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Gender-Specific Marketing Strategies Used by Sports Supplements: A Descriptive Study

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Gender-Specific Marketing Strategies Used by Sports Supplements: A Descriptive StudyAnna M. Cosgrove^a, Cori Lorts^a, and Lynda B. Ransdell^b^aNorthern Arizona University; ^bNorthern Illinois University**Abstract**

While the use of sports supplements is common among athletes and active adults, the marketing strategies used by these sports supplement manufacturers remain unknown—especially relative to active and athletic women. This descriptive study aims to describe marketing strategies used, such as color choices, structure function claims, and picture choice, and analyze if there are gender-specific differences within the strategies. A total of 100 best-selling sports supplements were selected from three separate third-party websites. Food products, accessories, and kitchen appliances were excluded. Supplement main webpages and sports supplement-specific webpages were explored to determine which marketing strategies were used and if there were gender-specific differences. Of 169 sports supplement webpages reviewed, only 23.1% (n=39) included pictures that were only/majority female. Only 7.1% (n=12) of supplement bottles used feminine colors, while for supplement pages, only 8.3% (n=14) utilized feminine colors and 43.2% (n=73) used masculine colors. While the number of women athletes continues to grow, sports supplement manufacturers are not using strategies targeted to women. Future research should examine the reasons for this discrepancy and women's perceptions of purchasing sports supplements targeted to men.

Key words: dietary supplements, women athletes, ergogenic aids, gender equity, active women

Introduction

Sports performance and supplement use have grown tremendously within the last few decades (Jovanov et al., 2019; Perko et al., 2015); the use of dietary supplements is one of the fastest growing trends in today's nutritional supplement market and is expected to grow 14% within the next few years (Arenas-Jal, et al., 2018). More than 80% of athletes use sports supplements and female athletes use them at approximately the same rate as male athletes (Aguilar-Navarro et al., 2020). Research focused on female athletes' intake of supplements found that women utilize supplements for various reasons, including keeping bones strong, preventing bone loss, supporting muscle recovery and growth, improving muscle strength and endurance, enhancing athletic performance, and improving their overall health (Aguilar-Navarro et al., 2020; Perko et al., 2015).

Individuals use sports supplements because a growing body of research supports their use. Some benefits include improving muscle repair following exercise, increasing endurance and performance for longer workout times, and decreasing muscle degradation. (Blomstrand et al., 2006; Nan et al., 2013; Shimomura et al., 2004). Additionally, supplements can enhance protein synthesis for increased muscle growth and provide quick energy for longer workout periods (Aguilar-Navarro et al., 2020; Blomstrand et al., 2006; Shimomura et al., 2010). Lastly, sports supplements have been found to reduce muscle damage during long term training (Braakhuis & Hopkins, 2015; Platt et al., 2016; US Food & Drug, 2022, Williams, 2004).

While the effects and use of sports supplements have been thoroughly examined, there is no current research assessing how these supplements are being marketed to active and athletic individuals, especially those who are female. Marketing strategies to promote supplements include a variety of tactics such as structure function claims, color choice, and pictures of active men or women. Structure function claims, as defined by the FDA, “describe the role of a nutrient or dietary ingredient intended to affect the normal structure or function of the human body” (US Food & Drug, 2022). These structure function claims can be gender-specific and focus on the outcome a male or female athlete would like to improve (Shimomura

et al., 2010). For instance, hormone related sports supplements can be targeted to men by stating “improves testosterone levels for larger gains,” compared to one tailored to women that states “helps with estrogen deficiency.”

The color a company uses can also appeal to males or females. For instance, one study from 22 countries worldwide found that over 50% of men and 35% of women choose blue as their favorite color, (Colour Assignment, n.d.) Additionally, 23% of women chose purple as their favorite color while no men chose purple as their favorite. Another study explored color preference based on gender and found that among participants, orange, red, and black were seen as masculine colors, while pink and purple were seen as feminine (Zhang, 2015). Lakshmi et al. (2017), found that women prefer advertisements that include more detail (Lakshmi, 2017). They also found that women respond to strong colors and evocative images. On the other hand, men were more likely to buy products that utilize less wording and are more concise in their messaging (Lakshmi, 2017).

Although levels of use and benefits of sports supplements have been studied, the relationship between sports supplements and gender-specific marketing strategies have not yet been examined. The goal of this paper was to describe the gender-specific marketing strategies used by sports supplement manufacturers. The results from this research will provide a better understanding of marketing tactics used and if female athletes are being equally represented in supplement marketing.

Materials and Methods

To determine which supplements were frequently used among male and female athletes, the top 100 best-selling sports supplements were extracted from three third-party supplement websites: iherb.com, vitacost.com, and bodybuilding.com. These websites were chosen based on 1) their high ranking within Google for “sports supplements,” 2) the inclusion of a sports supplement section, and 3) the ability to sort by best-selling products within the sports supplement section.

Inclusion and Exclusion Criteria

Supplements included were supplement pills and powders. Non-supplement and ready-to-eat items such as protein bars, snacks, sports accessories, sports clothing, and kitchen accessories were excluded.

Data Extraction Procedure

To determine the most frequently sold supplements, three third party supplement websites were examined. Researchers visited the sports supplement section of each website and filtered the results for the top 100 frequently bought supplements by selecting the scroll down option that states “best-selling.” Product name, manufacturer, size, and flavoring (if applicable) were extracted into an external database. A total of 300 sports supplements were collected from all three websites (100 per website) and duplicates were removed. Different flavors and sizes of the same product were condensed to one product. After the data were cleaned, the manufacturer’s main webpage and supplement-specific webpage were found for that product. Each webpage was visited, and variables were assessed according to a codebook.

Variables

The following data were extracted from each sports supplement’s webpage: the majority color of the webpage, majority color of the supplement bottle/container (“product color”), the gender of pictures on that webpage, the type of structure function claim that was used, type of product, and if links to published literature were included. Supplement main webpages were coded for the same variables, with the exception of the product color and type of product.

Primary colors, either for the webpage or supplement bottle, were black, gold/yellow, red, blue, grey/silver, orange, purple, pink, green, or brown. The product color was chosen

based on at least 50% of the bottle color, not including a white background. The website color was chosen based on the primary color of the website, or secondary color if the website had a white background. These colors were then combined into masculine, feminine, or neutral colors. Masculine colors were black, red, grey, and/or orange (Zhang, 2015). Feminine colors were designated as purple and pink (Weisgram et al., 2014). Lastly, neutral colors included blue and green (Zhang, 2015). There were no supplements or websites that included brown.

Pictures were initially coded as all male, mostly (>50%) male, all female, mostly (>50%) female, or equal genders. Due to the low count of images with females, these categories were combined into three for statistical power: 1) all or mostly male, 2) all or mostly female, and 3) gender-equal.

The following structure-function claims were coded: anti-aging, bone/connective tissue, endurance/performance, energy, fat-burning, gut health, healthy metabolism/weight, hormone related, mental function, muscle support/size, muscle recovery, muscle strength, or other. Structure function claims in the category “other” included claims regarding maintaining body homeostasis, normal body functioning, heart health, immune health, or general health support.

Supplements were also coded for type of product which could include: amino acids, hormone-related, caffeine/energy, collagen, creatine, electrolytes, MCT oil, herbal, bone/joint support, omega 3s, protein (powders only), pre-workout/intra-workout, post-workout/recovery, weight loss/carb blocker/ fat burner, vitamin/multivitamins, and other.

Descriptive Analysis: Descriptive statistics were computed for each variable. Chi-squared analysis was used to determine differences by group using IBM SPSS (Version 27).

Results

The total number of webpages analyzed included 169 product webpages and 49 main website pages. Table 1 contains descriptive characteristics and structure-function claims made on the supplement company’s main websites. Of the 49 website main pages, only 10.2% (n=5) utilized feminine colors. However, the use of women in pictures was more common, with 46.9% (n=23) of website main pages using either only pictures of women or mostly pictures of women.

Table 2 contains descriptive characteristics and structure-function claims made on sports supplements product webpages. Of the sports supplement webpages analyzed, the top five types of products were amino acids (21.9%, n=37), protein powders (18.9%, n=32), weight loss (10.1%, n=17), pre/intra-workout (7.7%, n=13), and vitamins/multivitamins (5.9%, n=10). In examining gender-specific characteristics, only 23.1% (n=39) of pictures displayed were either majority females or only females, and only 7.1% (n=12) of supplement products used feminine colors.

Structure-function claims included muscle support claims (43.8%, n=74), recovery support claims (37.3%, n=63), endurance and performance claims (34.3%, n=58), energy claims (33.1%, n=56), and healthy metabolism claims (24.3%, n=41). While many supplement pages claimed that their products were supported by research, only 5.3% (n=9) had linked clinical research articles to support their claims.

Table 3 summarizes the structure functions claims used and if they varied by supplement product color as well as by the percentage difference between products with masculine colors and feminine colors. Of all structure function claims, products with fat burning claims, strength claims, hormone related claims, and anti-aging claims did not use feminine colors on the product packaging. While there were no statistically significant differences in the analysis, the association between the strength claim and product color used was marginally significant (p=0.06) with 64.5% of products using a masculine color while 0% used a feminine color. The claims that had the highest difference between masculine and

feminine colors used on the supplement bottle included muscle support with 43.2% (n=32) difference, recovery with 47.2% (n=31) difference, performance with 48.3% (n=28) difference, and energy claims with 44.7% (n=25) difference.

Table 1

Descriptive characteristics and Structure-Function Claims Made on Supplement Company's Main Websites.

Characteristics	n (%)
<i>Website Color</i>	
Masculine	21 (42.9%)
Feminine	5 (10.2%)
Neutral	23 (46.9%)
<i>Structure Function Claims</i>	
Anti-Aging Claim	0 (0%)
Fat Burning Claim	0 (0%)
Healthy Metabolism and Weight Claim	0 (0%)
Hormone Related Claim	0 (0%)
Strength Claim	0 (0%)
Bone and Connective Tissue Claim	1 (2.0%)
Energy Claim	1 (2.0%)
Gut Health Claim	1 (2.0%)
Mental Function Claim	1 (2.0%)
Muscle Support Claim	1 (2.0%)
Recovery Support Claim	2 (4.1%)
Other Claims	6 (12.2%)
No Claim Included	41 (83.7%)
<i>Gender of Pictures Included</i>	
Male or Mostly Male	18 (36.7%)
Female or Mostly Female	23 (46.9%)
Equally Male and Female	6 (12.2%)
No Pictures Displayed	2 (4.2%)
Product Supported by Research	1 (2.0%)

Note. Masculine colors were black, red, grey, and orange. Feminine colors were purple and pink. Neutral colors included blue and green.

Table 4 summarizes the structure functions claims used and if they varied by the gender of pictures used on the sports supplement webpage. There was a significant difference between the endurance and performance claim and gender-specific pictures ($p=0.02$), with 60% of webpages using male/mostly male pictures and only 20% using female/mostly female pictures. There was also a significant difference between recovery support claim and gender of pictures ($p=0.002$); Of the 46 webpages to use this claim, 69.6% used all or mostly male images while only 15.2% used all or mostly female images. The claims that had the highest difference between male and female images included recovery claims with 54.4% (n=25) difference, muscle support claims with 37.8% (n=20) difference, endurance and performance with 40% (n=18) difference, and energy claims with 33.4% (n=15) difference.

Table 2

Descriptive characteristics of and Structure-Function Claims Made on Sports Supplements Product Webpages and Types of Products.

Product Type	n (%)
Amino Acids	37 (21.9%)
Protein (powders only)	32 (18.9%)
Weight Loss-Carb Blocker/Fat Burner	17 (10.1%)
Pre-Workout/Intra-Workout	13 (7.7%)
Vitamin/Multivitamins	10 (5.9%)
Herbal	9 (5.3%)
Creatine	7 (4.1%)
Electrolytes	7 (4.1%)
Post-Workout/Recovery	6 (3.6%)
Hormone-Related	5 (3.0%)
MCT Oil	5 (3.0%)
Omega 3s	5 (3.0%)
Bone/Joint Support	4 (2.4%)
Caffeine/Energy	4 (2.4%)
Collagen	4 (2.4%)
Other	4 (2.4%)
Supplement Characteristics	n (%)
<i>Product Color</i>	
Masculine	81 (47.9%)
Feminine	12 (7.1%)
Neutral	76 (45.0%)
<i>Website Color</i>	
Masculine	73 (43.2%)
Feminine	14 (8.3%)
Neutral	82 (48.5%)
<i>Structure function claims</i>	
Muscle Support	74 (43.8%)
Recovery Support Claim	63 (37.3%)
Endurance & Performance Claim	58 (34.3%)
Energy Claim	56 (33.1%)
Healthy Metabolism & Weight Claim	41 (24.3%)
Strength Claim	31 (18.3%)
Mental Function Claim	23 (13.6%)
Fat Burning Claim	19 (11.2%)
Bone and Connective Tissue Claim	15 (8.9%)
Gut Health Claim	15 (8.9%)
Hormone Related Claim	13 (7.7%)
Anti-Aging Claim	6 (3.6%)
Other Claims	66 (39.1%)
<i>Gender of Pictures Included</i>	
Male and mostly male	60 (35.5%)
Female and mostly female	39 (23.1%)
Equally male and female	15 (8.9%)
No pictures displayed	55 (32.5%)
Product Supported By Research	9 (5.3%)

Note. Masculine colors were black, red, grey, and orange. Feminine colors were purple and pink. Neutral colors included blue and green.

Table 3

Frequency of structure function claims used on sports supplements webpages and the gender-specific color used on the supplement bottle, and the difference between frequency of masculine and feminine colors.

Structure-Function Claim	Total (n)	Masculine Color n (%)	Feminine Color n (%)	Neutral Color n (%)	Difference between Masculine and Feminine Color	p-value
Energy	56	29 (51.8%)	4 (7.1%)	23 (41.1%)	25 (44.7%)	0.76
Healthy Metabolism & Weight	41	16 (39.0%)	4 (9.8%)	21 (51.2%)	12 (29.2%)	0.38
Endurance & Performance Claim	58	30 (51.7%)	2 (3.4%)	26 (44.8%)	28 (48.3%)	0.38
Fat Burning Claim	19	9 (47.4%)	0 (0%)	10 (52.6%)	9 (47.4%)	0.40
Strength Claim	31	20 (64.5%)	0 (0%)	11 (35.5%)	20 (64.5%)	0.06
Muscle Support Claim	74	37 (50.0%)	5 (6.8%)	32 (43.2%)	32 (43.2%)	0.89
Recovery Support Claim	63	34 (54.0%)	3 (4.8%)	26 (41.3%)	31 (47.2%)	0.39
Bone and Connective Tissue Claim	15	7 (46.7%)	1 (6.7%)	7 (46.7%)	6 (40.0%)	0.99
Mental Function Claim	23	13 (56.5%)	2 (8.7%)	8 (34.8%)	11 (47.8%)	0.57
Hormone Related Claim	13	7 (53.8%)	0 (0%)	6 (46.2%)	7 (53.8%)	0.57
Gut Health Claim	15	4 (26.7%)	2 (13.3%)	9 (60.0%)	2 (13.4%)	0.19
Anti-aging Claim	6	2 (33.3%)	0 (0%)	4 (66.7%)	2 (33.3%)	0.50

Note. P-value from chi-square analysis.

Table 4

Frequency of structure function claims and gender-specific pictures used on sports supplements webpages that included pictures, and the difference between frequency of male and female pictures.

Structure-Function Claim	Total (n)	All/Mostly Male Pictures n (%)	All/Mostly Female Pictures n (%)	Gender-Equal Pictures n (%)	Difference between Male and Female	p-value
Energy	45	26 (57.8%)	11 (24.4%)	8 (17.8%)	15 (33.4%)	0.43
Healthy	30	17 (56.7%)	8 (26.7%)	5 (16.7%)	9 (30.0%)	0.55
Metabolism & Weight						
Endurance & Performance Claim	45	27 (60%)	9 (20%)	9 (20%)	18 (40%)	0.02*
Fat Burning Claim	17	8 (47.1%)	4 (23.5%)	5 (29.4%)	4 (23.6%)	0.09
Strength Claim	27	18 (66.7%)	4 (14.8%)	5 (18.5%)	12 (51.9%)	0.50
Muscle Support Claim	53	33 (62.3%)	13 (24.5%)	7 (13.2%)	20 (37.8%)	0.10
Recovery Support Claim	46	32 (69.6%)	7 (15.2%)	7 (15.2%)	25 (54.4%)	0.002**
Bone and Connective Tissue Claim	12	8 (66.7)	2 (16.7%)	2 (16.7%)	6 (50%)	0.40
Mental Function Claim	20	12 (60.0%)	4 (20%)	4 (20%)	8 (40%)	0.28
Hormone Related Claim	9	6 (66.7%)	1 (11.1%)	2 (22.2%)	5 (55.6%)	0.28
Gut Health Claim	13	7 (53.8%)	5 (38.5%)	1 (7.7%)	2 (15.3%)	0.81
Anti-aging Claim	3	3 (100%)	0 (0%)	0 (0%)	3 (100%)	0.25

Note. p-value from chi-square analysis; analysis only included webpages that included pictures. *p < 0.05; **p < 0.01

Discussion

To the best of our knowledge, this descriptive study was the first to examine gender-specific sports supplement marketing strategies. Our results indicate that marketing strategies for sports supplements are targeted more to males than females. While 46.9% of the main pages of supplement websites had pictures including women, only 23% of sports supplements webpages used pictures that were all or majority female. Feminine colors were used far less, with only 10% of main website webpages using a feminine color and only 8% of sports supplement webpages using a feminine color. Out of the 45 products making claims to improve endurance and performance, 60% of these products used male/mostly male pictures, compared

to 20% using female/mostly female pictures. Further, out of 46 products using recovery support claims, 69.6% used males in their pictures while only 15.2% had females or mostly females. Given that the supplement main websites used a high frequency of females in pictures, the demand for supplements by women appears to be known by manufacturers; however, marketing sports supplements specifically towards women is not being frequently utilized.

As previously stated, women choose supplements for numerous reasons including but not limited to physical and mental wellbeing, building and maintaining bone density, and to enhance endurance and training (Aguilar-Navarro et al., 2020; Perko et al., 2015; Platt et al., 2016; Shimomura et al., 2010). Interestingly, this does not align with the marketing strategies used by these types of products. Products using muscle support structure function claims and recovery claims had a low percentage of feminine-directed marketing strategies; only 6.8% of products using a muscle support claim used feminine colors and only 4.8% of products using a recovery claim used feminine colors. The use of gender-specific images was also significantly different for products using recovery claims ($p=0.002$) and endurance and performance claims ($p=0.02$).

The ratio of male to female marketing strategies used found in the current study does not align with the ratio of male to female athletes. While the percentage of sport supplement webpages using feminine colors or pictures ranged from 7-10%, 45-50% of all athletes are women (Fink, 2015). In the recent 2020 Olympics, women accounted for 49% of athletes, and in 2018, 47% of all USA Weightlifting athlete members were women (Fink, 2015; Geurin, 2017). As for non-professional active adults, women make up more than 50% of gym-goers (International Health, 2020). Thus, while females make up approximately 50% of both professional athletes and active adults, they are not being equally represented in marketing (Fink, 2015).

The prevalence of marketing primarily to men is also found in promotion of professional sports teams. Shih-Chia et al. found professional basketball games are marketed differently between men and women's teams; men's sports received slightly more media coverage at 53% compared to women's sports at 47% (Shih-Chia Chen et al., 2016). In a separate study, researchers analyzed over 2000 lines of commentary from both men's and women's basketball championship games and found that commentary from men's sports was related to their physicality and athleticism, while women's sports commentary primarily focused on their looks and appearance (Billings et al., 2002)

Limitations and Future Directions

This descriptive study is the first to examine gender differences in sports supplement marketing strategies and the first to report that women are underrepresented in sports supplement marketing. Despite these important findings, there were some limitations with this study. Only the top 100 best-selling supplements from three websites were examined. It is possible that other supplements marketed towards women exist that are not as popular and thus excluded from analysis. Also, the manufacturer webpages were coded and analyzed, so it is possible other strategies are used on third-party seller websites and printed marketing materials. Lastly, the cross-sectional nature of this study may not represent trends among sports supplement marketing.

While women account for approximately 50% of all athletes and active adults, sports supplement manufacturers are not using marketing strategies that appeal to women. Whether this influences women's perceptions of the supplements or purchasing behavior is unknown. It is possible that supplement manufacturers are missing out on an important audience. It is also possible that women's use of sports supplements would be increased by additional advertising. If these supplements are shown to facilitate improvements in sport performance in a variety of ways, it may also be helpful to promote the use of these products to continue to improve female athletic performance.

Future research should examine the reason for this gender difference in sports supplement marketing, the impact of enhanced marketing to active and athletic females, and women's perceptions of sports supplements marketed to men. In addition, future research should continue to focus on gender-differences in effects of various sports supplements, and research should be used to support claims of improved athletic performance.

Conclusions

The use of sports supplements is common among female athletes; however, sports supplement manufacturers are not marketing to these women in the same manner as men. In this descriptive study, we found that sports supplements using structure-function claims about recovery support, endurance, and performance used male-focused images significantly more often than female-focused images. The use of feminine colors was also very low, with only 8.3% of sports supplements websites using a feminine color. Given this study was the first to examine the gender-specific marketing strategies of sports supplements, comparison to similar studies is not possible. However, these results align with research on the marketing and promotion of professional sports teams—male teams and athletes tend to be promoted more often than female teams/athletes. Future research should focus on the impact of this gender-discrepancy and women's perceptions of purchasing sports supplements that are being marketed to men.

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Conflicts of Interest: The authors declare no conflict of interest.

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