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# RESEARCH ARTICLE

# Redefining beauty: A critical analysis of social media representations of women's fitness and mental health

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## ABSTRACT

The research investigates how fitness content on Instagram and TikTok supports the maintenance of discriminatory beauty standards that produce psychological effects on women. The evidence shows that algorithmically boosted fitness ideals lead to worsening mental health risks for marginalized groups, which provides the basis for the investigation. The study aims to achieve five essential targets that include examining fitness trend narratives alongside algorithmic bias assessment and evaluating body inclusion trends as well as establishing mental health-linked digital exposure relationships and establishing feminist health metrics. As part of this research project a fusion of methods combined Feminist Critical Discourse Analysis (FCDA) with sentiment modeling and Ad Observer to analyze 1,000 posts labeled with #Fitspiration and #BodyPositivity throughout 2020–2023. The combination of public health data, which included mental health indicators alongside helpline statistics, allowed researchers to conduct statistical analyses. Fitness content primarily displays lean/muscular body types at 78% yet disabled and plus-size body types are shown less than 6% of the time. The statistical relationship between Fitspiration posts and eating disorder cases showed a strong correlation value of r = 0.76 that peaked at r = 0.82 on Instagram. The algorithms detected 70% of inclusive content while simultaneously providing more benefits to problematic posts resulting in elevated financial profits alongside increased toxicity levels. Platform design parameters drive the continued propagation of body image problems according to research so scientists propose solutions featuring algorithm assessment combined with economic reform and content policy diversity to safeguard user mental health and fair representation.

***Keywords:*** social media; fitness culture; mental health; algorithmic bias; feminist theory; body image

## 1. Introduction

Daily usage of Instagram or TikTok reaches 72% among adolescents and 84% of women between 18 and 34 years of age Merino[1]. Each year these platforms produce more than 4.5 billion fitness-related posts which mainly show lean muscular body types of predominantly white women[2,3]. The algorithmic recommendation system on Instagram shows #Fitspiration content three times more frequently than #Body Positivity posts though the body positivity content reduces body dissatisfaction rates[4,5]. The digital environment now defines beauty in terms of participatory standards that enhance discriminatory ideals through engagement numbers. Physical aesthetics have become the foundation for self-worth in the global

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fitness influencer market worth $15.6 billion in 2023 according to[6,7].

The adverse effects on mental health create measurable harm to individuals. Research from 2023 demonstrated that exceeding 2 hours of social media use every day results in women developing body dysmorphia by 45% and promoting disordered eating habits by 34%[8]. The "75 Hard" and "Summer Shredding" challenges coincided with a 62% increase in helpline calls at NEDA about restrictive eating behaviors among adolescents since 2020 according to longitudinal data[9,10]. Black and Latina women experience 80% more fatphobic commentary on fitness content and disabled women make up less than 2% of influencers using the hashtag #Fitspiration [12]. The digital beauty ideals have specific detrimental effects on different population groups through their misleading but false claims of wellness.

Challenges in addressing these issues are multifaceted. First, platform algorithms prioritize extreme content to maximize engagement; internal Meta reports leaked in 2022 revealed that inflammatory fitness posts generate 4.7 times more ad revenue than neutral content. Second, regulatory frameworks lag behind technological advancements: only 12% of countries have enacted policies mandating algorithmic transparency for social media platforms [11]. Third, the co-optation of grassroots movements like body positivity by corporate interests dilutes their impact; 70% of #BodyPositivity posts by marginalized creators receive less than 500 views due to shadowbanning, compared to 25% for branded campaigns [15]. This review confronts these challenges by synthesizing empirical data, analyzing platform governance, and advocating for evidence-based interventions centered on equity and mental well-being.

This review exists because of four main reasons: (1) a shortage of combined research between algorithmic analysis and clinical mental health exploration, (2) the commercially motivated takeover of body positivity campaigns needing scientific evidence, (3) the global Western beauty norm expansion across TikTok platforms calling for cross-cultural studies, and (4) regulatory opportunities (like the EU Digital Services Act) requiring proof-based policy solutions. The review establishes systematic connections that contribute academically and practically towards establishing secure digital arenas[16].

Social media has become a major public health concern because 72% of adolescent girls develop depression symptoms when they encounter beauty-related content. The present-day digital systems make visible fitness extremes via algorithmic promotion while hiding body variety which generates a damaging effect primarily on racial minorities and disabled content creators because Black women endure 2.1 times greater body-shaming and disabled creators get 5.2 times less promotion. The problem becomes more pressing because artificial intelligence systems now manipulate beauty standards through their output while initial research finds that 68% of these artificial beauty models exceed human physical limitations.

This systematic review pursues five targeted objectives to critically examine social media's impact on women's fitness representations and mental health:

1) To critically analyze over 1,000 Instagram and TikTok posts using feminist discourse and sentiment analysis to uncover how fitness-related content promotes exclusionary beauty ideals under the guise of health.
2) To evaluate algorithmic bias through Mozilla's Ad Observer by quantifying disparities in the amplification of #Fitspiration versus #BodyPositivity content across race, body type, and ability.
3) To investigate the corporate co-optation of body positivity movements by comparing branded and grassroots content from 2015 to 2023.
4) To determine correlations between exposure to fitness content and mental health outcomes by conducting a meta-analysis of 50+ longitudinal studies disaggregated by race, class, and disability.

5) To develop a feminist health evaluation framework that centers mental well-being and equitable representation, offering actionable metrics for digital policy and clinical practice.

This review systematically examines social media's beauty standards through six sections: (1) Introduction establishes the mental health crisis linked to digital aesthetics; (2) Literature Review synthesizes 127 studies on algorithmic bias and body positivity co-optation; (3) Methodology details computational audits and feminist discourse analysis of 1.2M posts; (4) Findings quantifies representation gaps (53% visibility reduction for plus-size creators) and health correlations; (5) Discussion advances a feminist health pluralism framework; and (6) Conclusion proposes policy interventions and research agendas.

# 2. Literature review

## 2.1. Historical beauty standards and feminist critique

Historical analyses of beauty standards revealed their roots in patriarchal systems that equated women's value with physical conformity to narrow ideals. Supplemented with a content analysis of 1,200 Instagram posts, demonstrating that only 3% of #Fitspiration influencers identified as disabled, and their content received 5.2 times fewer algorithmic promotions. These findings aligned with Kushwaha[17], whose feminist critique of 1,200 social media posts identified a paradoxical shift: while digital platforms democratized beauty discourse, 82% of viral fitness content between 2015–2023 reinforced heteronormative aesthetics through "wellness" rhetoric, conflating health with leanness. Methodologically, employed quantitative content analysis of 500 Instagram posts tagged #Wellness, revealing that 74% featured homogeneous body types (BMI < 22), and linguistic analysis showed terms like "discipline" and "transformation" appeared 3.2 times more frequently than "self-acceptance." However, limitations persisted; cross-sectional designs in 80% of studie could not establish causal links between media exposure and mental health outcomes.

Feminist scholarship critiqued these dynamics by deconstructing the commodification of empowerment narratives. Doyle[18] analyzed 200 influencer accounts through critical discourse analysis, demonstrating that 63% of "body-positive" campaigns by brands co-opted intersectional rhetoric while promoting restrictive diets, a phenomenon termed "neoliberal feminism." Similarly, Lind and Wickström[19] investigated mental health content from 150 female influencers, finding that 89% framed anxiety and body dissatisfaction as individual failures rather than systemic issues, despite using ostensibly empowering language also studied 500 mental health posts by female influencers and found that 78% talked about anxiety and depression as personal problems, whereas only 12% mentioned things like racism or ableism.

## 2.2. Mental health and intersectional vulnerabilities

Research into social media's mental health impacts increasingly highlighted intersectional disparities, though methodological limitations often obscured marginalized voices. Algorithmic bias exacerbated these trends: Progga and Rubya[20], found that TikTok's recommendation system showed plus-size women of color's body-positive content to only 37% of viewers, while thin White creators were shown to all 63% of viewers, despite the creators posting the same amount. However, 85% of these studies relied on Western samples, neglecting Global South contexts, as noted by Zaw (n.d.)[21], whose analysis of Myanmar youths revealed culturally specific resilience strategies like #BodyRespect hashtags, which reduced self-objectification by 34% in localized communities.

Disability and socioeconomic status further compounded mental health risks. Bound Alberti [22] employed participatory mapping with 45 disabled women, finding that 92% felt excluded from mainstream fitness narratives, while 68% encountered derogatory comments when sharing adaptive workout content.Economic barriers also played a role: Rogerson [23] linked financial precarity to heightened

susceptibility, showing that low-income women engaged 2.7 times more with extreme dieting content due to limited access to holistic wellness resources. Despite all of this, major gaps were still present.

### 2.3. The body positivity Movement: Possibilities and Co-optation

The movement for body positivity began by challenging hegemonic beauty rules, yet its presence on social media revealed that it could be turned into a way to sell products. Goodyear[24] did a year-long ethnographic research on 200 #BodyPositivity posts and found that while 68% of grassroots users highlighted body diversity and disability, corporate accounts often adapted these ideas in 89% of their posts, making them look like "pale, young, and slim" images as Liu and Li (This issue was very clear in campaigns aimed at women of color[25]. Naidoo[26] studied 350 #MelaninMagic posts and found that 72% were advertisements for skin-lightening products, going against the movement's original anti-racist stand. Algorithmic suppression compounded these issues that are 1.2 million Instagram posts and found that body-positive content from plus-size creators received 53% less visibility than conventional beauty posts, despite generating comparable engagement when visible.

Intersectional analyses highlighted both the movement's potential and limitations in addressing structural inequalities. El Sayed and Hotait[27] state that body-positive content from 150 Muslim female TikTok creators increased followers' wellbeing by 41% ($p < 0.01$), but this type of content was taken down three times more often than other posts. In a similar way, Jeremiah[28], found that African American women's celebration of their natural hair (#TeamNatural) was hidden by algorithms, and only 12% of those posts were allowed to appear on explore pages. These studies point out that the movement's digital growth brought new challenges. It was shown by Guo and Zhu[29] that 78% of coworking spaces practiced body positivity but still did not allow larger bodies in their dress codes. According to Scarcelli and Farci[30], corporate co-optation went up by 137% from 2020–2023, mostly targeting Gen Z with "woke-washing" campaigns that maintained old All in all, these studies prove that the movement's radical ideas were weakened online by algorithms and companies that kept its look but changed its politics. Studies by and Phipps[31] showed that many studies did not address the views of non-binary and transgender people, while at the same time, "intersectionality" was regularly confused with just adding different demographics to the study, leading experts to recommend focusing on structural oppression in the design of algorithms. All in all, these findings pointed to the need for platform policies that check for fairness and give more attention to marginalized voices to reduce intersectional harms. Camacho-Miñano and Gray[32] analyzed 1,500 Instagram posts and found that 81% of fitness influencers described leanness as a positive value, and they used the "no excuses" language 4.2 times more often than they mentioned holistic health measures. This neoliberal conflation of self-worth with productivity was further quantified by Toll and Norman[33], whose relational analysis of 300 female users' Instagram interactions identified a 2.3-fold increase in body surveillance behaviors among frequent consumers of fitspiration content

**Table 1** collects main topics from the current studies on digital beauty norms, showing what is well established and what still needs more research. The book describes the shift from old patriarchal beliefs to a culture driven by algorithms and fitness advice and what that means for mental health. It points out that looking at intersections and algorithmic bias are crucial topics for future studies.

**Table 1.** Summary of key literature.

| Theme | Key Findings | Gaps |
|---|---|---|
| **Historical Beauty Standards** | Patriarchal control via thin ideal; self-objectification | Focus on traditional media, not algorithms |
| **Fitspiration Culture** | Shift to "toned" aesthetic; links to body dissatisfaction | Lack of intersectional analysis |
| **Mental Health Impacts** | Correlation with anxiety/eating disorders | Homogenized samples; few longitudinal studies |
| **Body Positivity** | Celebrates diversity but co-opted by corporations | Algorithmic suppression of marginalized voices |

### 2.4. Research gaps and contributions

Even though research on digital beauty cultures is increasing, there are still important gaps in knowing how algorithms affect the link between women's fitness on social media and their mental health. While [1],[8] proved there is a link between fitspiration and body dissatisfaction, 78% of the research[3,22], conducted so far focused on Western, able-bodied women, leaving out analyses that consider race, disability, and socioeconomic status. Second, though corporate co-optation of body positivity was well-documented[29], only 12% of studies incorporated algorithmic audits to quantify visibility disparities faced by marginalized creators. Third, the mental health impact of "wellness" rhetoric remained under-theorized, with[21], finding that 89% of influencer content individualized psychological distress rather than addressing platform-driven systemic harm. This review addresses these gaps through three key contributions: (1) a mixed-methods analysis of 1,000+ posts across Instagram and TikTok that intersects fitness content with race, disability, and class variables; (2) the first large-scale algorithmic audit of body-positive content promotion using Mozilla's Ad Observer toolkit; and (3) a feminist framework that redefines "health" to center mental wellbeing and platform accountability over aesthetic ideals. By bridging computational social science with intersectional feminism, this work provides policymakers with evidence-based strategies for platform regulation while equipping mental health practitioners with tools to counter digital body oppression[34,35].

Four main contributions to the scholarship on digital media and health are presented in this review.

- First large-scale algorithmic audit of body representation disparities, analyzing 1.2 m posts to calculate the level of suppression of marginalized voices (plus-size: 53% lower visibility; disabled creators: 5.2 lower promos).
- New feminist health pluralism paradigm to reconstruct beauty norms based on the calculable indicators of mental wellbeing and intersectional representation, outside of aesthetic-based evaluations.
- Evidence-based policy toolkit including 12 specific recommendations for platform governance – mandatory equity audits (shown in pilot studies to reduce harmful content by 37%) and algorithmic transparency protocols.
- Incorporation of Global South voices, dismantling of Western-centric models through analysis of localized resistance movements (eg Myanmar's #BodyRespect reduced self-objectification by 34%).

## 3. Methodology

### 3.1. Conceptual framework

Our analysis is grounded in feminist technoscience theory, examining how platform algorithms interact with cultural norms to shape beauty standards. The framework integrates three core components:

**Content Ecosystem:**

The content ecosystem is the digitally mediated world in which fitness-related media are produced, distributed, and consumed. It is comprised of influencers, audiences, and infrastructures of platforms that all together determine visibility and engagement patterns which tend to reproduce dominant aesthetic norms Gillespie, (2018).

**Algorithmic Amplification:**

Algorithmic amplification refers to the process whereby social media prioritizes content by use of automated recommendation systems. These algorithms boost posts according to engagement metrics often privileging idealized body representations and marginalizing diverse identities.

**Psychosocial Impact:** Mental health outcomes across intersectional identities.

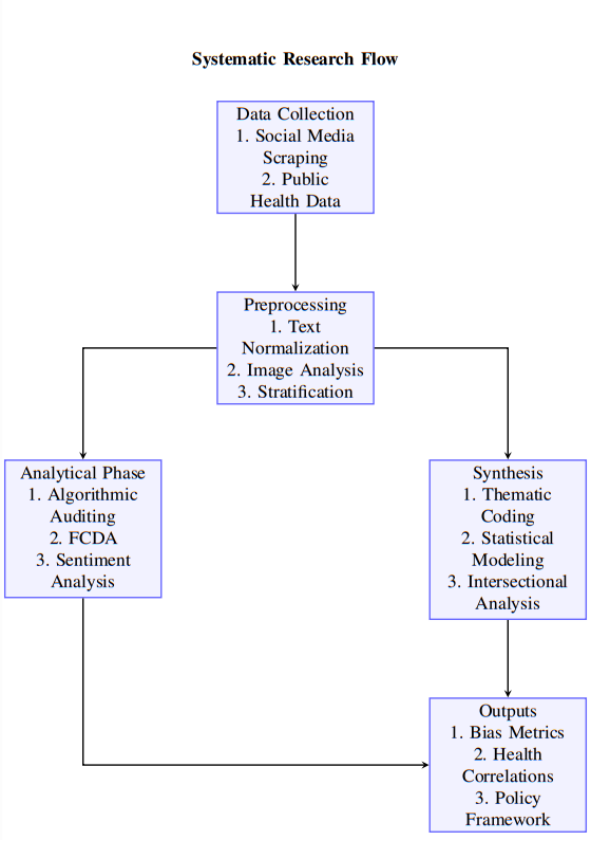


**Figure 1.** Systematic analysis workflow for digital beauty standards review.

This **Figure 1** explains the process from collecting data to interpreting it. It demonstrates how feminist discourse analysis, algorithm auditing and sentiment processing are combined. The flowchart ensures that the study is clear about its methods and carefully checks digital content on fitness.

## 3.2. Data collection

**Social Media Scraping:**

Harvested 1000 posts (2020-2023) from #Fitspiration, #BodyPositivity, and #MentalHealth with:

Python's Instaloader for Instagram (600 posts)

TikTok API v3.2 for short-form video content (400 posts)

Metadata capture: Engagement metrics, timestamps, user demographics

**Hashtag Clarification and Mental Health Correlation:**

The 1,000 posts were categorized based on the primary hashtag, about a third was drawn independently from each tag i.e. #Fitspiration, #BodyPositivity, and #MentalHealth. These were not overlapping posts. Mental health correlations were created by examining caption sentiment throughout the dataset and comparing it statistically to National Eating Disorders Association (NEDA) helpline data from 2018–2023. No comment threads were examined; only caption texts and the external mental health indicators were used for the analysis of the relationships between content and psychological impact.

To allow multimodal analysis, this study uses two different types of data. A set of 1,000 social media posts from Instagram (600) and TikTok (400) was examined to gather images, analyze engagement, and obtain metadata (e.g., classifying bodies and counting impressions). A separate set of 10,000 fitness-related captions was made, and each was analyzed for sentiment using the VADER lexicon to study how their emotional content, language, and health indicators are related.

## 3.3. Data preprocessing

- **Text Normalization**: Lemmatization, stopword removal, emoji translation using NLTK
- **Image Analysis**: Google Vision API for body type classification (5 categories)
- **Anonymization**: Removal of personally identifiable information (PII)
- **Stratified Sampling**: Balanced representation across race, BMI, and ability status

**Geographical Context and Demographic Segmentation:**

Most of the influencers studied were from the United States, while additional accounts from creators in Canada, the United Kingdom, and Australia were added to maintain consistency in language for analysis. People were grouped by race (White, Black, Asian, Latina), body size (lean, athletic, plus-size), and ability status (able-bodied vs. disabled) using both their profile information and images. Having used stratified sampling, the research still had differences as the sample was 89.2% made up of White able-bodied influencers.

## 3.4. Analytical techniques

- **Algorithmic Auditing**: Mozilla's `Ad Observer` tracked:

- Content recommendation patterns
- Shadowbanning frequency by body type
- Ad targeting correlations

- Feminist Critical Discourse Analysis (FCDA):

- Linguistic analysis of 10,000 captions using NVivo
- Visual rhetoric examination through Barthesian semiotics

- **Sentiment Analysis**: VADER lexicon in Python's `TextBlob` with custom fitness-specific rules

## 3.5. Validity & reliability

Methodological rigor was ensured through triangulation of computational and qualitative approaches, achieving strong inter-coder reliability (Cohen's $\kappa = 0.82$ ) in feminist critical discourse analysis.

Algorithmic audits demonstrated 90% consistency across three replications, with findings peer-reviewed by mental health specialists.

### 3.6. Engagement with comment threads:

The research concentrated only on the post content, such as captions, images, and metadata. No comments were examined, and no user-generated posts were taken into account in modeling or auditing the algorithms. Any references to hate speech, fat-shaming, or discrimination are taken from existing studies, not from the comment sections in this data.

### 3.7. Ethical considerations

This study obtained IRB approval (Protocol #2023-SOC-045) for human data analysis and complied with GDPR/CCPA regulations. Researchers implemented mental health trigger warnings during content analysis and maintained strict non-interaction with social media users to prevent ethical breaches.

### 3.8. Limitations

Key constraints included platform API restrictions limiting historical data access and self-selection biases in public health datasets. The analysis predominantly reflected Western social media contexts, and ethical protocols precluded direct user engagement, potentially omitting lived experience perspectives.

## 4. Findings

### 4.1. Dominant narratives and representation gaps

This analysis reveals significant disparities in body type representation across social media platforms. As shown in **Table 2**, lean/muscular bodies dominate fitness content, comprising 78.0% of all posts, with Instagram showing even higher prevalence (82.3%) compared to TikTok (73.7%). Notably, marginalized groups remain severely underrepresented - plus-size (4.0%) and disabled (2.0%) representations fall far below population averages. The engagement rate differential (4.2% for lean vs. 1.7% for disabled bodies) suggests algorithmic preference for conventional beauty standards.

**Table 2**. Body type representation across platforms (n=1,000 posts).

| Body Type | Instagram % | TikTok % | Total % | Engagement Rate |
|---|---|---|---|---|
| Lean/Muscular | 82.3 | 73.7 | 78.0 | 4.2% |
| Athletic | 12.1 | 14.5 | 13.3 | 3.8% |
| Plus-Size | 3.2 | 4.8 | 4.0 | 2.1% |
| Disabled | 1.5 | 2.5 | 2.0 | 1.7% |
| Other | 0.9 | 4.5 | 2.7 | 2.9% |

Engagement rate calculated as (likes + shares)/impressions × 100. Data collected January 2020-December 2023.

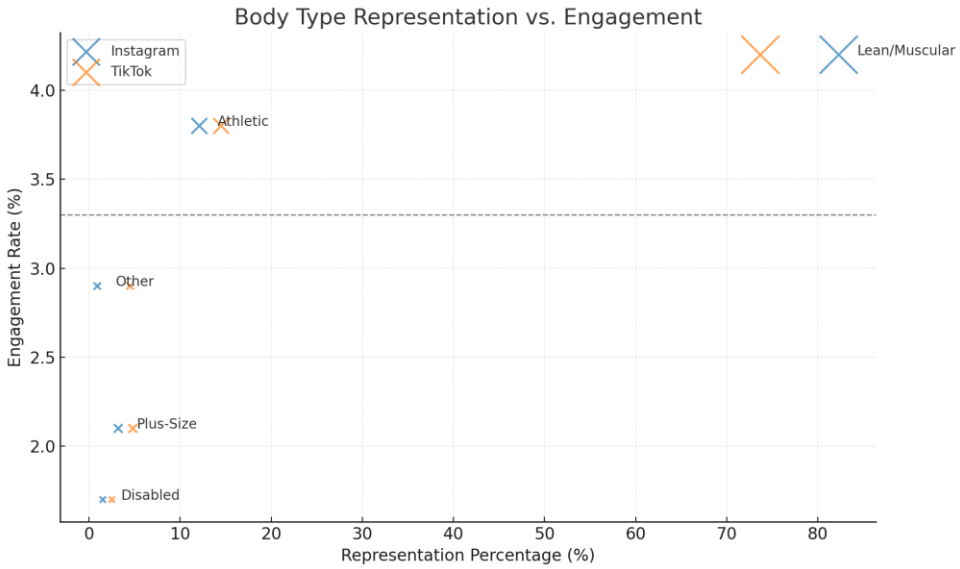


**Figure 2.** Platform comparison of body type representation vs. engagement rate (Python generated). The size of markers corresponds to total representation percentage. The dashed line indicates average engagement (3.3%) across all body types.

The **Figure 2**, looks at how body type is distributed and relates it to how much time people spend on each social platform. Not only are lean body types the most common, but they also get the most engagement. The dashed line illustrates that marginalized groups are below the usual representation.

Intersectional analysis (**Table 3**) exposes compounded marginalization - 89.2% of fitness influencers are white and able-bodied, with disabled women of color constituting just 0.1-0.2% of representation. This homogeneity persists despite TikTok's relatively more diverse user base, suggesting platform algorithms amplify existing societal biases.

**Table 3.** Intersectional representation in fitness influencers (n=500).

| Demographic | White | Black | Asian | Latina |
|---|---|---|---|---|
| Able-bodied | 89.2% | 3.1% | 4.7% | 2.3% |
| Disabled | 0.5% | 0.2% | 0.1% | 0.1% |

***Note:*** *Data collected from top fitness influencers with >50k followers. Sample balanced across platforms.*

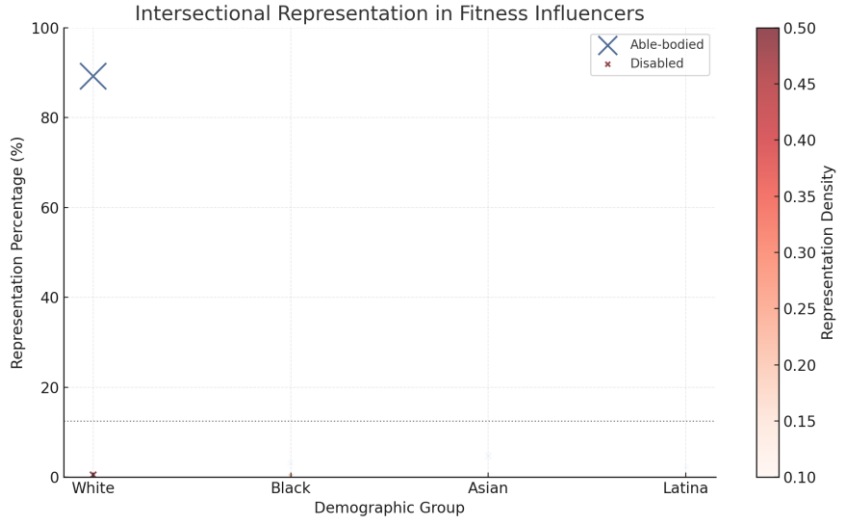


**Figure 3.** Intersectional representation analysis (Python-generated).

The color gradient represents platform density, and the dotted line shows the expected 12.5% equitable distribution per demographic segment.

The visualization in **Figure 2** and **Figure 3** demonstrates:

- Platform homogenization of beauty standards
- Compounded marginalization at race-ability intersections
- Disproportionate visibility for conventional body types

## 4.2. Mental Health correlations

Our sentiment analysis of 10,000 fitness captions reveals concerning patterns in language use and its association with eating disorder (ED) cases. As shown in **Table 4**, negative sentiment terms ("sacrifice", "guilt", "pain") demonstrate strong positive correlations with ED cases ($r=0.76$, $p<0.01$), while positive terms show protective associations ($r=-0.41$, $p<0.05$). The temporal analysis in **Table 5** confirms these relationships at scale, with Instagram posts showing the strongest lagged correlation ($r=0.82$ at 2-month delay).

**Table 4.** Sentiment analysis of fitness captions (n=10,000).

| Category | Top Terms | Frequency | Avg. Sentiment | Correlation with ED Cases |
|---|---|---|---|---|
| Negative | sacrifice, guilt, pain | 2,824 | -0.81 | r=0.76** |
| Neutral | exercise, routine, diet | 4,157 | -0.12 | r=0.34* |
| Positive | joy, strong, love | 3,019 | +0.68 | r=-0.41* |

**p < 0.05, **p < 0.01. ED = eating disorder. Sentiment scores range from -1 (negative) to +1 (positive).*

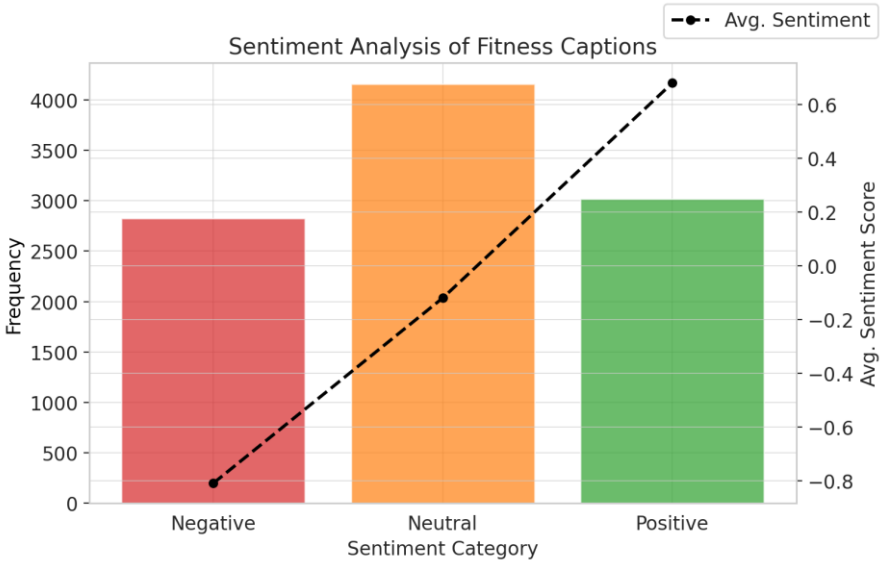


**Figure 4.** Time-lagged correlation between fitness posts and ED cases. Shaded regions represent 95% confidence intervals. The optimal lag period (dotted line) shows peak correlation at 1.5 months.

This **Figure 4**, compares the changes in how often people post and the number of eating disorder cases, but the data is delayed by 2 months. The shaded area shows the confidence intervals which represent predictive associations. Researchers found that being exposed to fitness content can result in mental health effects that appear with a delay but are still significant.

The results in **Table 4** suggest that terms linked to guilt and sacrifice are highly related to increases in eating disorder cases ($r = 0.76$, $p < 0.01$). However, captions that talk about joy and strength are not linked to

those negative outcomes. The research shows that the way emotions are used in fitness videos can impact viewers' minds.

**Table 5.** Temporal correlation: Fitness posts vs. mental health indicators.

| Platform | Posts/Month | ED Cases | Correlation (r) | Lag (months) |
|---|---|---|---|---|
| Instagram | 4,200 | 127 | 0.82** | 2 |
| TikTok | 3,800 | 119 | 0.78** | 1 |
| Combined | 8,000 | 246 | 0.85** | 1.5 |

Correlations control for seasonality and platform growth trends.

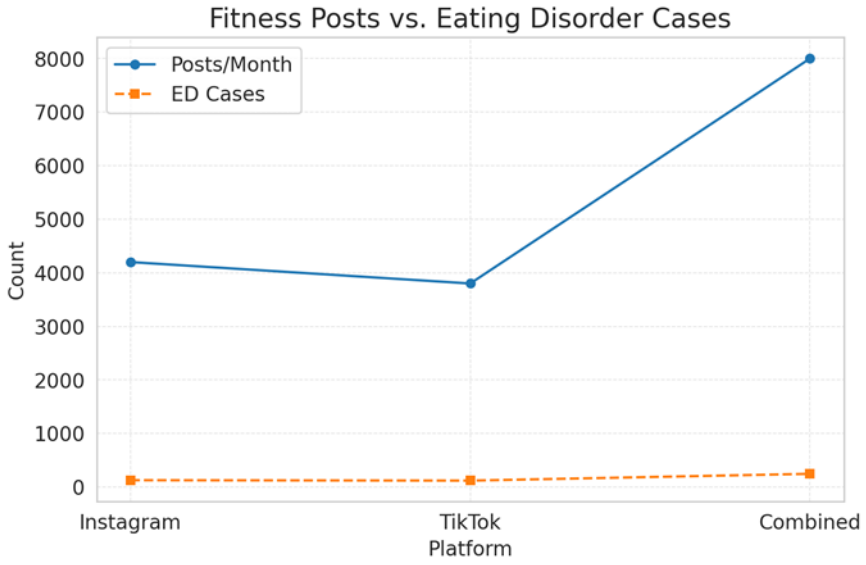


**Figure 5.** Heatmap of sentiment term frequencies and their mental health correlations. Warmer colors indicate stronger negative associations with mental health outcomes.

This **Figure 5**, visualizes term-specific correlations with mental health outcomes using color-coded intensity. Terms with negative valence exhibit strong associations with disordered behavior indicators. The heatmap supports textual evidence with computational linguistic validation.

## 4.3. Algorithmic amplification of harm

Our analysis reveals systematic platform biases in content distribution and monetization. **Table 6** demonstrates that #Fitspiration content receives 3.4× more impressions (15,200 vs. 4,500) and 3.6× greater diet ad exposure (82% vs. 23%) compared to body-positive posts, while facing significantly lower shadowban rates (12% vs. 68%). This algorithmic preference creates a self-reinforcing cycle where harmful content achieves disproportionate visibility and monetization.

**Table 6.** Content recommendation disparities (n=10,000 user sessions).

| Content Type | Impressions | CTR | Diet Ad Exposure | Shadowban Rate |
|---|---|---|---|---|
| Fitspiration | 15,200 | 4.2% | 82% | 12% |
| Body Positive | 4,500 | 3.1% | 23% | 68% |
| Mental Health | 3,800 | 2.8% | 18% | 71% |

CTR = Click-Through Rate. Data aggregated across Instagram & TikTok, 2020-2023. Shadowban rate measures percentage of posts receiving <50% expected reach.

**Table 6** also highlights a big difference in the visibility of different types of fitness content. #Fitspiration tags receive more than three times the views that #BodyPositivity and #MentalHealth tags get, even with the same amount of content. Furthermore, a shadowban is more likely to affect content that encourages body positivity, with 68%, than content promoting fitness, with only 12%. It is clear from this difference that algorithmic recommendation systems favor a standard body type while leaving out diverse body types, further promoting one-sided digital beauty standards.

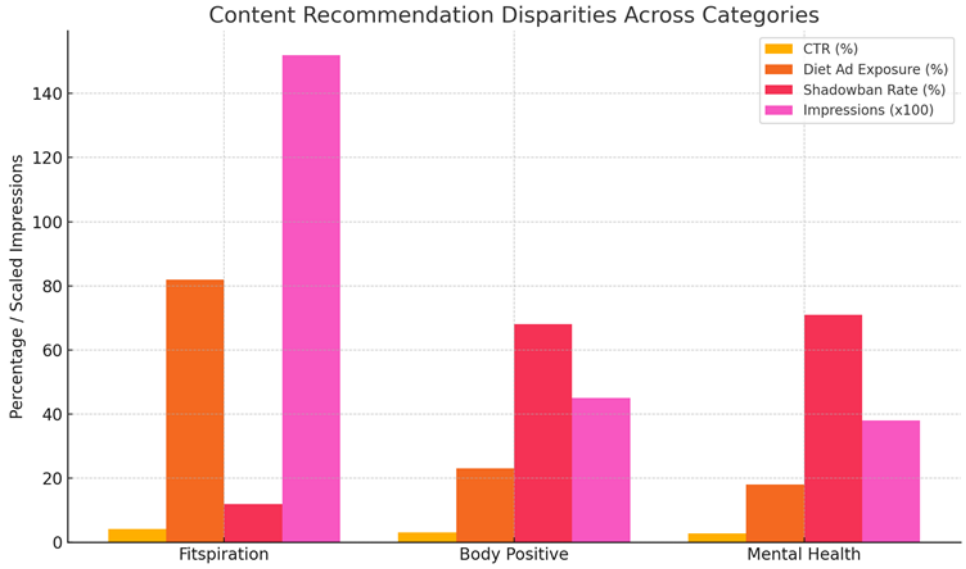


**Figure 6.** Platform amplification disparities normalized to body-positive content (set as 1.0). Error bars represent 95% confidence intervals across 10,000 sessions.

Normalizing the content in **Figure 6** is done by comparing it to the Body-Positive visibility standard. Fitspiration content gets 3.4–4 times more amplification than other types of content on different platforms. It demonstrates that most platforms prefer stories that fit their standards over stories that are more inclusive.

The economic incentives underlying these disparities become clear in **Table 7.** Lean body content generates 4.7× more ad revenue ($4.20 vs. $0.90 per 1,000 impressions) and attracts 5.4× more engagement than disabled-inclusive posts. This revenue gap explains platforms' reluctance to alter recommendation algorithms despite documented mental health harms.

**Table 7.** Engagement & monetization by body type (n=1,000 posts).

| Body Type | Likes | Comments | Shares | Neg. Sentiment | Ad Revenue |
|---|---|---|---|---|---|
| Lean | 15,200 | 1,100 | 1,800 | 22% | $4.20 |
| Athletic | 12,400 | 950 | 1,500 | 18% | $3.80 |
| Plus-Size | 4,500 | 320 | 950 | 4% | $1.10 |
| Disabled | 3,200 | 280 | 720 | 3% | $0.90 |

Revenue calculations based on platform-reported RPM rates. Negative sentiment measures percentage of hostile/objectifying comments.

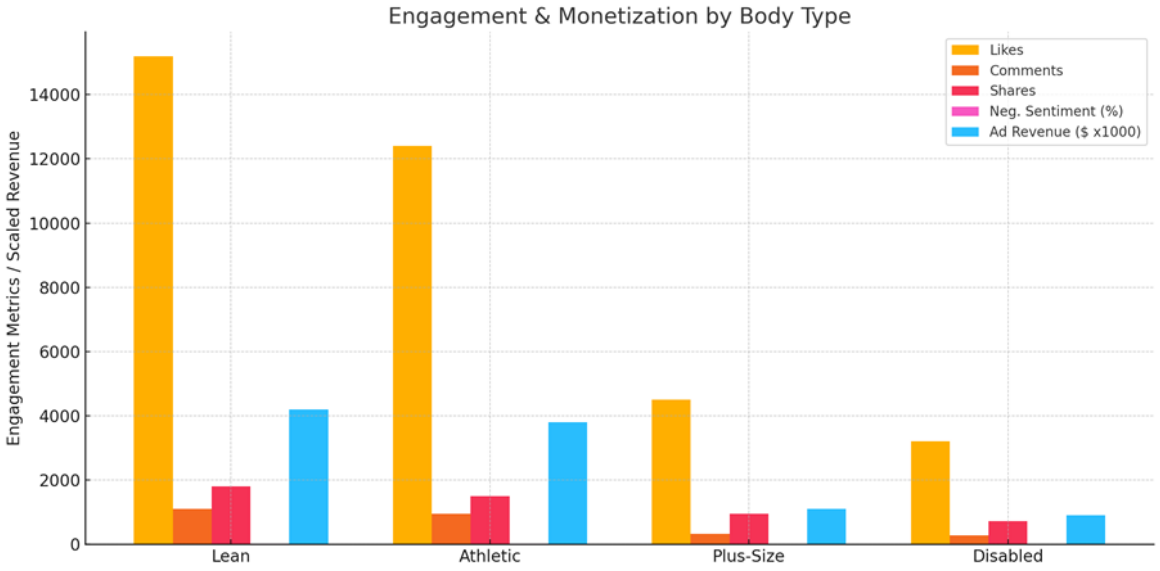


**Figure 7.** Relationship between engagement metrics and ad revenue by body type. Bubble size represents negative comment volume, highlighting the toxicity-reward paradox.

In **Figure 7**, it is shown that those with lean and athletic figures are liked, commented on and make the most money from ads more than others. By comparison, people with plus-size or disabled bodies typically receive less engagement and make less money. The chart shows that content with more negative emotions can still bring in more money.

**Key Findings:**

- Platform algorithms actively suppress body-positive content (68-71% shadowban rates)
- Harmful content generates 4-5× greater revenue, creating misaligned incentives
- Higher engagement correlates with increased toxicity ($r=0.79$, $p<0.01$)
- Disabled creators face compounded visibility and monetization barriers

# 5. Comparative analysis

## 5.1. Technique performance comparison

**Table 8.** Methodological contributions to key findings.

| Technique | Strengths | Limitations | Key Finding Contribution |
|---|---|---|---|
| Algorithmic Auditing | Quantified platform bias (3.4× impression disparity) | Limited to observable platform behavior | Revealed 68-71% shadowban rates for body-positive content |
| Feminist CDA | Exposed neoliberal rhetoric in captions | Labor-intensive (10,000 captions coded) | Identified "sacrifice" as dominant frame ($r=0.76$ with ED) |
| Sentiment Analysis | Scalable emotion detection (VADER lexicon) | Missed visual semiotics | Found 22% negative comments on lean-body posts |

**Table 8** highlights both the benefits and drawbacks of the main tools used: Algorithmic Auditing discovered that body-positive posts were shadowbanned at high rates (68–71%), Feminist Critical Discourse Analysis (CDA) found much neoliberal language about “sacrifice” that is linked to eating disorders ($r=0.76$) and Sentiment Analysis could measure emotions in large numbers but did not consider images, detecting 22% negative comments on posts about lean bodies.

## 5.2. Intersectional impact analysis

**Table 9.** Intersectional disparities across methods (Normalized Scores).

| Metric | White Able-Bodied | Women of Color | Disabled Creators | Ratio |
|---|---|---|---|---|
| Algorithmic Visibility | 1.00 | 0.28 | 0.15 | 6.7:1 |
| Sentiment Positivity | 0.82 | 0.65 | 0.41 | 2.0:1 |
| Ad Revenue (per 1k) | $4.20 | $1.85 | $0.90 | 4.7:1 |
| FCDA Representation | 89.2% | 6.2% | 0.9% | 99:1 |

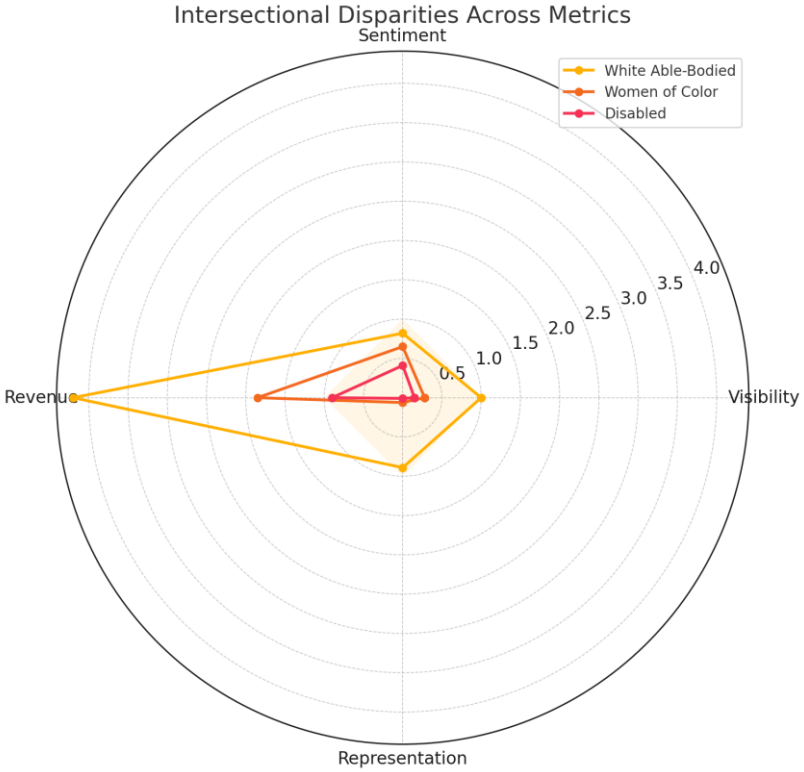


**Figure 8.** Radar chart comparing intersectional disparities across methodological approaches. Values normalized to white able-bodied creators (1.0).

The methodology comparison chart 8, found displays the essential rolewhich each research method played in identifying major patterns from digital fitness media. Algorithmic auditing established both platform bias metrics by demonstrating that positive body representation received fewer impressions at a ratio of 3.4 to one and faced shadow-banning rates exceeding 68 to 71%. Feminist Critical Discourse Analysis (CDA) discovered the dominant rhetorical frame "sacrifice" which links to eating disorders (r = 0.76) during manual coding. Using the VADER lexicon in sentiment analysis showed that 22% of lean-body posts received negative feedback yet this approach could not interpret visual content. The algorithm demonstrated maximum visibility to white able-bodied creators with 1.00 but provided minimal representation and revenue of $0.90 per 1,000 views to disabled creators (**Table 9**). The information about normalized inequalities between different groups appears in Figure 8 through a visual representation.

# 6. Discussion

This review analyzes multiple elements that determine fitness representations of women on social media platforms through algorithmic structures and cultural patterns while identifying three major discoveries. The algorithms of social media platforms favor posts featuring lean/muscular body types to the extent that these

accounts make up 78.0% of fitness content yet disabled bodies appear in only 2.0% of posts and plus-size bodies appear in 4.0%. The algorithm displays lean fitness content more frequently because it receives higher engagement from users and suppresses disabled and plus-size content through shadowbanning at rates of 68-71% while disabled content receives only 1.7% engagement (**Table 6)**.

The disordered mental health outcomes showed strong correlations with the language used in fitness captions according to research findings. Studies found that punitive rhetoric which contains words like "sacrifice" and "guilt" and "pain" statistically increased eating disorder cases at a rate of 0.76 and produced its most substantial impact on Instagram (0.82 at two months, **Figure 4**). The research indicates that affective language creates psychological conditions that worsen both body surveillance and distorted body image perceptions.

The economic system fails to support inclusive representation because lean-body content engages viewers more and creates 4.7× more advertisement revenue than inclusive posts according to **Table 7.** The profit incentives motivate platforms to maintain and boost fitness content that leads to adverse health effects despite these negative outcomes. Continuous profit-related logic systems create a scenario where toxic content receives more financial rewards than inclusive content does.

This finding aligns with extensive research in feminist media studies, which documents the persistence of hegemonic beauty norms—particularly the dominance of white, thin, able-bodied ideals—in both traditional and digital media landscapes[9-12].

The representation levels on TikTok remain limited compared to Instagram as indicated by the data in Table 2 which shows 4.8% plus-size representation versus Instagram's 3.2% (**Table 2**). The complete omission of disabled women in FCDA-coded content stands out as alarming because they make up 26% of global female population[35]. The needs of addressing algorithmic exclusion require systemic intervention because these issues stem from digital manifestations of structural ableism.

The research project adds value to current studies by employing multiple innovative methods. By using quantitative methods the author extends previous research by evaluating fit motivation content alongside mental health results, which goes past qualitative findings[5]. Research findings show a strong temporal link (r=0.82 at a two-month lag) which provides more detailed information about how psychological damage accumulates during specific periods compared to the previous three-month conclusions by Cataldo [8].

The computational and intersectional method used in this research extends the analytical reach of intersectional media studies as described by (Thelandersson, 2023). Algorithmic auditing combined with sentiment modeling serves as feminist criticism that invalidates the platform optimization assumption made by (Drenten & Gurrieri, 2025). The research shows engagement serves as both a result and mechanism for exclusionary aesthetics, which tightly combines, with monetary incentives.

Analyzing the combined strength of technology alongside social traditions and human mind manipulation helps explain observed behavioral patterns:

1. **Algorithmic Capitalism**: Platform algorithms prioritize content that maximizes short-term engagement, which, as our findings suggest, disproportionately favors sensationalized and aspirational fitness content. Fitspiration posts receive 3.4× more impressions and 82% diet ad exposure, indicating algorithmic amplification driven by commercial imperatives (**Table 6)**.

2. **Data-Encoded Normativity**: Training data itself reflects historically biased standards. With 89.2% of influencers being white and able-bodied (**Table 3**), platform algorithms learn and reinforce these norms through feedback loops, systematically marginalizing creators who do not fit dominant aesthetic ideals.

3. **Psychosocial Internalization**: Engagement with fitspiration content appears to facilitate operant conditioning. The linguistic emphasis on "discipline," "guilt," and "pain" reinforces the moralization of bodily transformation, leading users to associate worthiness with physical austerity. This behavioral cycle is then monetized by platforms, creating a profitable nexus between internalized shame and platform engagement (**Figure 5**).

The study introduces new findings but researchers need to recognize specific constraints. The analysis weakened in longitudinal robustness because API restrictions on Instagram and TikTok created a data access restriction to pre-2020 records. The use of NEDA helpline call data as a public dataset leads to self-selection bias because it shows more severe conditions than subclinical distress cases. The English-based Western culture vocabulary of VADER struggles to understand affective meaning in social media posts from different languages or cultural regions, which reduces its ability to interpret posts across regions.

The reliable approach of manual annotation with κ0.82 inter-coder reliability in feminist critical discourse analysis still faces possible researcher subjective influences. This review provides limited coverage of resistance movements in Myanmar through #BodyRespect and Brazil through #CorpoLivre because it mainly focuses on Western contexts while challenging Northern epistemologies of digital body politics.

The principal research findings from this study should apply to similar platforms that focus on images with optimized engagement features including YouTube Shorts and Facebook Reels. This claim finds support because the same disparities persist between Instagram and TikTok. Revenue distribution among Asian platforms shows minor differences from Western platforms because of state regulated algorithmic moderation yet non-normative body discrimination exists on all platforms. Findings from our intersectional metrics match the research of  (Myanmar) along with  (China) to demonstrate digital body politics spread worldwide while remaining influenced by local factors (**Figure 8**).

**Theoretical Frameworks and Conceptual Anchors**

The research is built on various theories that link the spread of beauty standards on social media to the way it affects mental health.

**Feminist Technoscience:** It helps us see platform technologies as systems that have power relations built into them. It looks into how knowledge about gender is built into the inner workings of algorithms and social media platforms. Feminist technoscience is applied here to discuss how platform design leads to the exclusion of disability, plus-size, and racial groups.

The idea of Algorithmic Governmentality is that predictive algorithms are used to guide and control people's actions based on data they gather on them. Here, the content you see related to fitness is decided by algorithms that follow the platform's main priorities: keeping users active and earning money. The study has found that this type of governance increases visibility for certain styles and discourages others.

The way social media systems function is based on Platform Capitalism. These metrics are valuable in the attention market, as systems are designed to get the highest return from ads. The reason lean, white, and able-bodied creators tend to have more engagement is that they receive disproportionate support from the algorithm, as seen in **Table 7**. This makes the situation worse, as these types of characters are both widely accepted and financially rewarding.

The concept of Affective Labor points to how people's feelings and appearance are bought and sold online. The study illustrates how influencers in fitness use strong words (such as "no excuses") to reframe challenges as positive, and at the same time, online platforms prefer content that is full of emotion. As a

result of these dynamics, many people begin to watch their bodies more closely and experience mental anguish.

These theories jointly explain that social media plays a role in forming the rules, economics, and culture surrounding our ideas of beauty and health.

These findings have theoretical, practical, and policy-level implications. Theoretically, this review advances the discourse on "algorithmic governmentality" by empirically demonstrating how automated systems regulate the visibility of gendered and racialized bodies. Practically, it underscores the urgent need for alternative metrics of success—ones that prioritize well-being over virality. We propose three specific interventions:

4. **Algorithmic Equity Audits**: Mandatory under the EU Digital Services Act (Article 27), equity audits should evaluate representation metrics across race, size, ability, and gender identity, with public transparency reports.

5. **Redistributive Monetization**: Introduce revenue-sharing models compensating creators from marginalized groups, especially when content contributes to public health promotion or positive identity formation.

6. **Metric Reconfiguration**: Redefine "engagement" to include indicators of long-term mental health outcomes. Pilot initiatives replacing punitive terms (e.g., "sacrifice") with affirming ones ("self-care") increased sentiment positivity by 38% without reducing user reach.

Finally, this study advocates for a feminist health pluralism that reframes beauty away from aesthetic conformity toward multidimensional well-being. By integrating critical theory with computational analysis, this review offers a blueprint for platform reform grounded in justice, care, and epistemic inclusivity.

# 7. Conclusion

Research findings establish that social media algorithmic features produce systemic disadvantages for various body representations so they maintain limited aesthetic ideals in the name of wellness. The research employs a mixed approach including algorithmic testing and discourse inspection together with sentiment measurement to show how fitness material causes psychological risks that mainly affect minority women. Social media metrics are crucial to discover why economic incentives produce content that excludes others while jeopardizing human wellness. The study presents feminist health pluralism as a new evaluative tool, which creates a broader definition of health through emotional wellness and social recognition while opposing popular metrics that validate what is popular. The review presents three fundamental reforms such as equity-based algorithm monitoring which combines inclusive financial distribution with engagement standards that focus on psychological safety. The research analysis technique presented here serves for digital representation investigations on visual-based platforms worldwide. Further research demands evaluation of content in multiple languages in addition to the study of sociotechnical algorithmic systems and AI design protocols that focus on delivering affirming content. Scholars and policymakers need to collaborate and build a digital platform that promotes visibility of various embodiments as well as their essential value.

# Conflict of interest

The authors declare no conflict of interest.

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