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The effect of Instagram #fitspiration images on young women's mood, body image, and exercise behaviour

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ABSTRACT

The present study experimentally examined the effects of viewing Instagram images of fitspiration on body dissatisfaction, mood, and exercise behaviour among young women. Further, the study investigated if exercise engagement following exposure to fitspiration images could mitigate any negative effects from image exposure. Participants were 108 women, aged 17–25 years, who were randomly assigned to a 2 (image type: fitspiration, travel inspiration) × 2 (activity type: exercise, quiet rest) between groups design. State body dissatisfaction and mood were assessed at baseline, following image exposure, and following participation in 10 min of walking or quiet rest. Results demonstrated that exposure to fitspiration images led to significantly higher negative mood and body dissatisfaction relative to exposure to travel images. There was no difference in actual exercise behaviour according to image type. However, participants who exercised following exposure to fitspiration images were significantly more likely to report higher subjective exertion ratings. Overall, negative mood and body dissatisfaction decreased after both exercise and quiet rest, with no additional benefit of exercise for the fitspiration condition. These findings provide further evidence highlighting fitspiration as a potentially harmful online trend.

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1. Introduction

One of the most influential forces on young women's body image is the media's consistent depiction of an idealised and often unobtainable body type, referred to as the "thin ideal" (Grabe, Ward, & Hyde, 2008; Groesz, Levine, & Murnen, 2002; Want, 2009). In recent years, social media platforms such as Instagram have provided a new media domain for appearance ideals to permeate. Research has demonstrated that social media usage is associated with greater body image concerns (Fardouly & Vartanian, 2015; Fardouly, Willburger, & Vartanian, 2017; Holland & Tiggemann, 2016; Meier & Gray, 2014; Tiggemann & Slater, 2013). It is likely the photo-based aspect, both viewing and uploading, of social media that is most salient for body image (Lonergan et al., 2019; Meier & Gray, 2014; Mills, Musto, Williams, & Tiggemann, 2018). Approximately 89 % of Australians use some form of social media, with Facebook and Instagram among the most popular for young women (Sensis, 2018). Young women's rapidly growing use of image-based media such as Instagram is of concern.

On Instagram, images are usually denoted and searchable by specific hashtags (short, searchable phrases preceded by the # symbol). One prominent hashtag, #fitspiration (a portmanteau of the words 'fitness' and 'inspiration') or #fitspo for short, currently returns over 65 million posts on Instagram. Fitspiration content aims to motivate individuals toward a healthier lifestyle through engaging in exercise and healthy eating. Images typically display people in workout clothing in different settings, either posed or actively engaged in exercise, motivational text, or healthy foods (Carrotte, Prichard, & Lim, 2017; Tiggemann & Zaccardo, 2018).

In theory, fitspiration content has the potential for considerable positive influence on women's health and well-being in terms

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of promoting exercise engagement. People who follow the hashtag also report that it inspires them to be physically active and eat healthily (Raggatt et al., 2018). However, content analyses of fitspiration images have identified several features of fitspiration that raise concerns for women's body image (Carrotte et al., 2017; Simpson & Mazzeo, 2016; Tiggemann & Zaccardo, 2018). First, fitspiration images habitually showcase only one body type, a body type that is thin with visible tone (Tiggemann & Zaccardo, 2018). Second, a large proportion of the content promotes exercise to improve appearance (Carrotte et al., 2017; Simpson & Mazzeo, 2016). This is problematic as evidence suggests young women using appearance-related reasons as motivation to exercise rather than health or functional related reasons are at increased risk of body dissatisfaction (Prichard & Tiggemann, 2005, 2008; Strelan, Mehaffey, & Tiggemann, 2003). Third, fitspiration images are often sexualised in nature and objectify the female body (Carrotte et al., 2017; Tiggemann & Zaccardo, 2018), potentially prompting increased self-objectification in viewers.

To date, most experimental research has suggested that exposure to fitspiration imagery leads to greater negative mood and body dissatisfaction (Prichard, McLachlan, Lavis, & Tiggemann, 2018; Robinson et al., 2017; Tiggemann & Zaccardo, 2015), although one study has found no effects (Slater, Varsani, & Diedrichs, 2017). In general, the effects of the media's representation of an idealised body type on body image are commonly attributed to the process of social comparison (Want, 2009), whereby women make evaluative comparisons about their physical appearance to the idealised appearance of women in the media. The impact of fitspiration images on body dissatisfaction has been shown to be mediated by state appearance comparisons (Tiggemann & Zaccardo, 2015). Furthermore, close to 25 % of fitspiration followers report feeling inadequate in comparison to the appearance and overall fitness of the people in the images (Raggatt et al., 2018). Collectively, this suggests that, despite the seemingly positive intentions and popularity of fitspiration, it might simply be another way to make women feel worse about their bodies.

An important question that arises is whether or not viewing fitspiration content motivates young women to exercise, or if the common negative response to this imagery actually discourages exercise behaviour. Two experimental studies have explicitly examined fitspiration media and exercise inspiration and have shown that viewing fitspiration images leads to greater exercise intentions (Prichard et al., 2018; Tiggemann & Zaccardo, 2015). However, in the only study to test the impact of fitspiration on actual exercise behaviour, Robinson et al. (2017) demonstrated that exposure to fitspiration images did not increase amount of exercise relative to viewing traditional thin-ideal or muscular-ideal images. However, Robinson et al. (2017) did not include a non-appearance control condition, i.e., one without idealized bodies. As such, the present study sought to determine if exposure to fitspiration content would increase exercise engagement in young women compared to exposure to non-body images.

More generally, meta-analyses have concluded that exercise itself improves body image (Campbell & Hausenblas, 2009; Reel et al., 2007). Research suggests that this may be a result of increased self-efficacy and perceptions of fitness over time (Martin Ginis, Bassett-Gunter, & Conlin, 2012). A second focus of the present study was to investigate if engagement in exercise could ameliorate any negative effect produced by viewing fitspiration imagery. In one relevant study, Fallon and Hausenblas (2005) found that women exposed to idealised media images after engaging in exercise did not report lower body dissatisfaction compared to those in a quiet rest condition. Similarly, Prichard and Tiggemann (2012) demonstrated that exercise at the same time as being exposed to media images led to greater positive mood, and lower state self-objectification and body dissatisfaction relative to baseline levels, irrespective of exposure to idealised imagery. Research is yet to examine the effect of engaging in exercise after viewing idealised imagery. Given the positive effect of exercise for body image (Campbell & Hausenblas, 2009), as well as mental health and quality of life more generally (Penedo & Dahn, 2005), it seems likely that exercising after exposure to ideal media imagery would ameliorate the established negative effect of this form of media. Thus, exercising after exposure to fitspiration imagery may reduce body dissatisfaction and help account for the popularity of this form of media.

In sum, the present study aimed to experimentally examine the effect of fitspiration images viewed via Instagram on mood, body dissatisfaction, and exercise behaviour in young women. It also aimed to determine whether exercising after viewing these images might ameliorate any negative effects. It was predicted that exposure to fitspiration imagery would lead to greater negative mood and state body dissatisfaction than exposure to control (travel) imagery. Given the focus of fitspiration on exercise and fitness, it was expected that exposure to fitspiration imagery would lead to greater exercise behaviour (distance travelled on a treadmill and exertion) than exposure to travel imagery. A subsequent post-activity interaction between image type and activity was also predicted, such that exercise engagement was expected to ameliorate the negative effects of viewing fitspiration images.

2. Method

2.1. Participants

A sample of 108 female undergraduate students aged between 17 and 25 years (M = 20.24, SD = 1.86) were recruited from Flinders University to participate in a study examining social media, exercise and well-being. The majority of the participants (n = 93) were reimbursed $15 for their time; the remaining participants received course credit.

2.2. Experimental design

The study occurred in two experimental phases. The first phase examined the impact of image type (fitspiration, travel) on the dependent variables of negative mood and state body dissatisfaction (controlling for baseline scores), distance travelled on the treadmill, and self-rated exercise exertion. The second phase examined the impact of activity type (exercise, quiet rest) for the image type groups (fitspiration, travel) on the dependent variables of negative mood and state body dissatisfaction.

2.3. Materials

2.3.1. Experimental manipulation: image type

Following Tiggemann and Zaccardo (2015), two sets of images were constructed for the study: 18 fitspiration images and 18 travel images. All images were sourced from public and freely available social media profiles on Instagram using the hashtags "fitspiration" and "travel" respectively. The fitspiration image set (N = 18) contained nine images of women posed in fitness clothing, four images of women engaged in fitness activities, four before-and-after body transformation images, and one travel image (to allow the travel-related items in the questionnaire to appear plausible). The ratio of the different types of images was based on Tiggemann and Zaccardo's (2018) content analysis, to ensure that the set of images accurately represented fitspiration content on social media. The travel image condition contained pictures of various travel destinations. Although eight of these featured people, the people were not the main feature of the image and their physical appearance was not clear.

The final 18 images in each condition were chosen from a larger set of 80 images (40 per condition) that were pre-tested by three independent female raters from the target age group for quality, physical attractiveness focus, and whether the image inspired them to be fit or to travel on 7-point scales ranging from *not at all* to *extremely*. The final sets of images were selected to be equivalent on perceived quality (fitspiration: M = 4.91, SD = 0.94; travel: M = 4.87, SD = 0.67). The fitspiration images had a greater focus on physical attractiveness (fitspiration: M = 5.46, SD = 0.78; travel: M = 1.19, SD = 0.42) and fitness inspiration (fitspiration: M = 5.07, SD = 0.52; travel M = 1.15), than the travel images. The travel images were higher on travel inspiration (fitspiration: M = 1.31, SD = 0.97; travel: M = 5.13, SD = 0.99).

The images were presented on an Apple iPad via the Instagram application using Instagram profiles created for the present study. The use of an actual Instagram profile was designed to replicate the real-world experience of scrolling on a social media application as opposed to viewing successive images on a screen.

2.4. Questionnaire measures

2.4.1. Mood and body image

Visual analogue scales (VAS) were used to measure mood and body dissatisfaction before (baseline) and after viewing the Instagram profiles (post-image), and again after exercise or quiet rest (post-activity). Following previous research (Robinson et al., 2017; Tiggemann & Zaccardo, 2015), the scales included five different state mood dimensions (anxiety, depression, happiness, anger, and confidence) and four dimensions which represented state body dissatisfaction (fat, physically attractive, satisfied with body size, and satisfied with body shape). Participants were asked to indicate how they feel *right now* with regards to each of the descriptors by marking a vertical line along a horizontal 100 mm line with end points labelled *not at all* (0) to *very much* (100). Overall scores for negative mood and body dissatisfaction were calculated by averaging the relevant items (positive items were reverse scored). In the current sample, the negative mood scale had slightly below acceptable internal reliability (α = .61, .66 and .72 at baseline, post-image, and post-activity respectively) and so these results should be interpreted with caution. The body dissatisfaction scale had good internal reliability (α = .84 at all three timepoints).

2.4.2. Exercise behaviour

For those in the exercise condition, exercise behaviour was measured in two ways: distance travelled on the treadmill and perceived exertion on the treadmill.

2.4.2.1. Distance travelled. The incline on the treadmill was set at neutral. However, participants could choose the speed with which they walked/ran. Following Robinson et al. (2017), the distance travelled on the treadmill (in km) was then recorded by the researcher at the end of the 10 min bout.

2.4.2.2. Perceived exertion. For those in the exercise condition, participants were asked to rate the extent to which the exercise they engaged in was either *low*, *average*, or *high* compared to their typical exercise engagement. This measure was designed for the present study to capture perceived exertion after the bout of exercise.

2.4.3. Social media usage

Given the study was advertised as a study on "Social media, Exercise and Well-being," questions on typical social media usage were included. Participants were asked how often in the past week they used Facebook, Instagram, You-Tube, Snap-Chat, Tumblr, Myspace, Twitter, or Pinterest on a 5-point scale, ranging from 1 (*never*) to 5 (*very often*). They were also asked if they have an Instagram or Facebook account, and if so, the average number of minutes they spent on them each day. Participants were asked separate items on how frequently in the past week they had seen fitness, fashion and travel related material on social media and if they have posted any such material.

2.4.4. Inspiration

Following Tiggemann and Zaccardo (2015), participants were asked to rate how inspired they had felt to improve their fitness and how inspired they had felt to travel while viewing the images on two 7-point scales ranging from 1 *(not at all)* to 7 *(very inspired)*.

2.4.5. Demographic information

Participants were asked their age and ethnicity. Upon completion of the study, height, and weight were measured by the researcher in order to calculate body mass index (BMI).

2.5. Procedure

The study was approved by the Social and Behavioural Research Ethics Committee at Flinders University. Participants were recruited for a study on "Social media, Exercise and Well-being." Upon arrival, participants were asked to read the letter of introduction and complete the consent form. Participants then completed the social media usage questions and baseline VAS for mood and state body dissatisfaction. They were then randomly allocated via Qualtrics to one of the four experimental conditions (fitspiration images/quiet rest; fitspiration images/exercise; travel images/quiet rest; travel images/exercise). In each condition, participants were presented with an Instagram profile featuring either 18 fitspiration related images or 18 travel related images on an Apple iPad. In order to mimic actual engagement on social media, participants were asked to 'like' each image they viewed by double tapping on it, and to also comment on the quality of each image by stating either *'low', 'ok',* or *'high'* in the comment box for each image. Following exposure to the Instagram profile, participants completed post-image measures of mood and state body dissatisfaction.

Participants allocated to the exercise condition were asked to exercise on a treadmill at a speed of their choice for 10 min. Upon completion, the researcher recorded distance travelled on the treadmill and asked participants to verbally rate their exercise exertion. Participants allocated to the quiet rest condition were asked to play the game "Snake" on the iPad for 10 min. This was chosen as a neutral activity with no appearance-related cues.

All participants then completed the post-activity mood and state body dissatisfaction scales, as well as the inspiration measure, followed by the demographic information. The researcher then measured participants' height and weight.

3. Results

3.1. Characteristics of the sample

The overall sample had a mean age of 20.24 years (SD = 1.86), with a range from 17–25 years old. Mean body mass index (BMI) was 23.02 (SD = 3.93). A large proportion of the participants were Caucasian (64.8 %) or Asian (27.8 %), with 3.7 % indicating they were from an Indian background, 0.9 % African, and 2.8 % reporting 'other' for their ethnicity. Every woman in the sample reported they had a Facebook account (100 %) and the majority (79.8 %) had an Instagram account. Overall, 92.6 % had seen fitness-related material on social media in the past week and 59.3 % of participants specifically followed fitness-related pages.

According to G*Power (Faul, Erdfelder, Lang, & Buchner, 2007), the sample size achieved (N = 108) was sufficient to detect medium-

Table 1
Means (SD) for sample characteristics and baseline scores across the four conditions (N = 108).

	Overall	Fitspiration (*n* = 53)		Travel (*n* = 55)	
		Quiet rest (*n* = 25)	Exercise (*n* = 28)	Quiet rest (*n* = 26)	Exercise (*n* = 29)
Age	20.24 (1.86)	20.40 (1.83)	20.61 (2.11)	19.88 (1.80)	20.07 (1.69)
BMI	23.02 (3.12)	23.75 (4.80)	22.27 (3.49)	23.05 (4.34)	23.08 (3.12)
Baseline negative mood	25.78 (11.70)	21.83 (9.75)	27.99 (10.66)	27.47 (11.48)	25.54 (13.90)
Baseline body dissatisfaction	54.51 (20.53)	52.66 (27.74)	54.19 (17.47)	54.57 (16.77)	56.38 (19.96)

Table 2
Means (SD) and adjusted means (SE) for negative mood and body dissatisfaction by image type (N = 108).

	Baseline	Post-image exposure	
	M (SD)	*M (SD)*	*Adj. M (SE)*
Negative mood			
Fitspiration (*n* = 53)	25.09 (10.61)	28.53 (12.27)	29.10 (0.88)
Travel (*n* = 55)	26.45 (12.73)	24.16 (10.90)	23.60 (0.86)
Body dissatisfaction			
Fitspiration (*n* = 53)	53.47 (22.68)	59.30 (21.29)	60.24 (0.94)
Travel (*n* = 55)	55.52 (18.37)	56.50 (18.28)	55.89 (0.92)

Table 3
Frequency (and percentage) of self-reported exercise exertion by image type for participants who exercised (n = 56).

Image Type	Subjective Exercise Exertion		
	Low	Average	High
Fitspiration (*n* = 28)	4 (15.4 %)	20 (71.4 %)	4 (14.3 %)
Travel (*n* = 28)	12 (42.9 %)	16 (57.1 %)	0 (0 %)

Note. Data were missing for one participant.

sized effects (.30) with power of .80, and an alpha of .05, across the ANCOVAs and mixed ANOVAs. A Bonferroni adjustment (.05/3) was applied to account for the three post-image comparisons, such that $p < .017$ was considered significant.

Preliminary analyses indicated that in support of the manipulation, participants in the fitspiration image condition reported significantly greater inspiration to be fit ($M = 5.04$, $SD = 2.16$) than participants in the travel image condition ($M = 3.05$, $SD = 2.09$), $t(106) = 4.85$, $p < .001$. The participants in the travel image condition reported significantly greater inspiration to travel ($M = 5.95$, $SD = 1.41$) than participants in the fitspiration image condition ($M = 3.70$, $SD = 1.93$), $t(106) = 6.94$, $p < .001$. Across the four conditions (fitspiration images/quiet rest; fitspiration images/exercise; travel images/quiet rest; travel images/exercise) there were no initial differences between groups on age, $F(3, 104) = 0.82$, $p = .486$, BMI, $F(3, 104) = 0.62$, $p = .604$, ethnicity, $\chi^2(12) = 15.08$, $N = 108$, $p = .237$, baseline state negative mood, $F(3, 104) = 1.49$, $p = .222$, or baseline state body dissatisfaction, $F(3, 104) = 0.15$, $p = .932$ (see Table 1 for means and *SD*s).

3.2. Effect of image type on negative mood and body dissatisfaction

ANCOVAs were used to determine whether there was any significant difference between the two image conditions on negative mood and state body dissatisfaction after controlling for baseline scores (means and adjusted means reported in Table 2). The results showed that exposure to the fitspiration images led to significantly greater negative mood, $F(1,105) = 20.09$, $p < .001$, *partial* $\eta^2 = .161$, and significantly greater body dissatisfaction, $F(1, 105) = 12.40$, $p = .001$, *partial* $\eta^2 = .106$, than exposure to the travel images.

3.3. Effect of image type on exercise behaviour

Of participants allocated to the exercise condition, there was no significant difference between those exposed to the fitspiration images in terms of distance travelled ($M = 1.05$ km, $SD = 0.16$) compared to those exposed to the travel images ($M = 1.02$ km, $SD = 0.22$), $t(53) = 0.54$, $p = .589$. However, a greater proportion of those exposed to travel images rated their exercise exertion as low, compared to participants who were exposed to fitspiration images who were more likely to rate their exercise exertion as average or high, $\chi^2(2) = 8.44$, $N = 56$, $p = .015$ (see Table 3).

3.4. The effect of exercise following image exposure

To examine the impact of activity type following image exposure, mixed ANOVAs were used to determine whether there were any significant differences between the four groups on negative mood and state body dissatisfaction from post-image exposure to post activity (means reported in Table 4). For mood, there was an interaction between time and condition type, $F(3, 104) = 5.17$, $p = .002$, *partial* $\eta^2 = .130$, whereby negative mood decreased for all groups except the travel/quiet rest group. Overall, there was no main effect of condition type, $F(3, 104) = 2.32$, $p = .080$, *partial* $\eta^2 = .063$, but there was an overall main effect of time with a significant decrease in negative mood evident, $F(1, 104) = 7.36$, $p = .008$, *partial* $\eta^2 = .066$. Similarly, for body dissatisfaction there was an interaction between time and condition type, $F(3, 104) = 4.13$, $p = .008$, *partial* $\eta^2 = .106$, whereby body dissatisfaction decreased for all groups except the travel/quiet rest group. There was no main effect of condition type, $F(3, 104) = 0.08$, $p = .972$, *partial* $\eta^2 = .002$, but there was a main effect of time with body dissatisfaction significantly decreasing over time, $F(1, 104) = 23.82$, $p < .001$, *partial* $\eta^2 = .186$. Thus, regardless of exercise condition, for those in the fitspiration condition, the elevated levels of negative mood and body dissatisfaction found after exposure to fitspiration images decreased. For those exposed to travel images, only women in the exercise condition reported a decrease in negative mood and body dissatisfaction.

4. Discussion

The present study sought to determine the effects of viewing fitspiration imagery on young women's mood, body image, and exercise behaviour, and whether engaging in exercise after viewing these images would ameliorate any potential negative effects. Consistent with previous research that has examined the impact of fitspiration imagery in comparison to travel inspiration imagery (Tiggemann & Zaccardo, 2015), exposure to fitspiration resulted in greater negative mood and body dissatisfaction. These findings add to the growing body of experimental research on the negative impact of fitspiration (Prichard et al., 2018; Robinson et al., 2017; Tiggemann & Zaccardo, 2015). Thus, despite their positive intentions and popularity, fitspiration may simply be another way to make women feel worse about themselves and their bodies. There is a clear need to further understand their impact and whether there are any positive benefits from this type of imagery.

Table 4
Means (SD) for negative mood and body dissatisfaction by activity type and image type group from baseline to post-image exposure to post activity.

	Fitspiration		Travel	
	Quiet rest (n = 25)	Exercise (n = 28)	Quiet rest (n = 26)	Exercise (n = 29)
Negative mood				
Baseline	21.83 (9.75)	27.99 (10.66)	27.47 (11.48)	25.54 (13.90)
Post-image exposure	25.62 (12.66)	31.13 (11.51)	26.51 (9.27)	22.05 (11.94)
Post activity	24.09 (11.68)	25.71 (10.39)	28.28 (13.15)	20.20 (13.52)
Body dissatisfaction				
Baseline	52.66 (27.74)	54.19 (17.47)	54.57 (16.77)	56.38 (19.96)
Post-image exposure	57.65 (26.63)	60.76 (15.44)	56.02 (16.35)	56.93 (20.14)
Post activity	52.70 (27.06)	53.50 (15.24)	56.57 (16.83)	52.93 (18.39)

Fitspiration images are intended to motivate viewers towards their fitness goals by promoting exercise. In line with this and previous research (Robinson et al., 2017; Tiggemann & Zaccardo, 2015), women in the present study who viewed fitspiration images reported greater inspiration to be fit. Contrary to expectations, participants exposed to fitspiration images did not travel a greater distance on the treadmill than participants exposed to travel images. This finding extends previous research which demonstrated that exposure to fitspiration images relative to thin-ideal and muscular-ideal images did not increase exercise behaviour (Robinson et al., 2017). However, it should be noted that in both the present study and that of Robinson et al. (2017), participants were given only 10 min to exercise. It is possible that benefits on exercise might be observed if measured in a different manner (e.g., duration of exercise rather than distance travelled).

Despite no observable difference in exercise behaviour for those allocated to the exercise condition, significantly more of the participants in the fitspiration image condition rated their exercise exertion level as average or high relative to those exposed to travel images. Thus, women in the fitspiration condition who exercised were more likely to perceive that they worked relatively harder while on the treadmill. This perception may have helped women feel like they were working towards the goal depicted in fitspiration images or, alternatively, viewing fitspiration images primed participants to think about exercise more, resulting in greater perceived exertion. At a practical level, perceiving greater exercise exertion after viewing fitspiration images whilst not objectively travelling any further may actually result in lower levels of fitness. Despite this, research (e.g., Zahrt & Crum, 2017) suggests that people who perceive themselves as more active (after controlling for actual activity levels) have better health outcomes. Future research could usefully examine other measures of both objective and perceived exertion in response to viewing fitspiration imagery, as well as the influence of exercise motivation and different fitness goals.

Overall, the findings suggest that the fitspiration trend may be of little value to its consumers. While inspiring, in the present study fitspiration imagery did not produce greater exercise behaviour and instead resulted in greater negative mood and body dissatisfaction. Given the popularity of fitspiration and the pervasive nature of social media, research is now also needed to focus on the specific aspects of fitspiration that may lead to positive experiences. For example, active images of fitspiration (e.g., images of women engaged in exercise) have been shown to be significantly more inspirational than posed, non-active images (e.g., 'selfies'; Prichard et al., 2018). In addition, recent evidence suggests that exposure to promotional campaigns depicting diverse bodies actively moving that are targeted at inspiring fitness regardless of what you look like (e.g., #thisgirlcan, #jointhemovement) leads to greater appearance satisfaction and exercise intentions (Mulgrew, McCulloch, Farren, Prichard, & Lim, 2018). Whether these intentions translate into increases in actual exercise behaviour remains unknown. Thus, research could usefully examine whether fitness inspiration might translate into greater exercise behaviour when it displays a more diverse range of bodies in comparison to idealised images.

The second aim of the study was to determine whether engagement in exercise following exposure to fitspiration images would ameliorate the negative effects of exposure to fitspiration. Overall, post-activity there was a significant interaction between time and condition, whereby body dissatisfaction and negative mood decreased for all groups except for women in the travel/quiet rest condition. As expected, there was no decrease in negative mood or body dissatisfaction for women in the travel/quiet rest condition. However, there was a decrease in these state variables for both exercise conditions (fitspiration and travel), and the fitspiration/quiet rest condition. The findings for the exercise conditions are similar to those of Prichard and Tiggemann (2012) who also found a reduction in state body dissatisfaction following exercise regardless of the type of media participants had viewed. They are also consistent with previous meta-analyses on the benefits of exercise engagement for both mood and body image concerns (Campbell & Hausenblas, 2009; Hausenblas & Fallon, 2006; Reel et al., 2007). The reduction in negative mood and body dissatisfaction in the fitspiration/quiet rest condition is a little harder to explain. Given that levels returned to around baseline, it is possible that the acute negative effects of viewing fitspiration imagery faded over time. More research is needed to determine the long-term effects of exposure to this type of imagery.

As with all research, the findings of the present study should be considered in light of some potential limitations. For example, the lab-based nature of the study limits its generalisability. Despite this, the images display to participants were sourced from publicly available Instagram profiles and were presented on an iPad in an Instagram account with the opportunity to like and comment on each image, ensuring that the process was as ecologically valid as possible. The lab-based setting also only allowed for a 10-minute bout of either exercise or quiet rest. Perhaps a longer bout of exercise would have produced differential effects. Due to ethical considerations, all participants were aware of the possibility of doing exercise in the study and the treadmill was visible to all participants. Future studies could consider more naturalistic ways of capturing exercise behaviour after viewing fitspiration images. The sample were primarily young, Caucasian university students. Future research could usefully examine the impact of fitness inspiration on other samples (e.g., different ethnicities, age groups, genders, or specific communities). The sample size per condition was also relatively small and thus the study may have been underpowered to detect interactions. Future research could also extend to other types of Instagram content. For example, "clean eating" or #cleaneating is another prominent health trend that is seemingly healthy due to its focus on natural, unprocessed food. However, it is commonly found alongside fitspiration imagery (Carrotte et al., 2017), and has been linked to increased levels of dietary restraint

(Allen, Dickinson, & Prichard, 2018). Finally, the control condition here consisted of travel images. Future research should test fitspiration material against stricter control conditions (e.g., exercise equipment, or images of bodies that do not represent the thin ideal).

In sum, the present study adds to the weight of evidence that demonstrates the negative impact of exposure to fitspiration images on women's mood and body dissatisfaction. Despite these negative effects, the images themselves are still considered inspirational. This is perhaps not surprising as they typically display an 'ideal' that women are encouraged to strive for. However, when considering actual exercise behaviour, there appears to be no beneficial effect. Research is now needed to examine whether these types of images can have any positive effects and to gain greater insight into particular features that may be helpful or harmful to mood, body image, and exercise behaviour. Research is also needed to determine the longer-term cumulative effect of exposure to this type of imagery.

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CRediT authorship contribution statement

Ivanka Prichard: Conceptualization, Methodology, Formal analysis, Writing - original draft, Supervision. **Eliza Kavanagh:** Conceptualization, Methodology, Investigation, Formal analysis, Writing - original draft. **Kate E. Mulgrew:** Conceptualization, Writing - review & editing. **Megan S.C. Lim:** Conceptualization, Writing - review & editing. **Marika Tiggemann:** Conceptualization, Methodology, Writing - review & editing.

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