical case for nudity-based interventions.

### **Conclusions**

As society becomes more diverse and tolerant of varied activities, we can find new methods of confronting old problems. This research adds to the scant work on nudity and body image, finding that the benefits of nakedness are enduring, and extend even to those who have no prior interest in it. This research is still in its infancy and not yet conclusive. Nonetheless, given this slowly accumulating body of evidence, it is worth considering whether nakedness may be a low-cost, effective means of improving body image, self-esteem and overall happiness, despite its unconventional image in contemporary society.

## References

- Acun-Kapikiran, N., Korukcu, Ö., & Kapikiran, Ş. (2014). The Relation of Parental Attitudes to Life Satisfaction and Depression in Early Adolescents: The Mediating Role of Self-esteem. *Educational Sciences: Theory & Practice*, *14*(4), 1246–1253. <https://doi.org/10.12738/estp.2014.4.2137>
- Agliata, D., & Tantleff-Dunn, S. (2004). The impact of media exposure on males body image. *Journal of Social and Clinical Psychology*. <https://doi.org/10.1521/jscp.23.1.7.26988>
- Al Sabbah, H., Vereecken, C. a, Elgar, F. J., Nansel, T., Aasvee, K., Abdeen, Z., ... Maes, L. (2009). Body weight dissatisfaction and communication with parents among adolescents in 24 countries: international cross-sectional survey. *BMC Public Health*, *9*, 52–62. <https://doi.org/10.1186/1471-2458-9-52>
- Avalos, L. C., Tylka, T. L., & Wood-Barcalow, N. (2005). The Body Appreciation Scale: Development and psychometric evaluation. *Body Image*, *2*(3), 285–297. <https://doi.org/10.1016/j.bodyim.2005.06.002>
- Carr-Gomm, P. (2012). *A brief history of nakedness*. Reaktion Books.
- Correll, J., Park, B., Judd, C. M., & Wittenbrink, B. (2002). The police officer's dilemma: using ethnicity to disambiguate potentially threatening individuals. *Journal of Personality and Social Psychology*, *83*(6), 1314–1329. <https://doi.org/10.1037/0022-3514.83.6.1314>
- Deschenes, S. (2016). *The official INF-FNI definition of naturism*.
- Devine, P. G., Forscher, P. S., Austin, A. J., & Cox, W. T. L. (2012). Long-term reduction in implicit race bias: A prejudice habit-breaking intervention. *Journal of Experimental Social Psychology*, *48*(6), 1267–1278. <https://doi.org/10.1016/j.jesp.2012.06.003>
- Diener, E., Emmons, R., Larsen, J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, *49*(1), 71–75. [https://doi.org/10.1207/s15327752jpa4901\\_13](https://doi.org/10.1207/s15327752jpa4901_13)
- Dohnt, H., & Tiggemann, M. (2006). The contribution of peer and media influences to the development of body satisfaction and self-esteem in young girls: A prospective study. *Developmental Psychology*, *42*(5), 929–936. <https://doi.org/10.1037/0012-1649.42.5.929>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G\*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160. <https://doi.org/10.3758/BRM.41.4.1149>
- Grabe, S., Ward, L. M., & Hyde, J. S. (2008). The role of the media in body image concerns among women: a meta-analysis of experimental and correlational studies. *Psychological Bulletin*, *134*(3), 460–476. <https://doi.org/10.1037/0033-2909.134.3.460>
- Grower, P., & Ward, L. M. (2018). Examining the unique contribution of body appreciation to heterosexual women's sexual agency. *Body Image*, *27*, 138–147. <https://doi.org/10.1016/j.bodyim.2018.09.003>
- Halliwell, E., & Diedrichs, P. C. (2014). Testing a dissonance body image intervention among young girls. *Health Psychology*, *33*(2), 201–204. <https://doi.org/http://dx.doi.org/10.1037/a0032585>
- Herbozo, S., & Thompson, J. K. (2006). Appearance-related commentary, body image, and self-esteem: Does the distress associated with the commentary matter? *Body Image*, *3*(3), 255–262. <https://doi.org/10.1016/j.bodyim.2006.04.001>

- Hesketh, K., Wake, M., & Waters, E. (2004). Body mass index and parent-reported self-esteem in elementary school children: evidence for a causal relationship. *International Journal of Obesity and Related Metabolic Disorders*, 28(10), 1233–1237. <https://doi.org/10.1038/sj.ijo.0802624>
- Ipsos-Mori. (2011). Attitudes to Nudity Omnibus Research, 1–19.
- Kanayama, G., Barry, S., Hudson, J. I., & Pope Jr, H. G. (2006). Body Image and Attitudes Toward Male Roles in Anabolic-Androgenic Steroid Users. *American Journal of Psychiatry*, 163, 697–703.
- Killen, J. D., Taylor, C. B., Hayward, C., Haydel, K. F., Wilson, D. M., Hammer, L., ... Strachowski, D. (1996). Weight concerns influence the development of eating disorders: A 4-year prospective study. *Journal of Consulting and Clinical Psychology*, 64(5), 936–940. <https://doi.org/10.1037//0022-006x.64.5.936>
- Levine, M. P., & Piran, N. (2004). The role of body image in the prevention of eating disorders, 1, 6–8. [https://doi.org/10.1016/S1740-1445\(03\)00006-8](https://doi.org/10.1016/S1740-1445(03)00006-8)
- Lewis, R. J., & Janda, L. H. (1988). The relationship between adult sexual adjustment and childhood experiences regarding exposure to nudity, sleeping in the parental bed, and parental attitudes toward sexuality. *Archives of Sexual Behavior*, 17(4), 349–362.
- Littleton, H., Bretkopf, C. R., & Berenson, A. (2005). Body image and risky sexual behaviors: An investigation in a tri-ethnic sample. *Body Image*, 2, 193–198. <https://doi.org/10.1016/j.bodyim.2005.02.003>
- Mclaren, L., Kuh, D., Hardy, R., & Gauvin, L. (2004). Positive and negative body-related comments and their relationship with body dissatisfaction in middle-aged women. *Psychology & Health*, 19(2), 261–272. <https://doi.org/10.1080/0887044031000148246>
- Negy, C. (2004). Therapy with dissimilar clients: Issues to consider along this road more traveled. In C. Negy (Ed.), *Cross-cultural psychotherapy: Toward a critical understanding of diverse clients* (pp. 3–22). Reno, NV: Bent Tree Press.
- Negy, C., & Winton, S. (2008). A comparison of pro- and anti-nudity college students on acceptance of self and of culturally diverse others. *Journal of Sex Research*, 45(3), 287–294. <https://doi.org/10.1080/00224490802204464>
- Okami, P., Olmstead, R., Abramson, P. R., & Pendleton, L. (1998). Early childhood exposure to parental nudity and scenes of parental sexuality ('primal scenes'): an 18-year longitudinal study of outcome. *Archives of Sexual Behavior*, 27(4), 361–384.
- Re, D., Coetzee, V., & Xiao, D. (2011). Viewing heavy bodies enhances preferences for facial adiposity. *Journal of Evolutionary Psychology*, 9(4), 295–308. <https://doi.org/10.1556/JEP.9.2011.4.2>
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Ruvalcaba, Y., & Eaton, A. A. (2019). Nonconsensual pornography among U.S. adults: A sexual scripts framework on victimisation, perpetration, and health correlates for women and men. *Psychology of Violence*. <https://doi.org/http://dx.doi.org/10.1037/vio0000233>
- Smith, G., & King, M. (2009). Naturism and sexuality: Broadening our approach to sexual wellbeing. *Health and Place*, 15(2), 439–446. <https://doi.org/10.1016/j.healthplace.2008.08.002>
- Stice, E., Shaw, H., & Marti, C. N. (2007). A meta-analytic review of eating disorder prevention programs: Encouraging findings. *Annual Review of Clinical Psychology*, 3,

- 207–231. <https://doi.org/10.1146/annurev.clinpsy.3.022806.091447>
- Story, M. D. (1979). Factors associated with more positive body self-concepts in preschool children. *The Journal of Social Psychology*, *108*(1), 49–56. <https://doi.org/10.1080/00224545.1979.9711960>
- Story, M. D. (1984). Comparisons of body self-concept between social nudists and nonnudists. *The Journal of Psychology: Interdisciplinary and Applied*, *118*(1), 99–112.
- Swami, V. (2015). Illustrating the body: Cross-sectional and prospective investigations of the impact of life drawing sessions on body image. *Psychiatry Research*, *235*, 128–132. <https://doi.org/10.1016/j.psychres.2015.11.034>
- Swami, V. (2017). Sketching people : Prospective investigations of the impact of life drawing on body image. *Body Image*, *20*, 65–73. <https://doi.org/10.1016/j.bodyim.2016.12.001>
- Swami, V., Frederick, D. A., Aavik, T., Alcalay, L., Allik, J., Anderson, D., ... Pokrajac-bulian, A. (2010). The attractive female body weight and female body dissatisfaction in 26 countries across 10 world regions: Results of the International Body Project I. *Personality and Social Psychology Bulletin*, *36*(3), 309–325. <https://doi.org/10.1177/0146167209359702>
- Tylka, T. L., Annunziato, R. A., Burgard, D., Daniëlsdóttir, S., Shuman, E., Davis, C., & Calogero, R. M. (2014). The weight-Inclusive versus weight-normative approach to health: Evaluating the evidence for prioritizing well-being over weight loss. *Journal of Obesity*, (983495).
- Tylka, T. L., & Wood-Barcalow, N. L. (2015). What is and what is not positive body image? Conceptual foundations and construct definition. *Body Image*, *14*, 118–129. <https://doi.org/10.1016/j.bodyim.2015.04.001>
- West, K. (2018). Naked and unashamed: Investigations and applications of the effects of naturist activities on body image, self-esteem, and life satisfaction. *Journal of Happiness Studies*, *19*(3), 677–697. <https://doi.org/10.1007/s10902-017-9846-1>
- West, K. (*in press*). I feel better naked: Communal naked activity increases body appreciation by reducing social physique anxiety. *Journal of Sex Research*.

**Tables**

Table 1: Descriptive statistics for all outcome variables according to time point.

	Time 1	Time 2	Time 3
Outcome	(Before)	(After)	(1 Month After)
Body Image	1.32 <sup>a</sup> (.46)	4.08 <sup>b</sup> (.70)	3.87 <sup>b</sup> (.92)
Self Esteem	2.76 <sup>a</sup> (.77)	4.34 <sup>b</sup> (.52)	4.44 <sup>b</sup> (.70)
Life Satisfaction	2.33 <sup>a</sup> (1.04)	3.88 <sup>b</sup> (.81)	3.95 <sup>b</sup> (.73)

Note: (1) Standard deviations are shown in parentheses. (2) Conditions that differ significantly are indicated by different superscripts.

Figures

Figure 1: Participants' body image, self-esteem and life satisfaction scores before (Time 1), immediately after (Time 2), and one month after (Time 3) the naturism-based intervention.



Note: Error bars show the standard error of the mean.

## Notes

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<sup>i</sup> Including this participant did not change the pattern of results between Time 1 and Time 2. Participants still showed large and significant improvements in body image ( $M = 1.36$ ,  $SD = .47$  vs.  $M = 4.10$ ,  $SD = .68$ ),  $t(14) = 21.62$ ,  $p < .001$ , self esteem ( $M = 2.82$ ,  $SD = .78$  vs.  $M = 4.36$ ,  $SD = .51$ ),  $t(14) = 8.18$ ,  $p < .001$ , and life satisfaction ( $M = 2.32$ ,  $SD = 1.00$  vs.  $M = 3.92$ ,  $SD = .79$ ),  $t(14) = 8.15$ ,  $p < .001$ , between Time 1 and Time 2.

<sup>ii</sup> It was noted that the body image scale internal reliability was low at Time 1. Deletion of a single item (“I am attentive to my body’s needs”), raised the scale reliability to acceptable levels ( $\alpha_{\text{Time 1}} = .70$ ,  $\alpha_{\text{Time 2}} = .92$ ,  $\alpha_{\text{Time 3}} = .95$ ). However, it did not alter the pattern of results. Body image increased substantially between Time 1 and Time 2 ( $p < .001$ ) and between Time 1 and Time 3 ( $p < .001$ ), but did not change between Time 2 and Time 3 ( $p = .45$ ).