

How Health-Related Behaviors Predict Body-Esteem in Men

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Abstract

While there is a general consensus on the biological implications of health-related behaviors, there is little research on the implications of health-related behaviors on body-esteem in a nonclinical population of men. This study aimed to examine, using a multidimensional measure of health-related behaviors and controlling for body mass index (BMI), whether body-esteem in men can be predicted by health-related behaviors. Five hundred and sixty-one men between the ages of 30 and 45 years ($M = 35.42$, $SD = 4.41$) completed the Body-Esteem Scale (BES), the Health Behaviour Inventory (HBI), and a questionnaire covering anthropometric measures including height and weight. Multiple regression analyses revealed that health-related behaviors (including positive nutrition habits, positive attitude, and healthy practices) significantly predicted body-esteem, $R^2_{adj} = 0.05$, $F(5, 540) = 6.91$, $p < .001$. The results are discussed in relation to healthy lifestyle promotion interventions targeting men.

Keywords

body image, mental health, health related behaviors, men, body esteem

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While the sexualization of female bodies has been prominent for centuries, semi-naked men have only started appearing in Western media since the 1980s (Pope, Olivardia, Borowiecki, & Cohane, 2001). This has resulted in an increasing trend of men placing greater importance on their physical appearance (Tylka, 2011). Despite healthy practices being one of the dominant factors in achieving health and fitness goals, the majority of Western societies are characterized by excessive consumption of processed food, which is high in saturated fat and sugar, low participation in exercise, unhealthy sleeping patterns, inability to cope with stress, and high consumption of stimulants and addictive substances (Olson, Hummer, & Harris, 2017; Stranges et al., 2008). The long-term consequences of negative health-related behaviors are widely recognized; i.e., obesity, high blood pressure, strokes, and insulin resistance (Armitage & Conner, 2001; Donnachie, Wyke, & Hunt, 2018). Researchers argue that an individual's health behavior habits can also have psychological implications, including on the perception of one's own body (Lowery et al., 2005; Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006).

Self-evaluation of the appearance of one's body, i.e., the extent to which one is satisfied with one's body, is defined as body-esteem (Franzoi & Shields, 1984). There is some evidence that body-esteem might be an important factor of psychological functioning. For example, a longitudinal study over a 10-year period from adolescence to young adulthood identified that negative body-esteem in males was associated with depressed mood and low general self-esteem (Quick, Eisenberg, Bucchianeri, & Neumark-Sztainer, 2013). Research has demonstrated that there are some significant sex differences in how individuals appraise their bodies. While males are more

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likely to appraise their bodies in terms of its physical functions (e.g., muscular strength, coordination, health) and they tend to treat their body as a dynamic process, women tend to exhibit an object-oriented view of their bodies (Franzoi et al., 2012). Appraising one's body in terms of physical function emphasizes the body's functioning over its physical appearance, which is of peripheral importance. This results in less criticism regarding one's appearance, that is, one is satisfied with their body if it is capable of meeting the physical demands. Muscularity is linked to the strength and physical function of the body, and plays a key role in male body image (Ridgeway & Tylka, 2005). Although body-esteem stays relatively stable over time (Tiggemann, 2004), it can be shaped by various sociocultural and individual factors, including health-related behaviors (Tiggemann & Williamson, 2000; Zanon, Tomassoni, Gargano, & Granai, 2016).

The Relationship Between Health-Related Behaviors and Body-Esteem

Health-related behaviors include eating habits, physical activity, coping with stress, and avoiding addictive substances such as alcohol and tobacco (Cinelli & O'Dea, 2009). There is evidence that individual health-related behaviors can moderately influence body-esteem. A meta-analysis of the relationship between physical activity and body image among men and boys across 84 individual effect sizes concluded that physical activity is positively related to body image (Bassett-Gunter, McEwan, & Kamarhie, 2017). Similarly, an unhealthy diet combined with a lack of physical activity is a risk factor for low body-esteem (Zanon et al., 2016).

The relationship between health-related behaviors and body-esteem can be explained on the biochemical level, i.e., health behaviors engage neurotransmitter pathways responsible for improved mood (Ravens-Sieberer, Kökönyei, & Thomas, 2004). Nutrition researchers have demonstrated that a healthy diet, rich in fruits and vegetables as well as wholegrain carbohydrates, enhances serotonin. This in turn regulates mood, which is crucial for the formation of positive body-esteem (Young, 2007). A similar pattern is involved in other healthy practices, such as moderate physical activity, positive attitude, and stress management, which all contribute to boosting serotonin levels (Lipowski, 2012; Quick et al., 2013). Additionally, involvement in healthy practices, including regular exercise or body-weight control, may produce a number of important biological reinforcements in men, including increased muscle tone and reduction in body fat content, which may enhance the physical perception of oneself (Bobbio, 2009).

Despite this, most published studies investigating the link between body-esteem and health-related behaviors

narrowed health-related behaviors to physical activity, nutrition habits, and the use of addictive substances such as tobacco and alcohol (e.g., Bassett-Gunter, McEwan, & Kamarhie, 2017; Zanon et al., 2016). As a result, they failed to apply the multidimensional approach to health, which goes beyond individual behaviors, such as psychological reactions, including positive thinking and stress management (Gochman, 1982). Psychological research on the influence of health-related behaviors on body-esteem almost exclusively relied on nonvalidated surveys rather than validated measures of health-related behaviors (Zanon et al., 2016). Few studies attempted to control for the impact of anthropometric measures, such as body mass index (BMI; e.g., Moustafa et al., 2017). Although males tend to exhibit a process-oriented view of their bodies, research identified that being overweight or obese might be a predictor of a desire to reduce weight and change appearance (Bassett-Gunter et al., 2017; Page & Fox, 1997). There seems to be limited research on the association between physical self-perceptions and health-related behaviors in a general, nonclinical adult male population.

The Present Study

The present study expands upon the literature exploring whether body-esteem could be predicted by health-related behaviors using validated, multidimensional measurement of health-related behaviors while controlling for BMI. Individual health-related behaviors investigated in this study included proper nutrition habits, preventive behaviors, positive attitude, and healthy practices. The aims of this study were to examine whether body-esteem was predicted by different subfactors of health-related behaviors, while controlling for BMI, and to examine the possibility of differential relationships between individual health-related behaviors and body-esteem. Based on the empirical rationale and the biological mechanisms involved in health-related behaviors discussed above it was hypothesized that a higher involvement in health-related behaviors (proper nutrition habits, preventive behaviors, positive attitude, and healthy practices) would predict higher body-esteem in male adults, while higher BMI levels would predict lower body-esteem.

Method

Participants

White Polish men between the ages of 30 and 45 were recruited for this study ($N = 561$) with a mean age of 35.42 ($SD = 4.41$). The age of the participants was chosen based on biological development and a low risk of developing health problems associated with aging (Dever,

1984). Exclusion criteria included DSM-5 psychiatric diagnoses (American Psychiatric Association, 2013), neurological disorders, and any known chronic illnesses. Furthermore, competitive athletes were excluded from this study due to an expected higher muscle mass than a general population (Prentice & Jebb, 2001). The mean BMI for the sample was 26.72 ($SD = 3.63$). Forty-nine percent ($n = 275$) of participants had college education, 37% ($n = 207$) had secondary education, and 14% ($n = 79$) had primary education. All recruited participants were employed at the time of the study.

Procedure

The protocol of this study was approved by the Psychology Research Ethics Committee at the University of Bath (decision no. 16-060) and by the Ethics Board for Research Projects at the Institute of Psychology, University of Gdansk (decision no. 17/2013; Appendix B). The recruitment procedure was two-staged. During the first stage, 254 males participating in a larger project described elsewhere (Lipowska, Lipowski, Jurek, Jankowska, & Pawlicka, 2018) who met the inclusion criteria for the study were recruited. During the second stage, males who met inclusion criteria for the project were asked to invite acquaintances to participate; i.e., a non-random method of sample selection (“snowball sampling technique”). A total sample of 561 males was recruited for this study. Prior to the study, written informed consent was obtained from the participants who were also informed that they could discontinue their participation at any time without repercussions. Respondents were given 3 days to complete the questionnaire pack, which was then returned to one of the investigators. The data used for this study was part of a larger survey, and the questionnaires that formed this study took around 10 mins to complete.

Materials

Health Behaviour Inventory. The Health Behaviour Inventory (HBI; Juczynski, 2001) was used to measure health behaviors. All four subscales (a–d) were used in this study:

- (a) Proper nutrition habits: high consumption of fruits and vegetables; limiting the consumption of sugar and animal fats; caring about proper diet; avoiding foods with preservatives; avoiding salt and foods with a high salt content; and consumption of wholegrain bread.
- (b) Preventive behaviors: avoiding colds; having access to emergency numbers; regular health

screenings and check-ups; adhering to medical recommendations; seeking information on the avoidance of diseases; and obtaining information concerning health and sickness.

- (c) Positive attitude: taking the recommendations of people who are concerned about health seriously; avoiding depressive situations; avoiding overly strong emotions, stress, and tension; having friends and a stable family life; avoiding feelings such as anger, anxiety, and depression; and positive thinking.
- (d) Healthy practices: getting enough rest; avoiding overworking; controlling body weight; getting enough sleep; avoiding tobacco; and avoiding overly intense physical effort.

This instrument consists of 24 statements describing health behaviors and respondents are asked to report how often they engage in a given behavior on a scale from 1 (*Almost never*) to 5 (*Almost always*). The HBI is a Polish measure with acceptable reliability and validity, with Cronbach’s $\alpha = 0.85$ (Juczynski, 2001). This research instrument was chosen because, unlike most other health behavior scales, it not only measures actual health behaviors, such as smoking or balanced diet, but also psychological reactions, i.e., *positive attitude*.

Body-Esteem Scale. To assess a respondent’s attitude to their body, the Body-Esteem Scale (BES; Franzoi & Shields, 1984; adapted to Polish by Lipowska & Lipowski, 2013) was used. The BES consists of 35 items, and participants rate their degree of satisfaction or dissatisfaction with various body parts and functions on a 5-point Likert scale ranging from 1 (*Have strong negative feelings*) to 5 (*Have strong positive feelings*). The scale consists of three subscales for males: physical attractiveness, which assesses facial features and physique-bodily parameters; upper body strength, which assesses individual upper body parts and their functions; and physical condition, which assesses the stamina, strength, and agility of the male body. The Body-Esteem Scale is a widely used measure with acceptable reliability and validity, with Cronbach’s α varying between $\alpha = 0.85$ and 0.88 for physical attractiveness and physical condition factors respectively (Lipowska & Lipowski, 2013). The total score was computed by adding up the scores from all three subscales.

Demographic questionnaire. This collected data on age, education, professional status, sports practiced at a professional level, and physical characteristics, including height and weight. Body Mass Index (BMI) was calculated based on physical characteristics data.

Table 1. Men's Mean Results of Individual HBI Subscales, BES, and BMI Levels ($N = 561$).

Variables	<i>M</i>	<i>SD</i>	Range
Proper nutrition habits	19.66	4.52	7.00–30.00
Preventive behaviors	19.39	4.39	7.00–30.00
Positive attitude	21.40	3.65	7.00–30.00
Healthy practices	19.22	3.60	7.00–30.00
BMI	26.72	3.63	19.32–45.79
Body-esteem	121.20	18.28	51.00–165.00

Note. BES = Body-Esteem Scale; HBI = Health Behaviour Inventory; BMI = body mass index.

Table 2. Summary of Linear Regressions for Variables Predicting Scores of Body-Esteem.

Independent variables	Body-esteem β
Proper nutrition habits	0.12*
Preventive behaviors	−0.04
Positive attitude	0.23***
Healthy practices	−0.12*
BMI	0.06

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

Results

Eleven participants were excluded from the data analysis due to missing BES, HBI, or BMI scores. A total number of 561 participants were included in the analysis.

Descriptive Statistics

The mean scores, presented in Table 1, indicate the average levels of health-related behaviors scores, body-esteem scores, and BMI levels.

Multiple Regression Analysis

A simple multiple linear regression was conducted to test how well health-related behaviors and BMI predicted body-esteem. The linear combination of the four health-related measures and BMI was significantly related to body-esteem, $R^2_{adj} = 0.05$, $F(5, 540) = 6.91$, $p < .001$, with three variables being significant: proper nutrition habits, positive attitude, and healthy practices (Table 2). The relationships between proper nutrition habits and body-esteem as well as positive attitude and body-esteem were positive. The relationship between healthy practices and body-esteem was negative, indicating that those with higher scores on this scale were expected to score lower on body-esteem. Preventive behaviors and BMI did not contribute to the multiple regression model.

Multiple regression analysis showed that the association between body-esteem and health-related behaviors was significant and positive, and collectively, the predictors accounted for 5% of the variance in body-esteem.

Discussion

This study suggests that health-related behaviors can predict body-esteem in men. While the analysis showed that the relationships between positive attitude, as well as proper nutrition habits, and body-esteem were positive, the relationship between healthy practices and body-esteem was negative. The size of the present sample ($N = 561$) is one of the largest samples in the literature to demonstrate a link between male body-esteem and health-related behaviors to date. The present findings provide further evidence of the relationship between body-esteem and health-related behaviors (Moustafa et al., 2017; Zanon et al., 2016).

In the present study, positive attitude was the most significant health-related behavior positively predicting body-esteem; a finding consistent with previous research on this phenomenon (Lipowski, 2012; Lipowska et al., 2016). Another significant predictor, proper nutrition habits, was also positively associated with body-esteem. A review on non-pharmacologic factors that naturally raise serotonin levels in the brain suggest that diet can play a role in raising brain serotonin. Increased serotonin levels can improve mood, which is crucial for the formation of positive body-esteem (Young, 2007). The relationship between healthy practices and body-esteem was negative. This indicates that participants who engaged heavily in healthy practices—including fatigue avoidance and body weight control—had lower body-esteem than their counterparts, who were less involved in these practices. This was an unexpected finding, contradicting previous research on this phenomenon (Bobbio, 2009). It seems that the findings could be explained, at least partially, by some of the individual constructs of the “healthy practices” subscale. While the item “avoiding overly intense physical effort” only focuses on over-exercising, the extent of engagement in physical activity has not been measured and the scale fails to differentiate between behaviors, such as no physical activity and moderate physical activity. Under-exercising was not taken into account and non-active participants might have scored high on this item. In contrast to the hypothesis that greater involvement in individual health-related behaviors predicts more positive body-esteem, preventive behaviors did not predict body-esteem in men. This finding could be explained through the observation that somatically healthy individuals tend to have a neutral emotional attitude towards preventive behaviors (Patnaik, Joshi, & Sahu, 2015).

The biological mechanisms involved in health-related behaviors might partially explain the process of body-esteem modification through health-related behaviors. There is some evidence that healthy diet as well as positive attitude and stress management engage neurotransmitter pathways responsible for hormonal secretion in the brain, which regulates mood and can, in turn, influence body-esteem (Quick et al., 2013; Ravens-Sieberer et al., 2004; Young, 2007). The negative relationship between healthy practices and body-esteem as well as the non-significance of preventive behaviors in male adults seem to contradict the biological mechanisms involved in health-related behaviors. Individual constructs of the subscales of healthy practices fail to differentiate between behaviors, such as no physical activity and moderate physical activity, which could have led to distorted results. While non-active participants might have scored high on this scale, studies demonstrated that non-activity can contribute to hormonal deregulation on similar levels as over-intense activity. Research has indicated that low physical activity and daytime napping break circadian rhythms, disrupt homeostasis, and contribute to hormonal deregulation, which has been associated with low body-esteem (Huang, Ramsey, Marcheva, & Bass, 2011). At the same time, somatically healthy individuals are unlikely to experience the psychological or biological effects of preventive behaviors (Patnaik et al., 2015) and thus, preventive behaviors have no direct impact on biological mechanisms. Preventive behaviors themselves do not contribute to hormonal regulation and thus do not have any direct impact on the hormonal level. It seems that body-esteem can be partially shaped by health-related behaviors, which can impact body-esteem through their biochemical effects on psychological functioning (Ravens-Sieberer et al., 2004). Nevertheless, this is only a hypothesized explanation which needs to be further explored.

Body-esteem was identified to be independent of anthropometric measurements. This finding contradicts previous research suggesting that being overweight or obese is a predictor of desire to reduce weight and change appearance (Page & Fox, 1997). This can be explained by previous findings that males focus on the body as a process rather than as an object (Franzoi et al., 2012). Assessing body mass might not be the most relevant anthropometric measure of the male body. Despite the widespread popularity of BMI, this measure does not reflect the type of body figure—that is, the relationship between muscle and body fat content (Prentice & Jebb, 2001). Considering that Western culture promotes a muscular silhouette (Halliwell, Dittmar, & Osborn, 2007), muscle mass rather than weight might be a more relevant anthropometric measure. An example of a more reliable anthropometric measure of the male body might be the waist to hips ratio (Prentice & Jebb, 2001). Although

professional athletes were not included in the data sample, BMI might not have been a valid measure for males who had high muscle mass.

Implications and Limitations

This study suggests that it may not be body-weight that predicts body-esteem, but rather other predictors such as health-related behaviors. This finding is particularly relevant to interventions focused on low body-esteem: self-evaluation of one's body could be thus modified by interventions targeting physical health and fitness, rather than general appearance. Health-related behaviors that might be particularly important include maintaining a healthy diet and having a positive attitude. While there is some empirical evidence that certain health interventions can improve physical perceptions (Campbell & Hausenblas, 2009), research on this phenomenon has mainly considered physical activity. Thus, it would be important to further explore the effect of interventions on other health-related behaviors in the general men population.

While the model was significant, it only partially predicted body-esteem. Taking into account the high number of participants ($N = 561$), the global magnitude of effects is rather small. This suggests that health-related behaviors are only one of the factors that account for body-esteem. This is not surprising, given that previous research has reported a number of variables that predict body-esteem, such as personality traits (Srivastava & Das, 2015). It seems there are multiple variables which may account for body-esteem, and it will be important for future research to test a more complex model which takes into account the numerous potential predictors of this variable.

The recruitment procedure (“snowball sampling”) can be considered a limitation of the study, that is, participants might not be representative of a healthy male population. Another methodological limitation includes one of the HBI items. “Avoiding overly intense physical effort” item only focuses on over-exercising, and fails to consider under-exercising, that is, non-active participants might have scored high on this scale. Considering that the study is cross-sectional, the findings cannot provide evidence for temporal precedence. Future research should use a longitudinal design to determine the strength, cause, and direction of this relationship. In terms of other factors mediating the relationship between body-esteem and health-related behavior, it would be useful to investigate variables that might mediate this relationship, such as personality traits. Future research could look at other factors which are correlated with the investigated variables, i.e., what is it about positive attitude that makes body-esteem more favorable? It has been suggested that positive attitude might have some similarities to optimism–pessimism (Srivastava & Das, 2015). It may

be the case that optimism–pessimism is a relevant factor underlying body-esteem. Research has shown that an optimistic attitude is central to the maintenance of health behaviors (Steptoe et al., 2006). It could be useful for future research to investigate whether an optimistic attitude is an underlying factor that may account for the relationship between health-related behaviors and body-esteem.

Conclusion

It seems that positive health-related behaviors may be important for the formation of positive body-esteem in male adults. This can be explained biologically as healthy behaviors impact body-esteem through their biochemical effects on psychological functioning. Promotion of healthy lifestyle should form an integral part of body-esteem interventions. The importance of healthy practices in the formation of body-esteem should not be over-estimated as there are multiple variables which may account for physical self-perceptions. A more complex model, which takes into account the numerous potential predictors of body-esteem, should be further investigated in order to facilitate the design of successful positive body-esteem interventions for male adults.

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References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology, 40*(4), 471–499. doi:10.1348/014466601164939
- Bassett-Gunter, R., McEwan, D., & Kamarhie, A. (2017). Physical activity and body image among men and boys: A meta-analysis. *Body Image, 22*(3), 114–128. doi:10.1016/j.bodyim.2017.06.007
- Bobbio, A. (2009). Relation of physical activity and self-esteem. *Perceptual and Motor Skills, 108*(2), 549–557. doi:10.2466/pms.108.2.549-557
- Campbell, A., & Hausenblas, H. A. (2009). Effects of exercise interventions on body image: A meta-analysis. *Journal of Health Psychology, 14*(6), 780–793. doi:10.1177/1359105309338977
- Cinelli, R. L., & O'Dea, J. A. (2009). Body image and obesity among Australian adolescents from indigenous and Anglo-European backgrounds: implications for health promotion and obesity prevention among Aboriginal youth. *Health Education Research, 24*(6), 1059–1068. doi:10.1093/her/cyp040
- Dever, G. E. A. (1984). *Epidemiology in health services management*. Gaithersburg, MD: Aspen Publication.
- Donnachie, C., Wyke, S., & Hunt, K. (2018). Men's reactions to receiving objective feedback on their weight, BMI and other health risk indicators. *BMC Public Health, 18*(1), 291. doi:10.1186/s12889-018-5179-1
- Franzoi, S. L., & Shields, S. A. (1984). The body esteem scale: Multidimensional structure and sex differences in a college population. *Journal of Personality Assessment, 48*(2), 173–178. doi:10.1207/s15327752jpa4802_12
- Franzoi, S. L., Vasquez, K., Sparapani, E., Frost, K., Martin, J., & Aebly, M. (2012). Exploring body comparison tendencies: Women are self-critical whereas men are self-hopeful. *Psychology of Women Quarterly, 36*(1), 99–109. doi:10.1177/0361684311427028
- Halliwell, E., Dittmar, H., & Orsborn, A. (2007). The effects of exposure to muscular male models among men: Exploring the moderating role of gym use and exercise motivation. *Body Image, 4*(3), 278–287. doi:10.1016/j.bodyim.2007.04.006
- Huang, W., Ramsey, K. M., Marcheva, B., & Bass, J. (2011). Circadian rhythms, sleep, and metabolism. *Journal of Clinical Investigation, 121*(6), 2133–2141. doi:10.1172/JCI46043
- Juczynski, Z. (2001). Inwentarz Zachowań Zdrowotnych. In Z. Juczyński (Ed.), *Narzędzia pomiaru w promocii i psychologii zdrowia [Measurement instruments for health promotion and psychology]* (pp. 87–92). Warszawa: Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego.
- Lipowska, M., & Lipowski, M. (2013). Polish normalization of the body esteem scale. *Health Psychology Report, 1*, 72–81. doi:10.5114/hpr.2013.40471
- Lipowska, M., Lipowski, M., Jurek, P., Jankowska, A. M., & Pawlicka, P. (2018). Gender and body-fat status as predictors of parental feeding styles and children's nutritional knowledge, eating habits and behaviours. *International Journal of Environmental Research and Public Health, 15*(5), 852. doi:10.3390/ijerph15050852
- Lipowska, M., Lipowski, M., Olszewski, H., & Dykalska-Bieck, D. (2016). Gender differences in body-esteem among seniors: Beauty and health considerations. *Archives of Gerontology and Geriatrics, 67*(4), 160–170. doi:10.1016/j.archger.2016.08.006
- Lipowski, M. (2012). Level of optimism and health behaviour in athletes. *Medical Science Monitor, 18*(1), 39–43. doi:10.12659/MSM.882200
- Moustafa, S., Tawbe, Z., Sleiman, F., Daouk, S. E., Al-Iskandarani, M., Sleiman, M., ... Hoteit, M. (2017). Body image perception in association with healthy lifestyle behaviour's in Lebanese men and women. *International Journal of School and Cognitive Psychology, 4*, 201. doi:10.4172/2469-9837.1000201

- Neumark-Sztainer, D., Paxton, S. J., Hannan, P. J., Haines, J., & Story, M. (2006). Does body satisfaction matter? Five-year longitudinal associations between body satisfaction and health behaviors in adolescent females and males. *Journal of Adolescent Health, 39*(2), 244–251. doi:10.1016/j.jadohealth.2005.12.001
- Olson, J. S., Hummer, R. A., & Harris, K. M. (2017). Gender and health behavior clustering among U.S. young adults. *Biodemography and Social Biology, 63*(1), 3–20. doi:10.1080/19485565.2016.1262238
- Page, A., & Fox, K. R. (1997). Adolescent weight management and the physical self. In K. R. Fox (Ed.), *The physical self: From motivation to well-being* (pp. 229–256). Champaign, IL: Human Kinetics.
- Patnaik, L., Joshi, A., & Sahu, T. (2015). Mobile phone-based education and counseling to reduce stress among patients with diabetes mellitus attending a tertiary care hospital of India. *International Journal of Preventive Medicine, 6*(1), 37. doi:10.4103/2008-7802.156267
- Pope, H. G., Olivardia, R., Borowiecki, J. J., & Cohane, G. H. (2001). The growing commercial value of the male body: A longitudinal survey of advertising in women's magazines. *Psychotherapy and Psychosomatics, 70*(4), 189–192. doi:10.1159/000056252
- Prentice, A. M., & Jebb, S. A. (2001). Beyond body mass index. *Obesity Reviews, 2*(3), 141–147. doi:10.1046/j.1467-789x.2001.00031.x
- Quick, V., Eisenberg, M. E., Bucchianeri, M. M., & Neumark-Sztainer, D. (2013). Prospective predictors of body dissatisfaction in young adults: 10-year longitudinal findings. *Emerging Adulthood, 1*(4), 271–282. doi:10.1177/2167696813485738
- Ravens-Sieberer, U., Kökönyei, G., & Thomas, C. (2004). School and health. In C. Currie, C. Roberts, A. Morgan, R. Smith, W. Settertobulte, O. Samdal, & V. Barnekow (Eds.), *Young people's health in context: International report from the HBSC 2001/2002 48 survey*. WHO policy series: *health policy for children and adolescents* (pp. 184–195). Copenhagen: WHO Regional Office for Europe.
- Ridgeway, R. T., & Tylka, T. L. (2005). College men's perceptions of ideal body composition and shape. *Psychology of Men & Masculinity, 6*(3), 209–220. doi:10.1037/1524-9220.6.3.209
- Srivastava, K., & Das, R. C. (2015). Personality and health: Road to well-being. *Industrial Psychiatry Journal, 24*(1), 1–4. doi:10.4103/0972-6748.160905
- Steptoe, A., Dockray, S., & Wardle, J. (2009). Positive affect and psychobiological processes relevant to health. *Journal of Personality, 77*(6), 1747–1776. doi:10.1111/j.1467-6494.2009.00599.x
- Stranges, S., Dorn, J. M., Shipley, M. J., Kandala, N. B., Trevisan, M., Miller, M. A., ... Cappuccio, F. P. (2008). Correlates of short and long sleep duration: Cross-cultural comparison between the United Kingdom and the United States: The Whitehall II Study and the Western New York Health Study. *American Journal of Epidemiology, 168*(12), 1353–1364. doi:10.1093/aje/kwn337
- Tiggemann, M. (2004). Body image across the adult life span: Stability and change. *Body Image, 1*(1), 29–41.
- Tiggemann, M., & Williamson, S. (2000). The effect of exercise on body satisfaction and self-esteem as a function of gender and age. *Sex Roles, 43*(1–2), 119–127. doi:10.1023/A:1007095830095
- Tylka, T. L. (2011). Refinement of the tripartite influence model for men: Dual body image pathways to body change behaviors. *Body Image, 8*(3), 199–207. doi:10.1016/j.bodyim.2011.04.008
- Young, S. N. (2007). How to increase serotonin in the human brain without drugs. *Journal of Psychiatry & Neuroscience, 32*, 394–399.
- Zanon, A., Tomassoni, R., Gargano, M., & Granai, M. G. (2016). Body image and health behaviors: Is there a relationship between lifestyles and positive body image? *La Clinica Terapeutica, 167*(3), 63–69. doi:10.7417/CT.2016.1935