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REVIEW

Effect of Social Media on Diet, Lifestyle, and Performance of Athletes: A Review of Current Evidence

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Abstract

Purpose of Review Social media (SM) plays an important role in providing diet and health advice to athletes, but it also carries with it a risk of credibility in the information sought for and received. The objective of this review is to assess the knowledge gap on how SM influences dietary and lifestyle practices in athletes.

Recent Findings For this, relevant literature was searched in three leading databases with appropriate keywords, which were subjected to proper scrutiny that led to inclusion of 22 articles (original research papers, reviews, viewpoints, and commentaries). The current era of digitalization has seen an over-reliance on internet and SM for nutrition and lifestyle advice for an athlete. SM has become a powerful tool in athlete's choice of food, nutrition information, healthy living, and performance, with merits and demerits. Their role in choosing dietary supplements and particular food types (e.g., ketogenic diet), body image, self-esteem and eating disorders, and in lifestyle and performance are discussed.

Summary SM should be used with caution and should not be used alone as a source of information for nutrition related pieces of advise by athletes. Any food type and supplements trending in SM should be discussed with a sports nutritionist before consumption. SM influencers having a big follower base may not always be disseminating the right knowledge on food and nutrition, thus caution should be exercised. For optimal benefit to the athlete, SM information should be in alignment with recommendations provided by sports nutrition and coaches.

Keywords Sports nutrition · Social media · Athlete · Dietary supplements · Ketogenic diet

Introduction

A proper and adequate nutrition and healthy lifestyle are the basic prerequisites for an athlete to excel in his/her sports activity. It helps in optimal sports performance and to fasten recovery from any sports related injuries [1]. For a sportsperson, the sources of information for nutrition and lifestyle are multiple which ranges from coaches, peer athletes, non-athletic friends and families, celebrities, dieticians, print, and electronic media to name a few [2]. While dieticians/nutritionists, especially sports nutritionists have in-depth knowledge on nutrition requirements and practices of a sportsperson, the other stakeholders in sports (e.g., coaches, peer athletes, sports media person, etc.) may not have the same information. In the current era of fast digitalization, the ever-increasing use, access, and exposure to various forms of social media (SM) is also playing a major role in an athlete's life, while making dietary and/or lifestyle choices. SM has been acknowledged as a powerful medium to reach, influence, and change physical activity, lifestyle,

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and dietary behavior, being quick, cheap, and easy to access avenues for consumers who are presented with well-drafted, appealing nutrition, and lifestyle information [3]. The World Health Organisation (WHO) Global Action Plan for Physical Activity identified SM to have the potential to reach out to a vast majority in a short timespan to promote physical activity [4]. There also lies issues with SM which needs careful speculation. While credible people having mastery on a health-related topic can post scientifically validated information, SM can also be used by anyone else to "post," "blog," and "tweet" nutrition information regardless of their education and knowledge on the topic [5]. When athletes receive information from unreliable sources, they risk exposure to incorrect nutrition advice, which may inevitably have a detrimental effect on performance and well-being [6].

The effect of SM on health and lifestyle has been studied across the globe. Nevertheless, literature delving into their role in a sportsperson diet, lifestyle, and performance is scarce. There always remains a need to assess this gap in knowledge. The current review categorically aims to understand the role of SM in diet, lifestyle, and performance of a sportsperson while also attempting to provide us with a roadmap on the topic.

Methodology (Fig. 1)

The search strategy employed for the topic included a thorough literature search from three databases (PubMed, Embase, and Google Scholar), with combination of keywords (using appropriate Boolean operators) including "social media," "facebook," "twitter," "tweet," "instagram," "sportsman," "athletes," "athlete," "diet," "nutrition," "lifestyle," and "athletic performance." The initial search returned 121 records from all the databases from where 102 articles were found after removing duplicates (Vide PRISMA flowchart, Fig. 1).

Next, the inclusion and exclusion criteria were determined. The search results were confined to journal articles written in English and matching the eligibility criteria. First, the titles and abstracts for each of the 102 articles were reviewed to determine its relevance and articles were excluded only if they did not report the desired topic. Following the criteria set out above, 80 studies were eliminated, and 22 studies were retained. These studies were then evaluated by going through the whole article. At least three authors independently reviewed each abstract. Minor

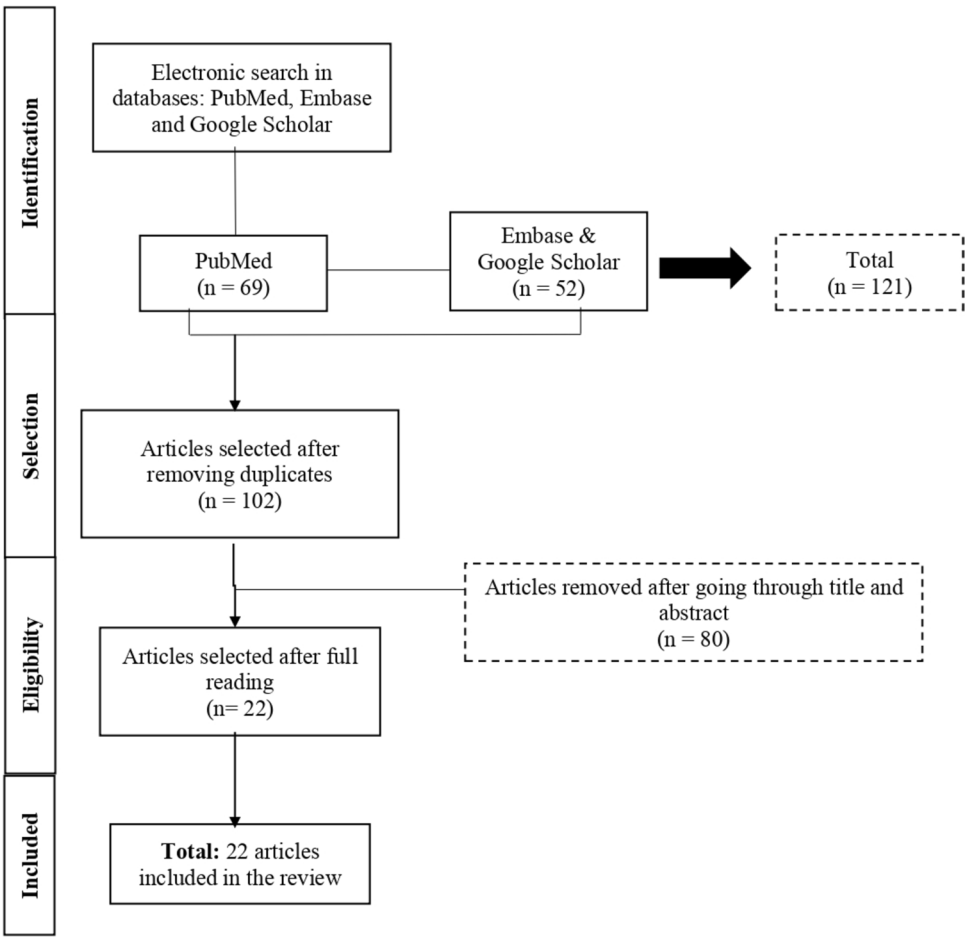

Fig. 1 Study selection, assessment, and inclusion (presented using the PRISMA flow diagram)

disagreements were addressed in a meeting that resulted in an agreement, and finally 22 articles were retained (Table 1). The manuscript was drafted based upon these final articles.

Impact of Social Media in Diet, Health, and Lifestyle

The role of SM in promotion of health, nutrition, and lifestyle is immense due to multifactorial reasons. Firstly, posts, tweets, blogs, images, and videos shared in a SM platform have the potential to reach a wide audience in a short time period. Facebook, one of the most powerful SM platforms, has approximately 2.93 billion monthly users worldwide as on current date [7]. Twitter, another leading SM platform, had 396.5 million users worldwide of which 206 million are daily active users [8]. Instagram, a widely used photo-sharing based SM has approximately 1 billion monthly active users (500 million daily active users) globally and has been ranked as the 4th most popular SM platform after Facebook, Youtube, and WhatsApp [9]. No other form of media can have such a wide outreach and varied audience as like SM. Secondly, messages can be delivered via existing contacts which becomes more impactful as opposed to those delivered through a traditional health portal website. Thirdly, since gadget use and use of SM has reached an "addiction" proportion these days, health, lifestyle- and nutrition-related posts delivered through SM has a higher degree of engagement and retention in the users [10]. Lastly, content generators in SM use innovative ways to make their content (e.g., health and lifestyle) more appealing and engaging rather than traditional web-based portals, thus playing a more influential role in effecting a behavior change in the users/subscribers [11]. Maher et al. [12] in their systematic review on the effectiveness of health behavior change interventions delivered through online social networks, reported that out of 10 studies included in the review, 9 reported significant improvement in some aspects of health behavior change/outcomes related to behavior change, with smaller effect sizes. The authors concluded that current evidence for such SM health interventions is modest which needs further exploration [12].

SM posts are made impactful by the nature of the contents they intend to deliver. One such way is the use of hashtags (#) along with the content posted. Often such hashtags trend high among users which signifies the influence the post has on them [13]. Such a trend on promoting a healthy lifestyle through "Fitspirational" content has been highly posted and followed by recent SM users. This was done by adding a hashtag #fitspiration with posts that wished to convey a healthy lifestyle through diet and exercise. It was identified that there were approximately 14.3 million Instagram posts with #fitspiration hashtag in 2018 as compared to 1.8 million in 2014 signifying the rapidity in which a SM post can gain popularity [14, 15].

SM posts related to diet, health, and lifestyle can often have a deleterious effect in those who are serious followers. This is because, often for the sake of gaining popularity, influencers with apparently no proper educational background (related to healthy eating and lifestyle) can post their views related to a topic which are accepted and agreed upon by the followers in an unfiltered manner. Often such followers do not get to know the credibility of the information, thus risking their well-being [16•]. SM can even be manipulated to trend contents with appropriate hashtags that make unhealthy lifestyle and dietary choices viral. One such was a trend of thinness to the extent of showing protruding bones in SM posts of "Thinspiration" and "Bonespiration" which were worrying in terms of inducing an unhealthy way of living [17]. A qualitative study that aimed to assess young adult's ($n=20$) perception and experience of fitspirational SM content on their thoughts, emotions, behavior, and health revealed that in spite of invoking some potential to support a behavior change, the contents are often unrealistic and untrustworthy and can have a negative emotional connotation [14]. This points to the fact that SM contents on diet, health, and lifestyle, should be subjected to careful dissection in terms of credibility, so that information disseminated can be put to better use.

Role of Social Media in Dietary/Nutritional Choices and Advice in Athletes

Athletes are no exception to the usage of SM for information related to health, lifestyle, and nutrition. Gym users have been reported to be big users of SM for their diet, lifestyle, and dietary supplements [18]. This is mostly because of reasons as mentioned before. Information obtained from SM needs to be discussed with a dietician since the later can identify the credibility of the information, as well as use the information in an individualized way. Various types of sports have different types of nutrition and health needs in different phases of training, and in recovery phase, the detailed description of which is beyond the scope of this current review. There are even barriers to good nutrition for them. Heaney et al. [19] in their study reported that lack of time for food preparation along with financial constraints, inadequate nutrition knowledge, lack of cooking skills, and problems with living arrangements are the main reasons of hindrances to an effective nutrition for elite athletes. Dieticians included in the study stressed that a good nutrition knowledge reciprocates into an adequate nutrition in the athletes [19]. The latter was also reciprocated in a subsequent study that reported better diet quality in college athletes to be

Table 1 Summary of the literature on the effect of social media in diet, lifestyle, and performance of athletes

Author and year	Study type	Aims/sample size (*n*)	Results
Maher et al. (2014) [12]	Systematic review	To assess whether health behavior interventions delivered through online social networks are effective/*n* = 10 included studies	Nine studies reported significant improvement in some aspects of health behavior change/ outcomes related to behavior change, with an effect size ranging widely from − 0.05 (95% CI 0.45–0.35) to 0.84 (95% CI 0.49–1.19), that is overall statistically non-significant. The authors concluded that current evidence for such SM health interventions is modest which needs further exploration
Easton et al. (2018) [14]	Qualitative	To assess young people's experiences of viewing fitspirational social media trends/*n* = 20	Themes developed out of this study were (1) a potential to support healthy living, (2) unrealistic, untrustworthy content, (3) negative effects on emotional well-being, and (4) vulnerability and protective factors. Fitspirational posts on SM can provide young people with knowledge and motivation to support healthy lifestyle behaviors. However, they can also negatively impact physical and psychological health
Talbot et al. (2017) [17]	Qualitative	Content analysis on body-focussed images in 3 social media platforms with hashtag thinspiration, bonespiration and fitspiration/*n* = 734 images	"Thinspiration" and "bonespiration" content contained more thin and objectified bodies, compared to "fitspiration." The later contained more bone protrusions and fewer muscles than thinspiration content
Goston (2010) [18]	Cross-sectional	To assess supplement use in gym users in Brazil/*n* = 1102 gym users	36.8% gym users reported supplement use. Fifty-five percent reported taking these supplements without any professional guidance
Heaney et al. (2008) [19]	Qualitative	To assess barriers for effective nutrition in elite athletes/*n* = 46 athletes, 12 elite coaches and 16 sports dieticians	Lack of time for food preparation along with financial constraints, inadequate nutrition knowledge, lack of cooking skills, and problems with living arrangements are the main reasons of hindrances to an effective nutrition for elite athletes. Dieticians included in the study stressed that a good nutrition knowledge reciprocates into an adequate nutrition in the athletes
Zuniga et al. (2017) [22]	Cross-sectional	To assess interest and applicability of a mobile device application for nutrition in Division I Collegiate Athletes/*n* = 72	"Internet media" (44.9%) was the second most common source of nutrition information after "parents/family" (59.4%), while "dietician/nutritionist" (13%) ranks much lower. A mobile device application for nutrition is highly welcomed by collegiate athletes. Protein needs, hydration, and fueling during exercise were rated of highest priority searches, followed by nutrition for injured athletes and healthy food choices at restaurants. Topics of weight gain, dietary supplements, and eating disorders were lower in their list

Table 1 (continued)

Author and year	Study type	Aims/sample size (*n*)	Results
Klein et al. (2021) [23••]	Cross-sectional	To assess sport nutrition knowledge, dietary practices, and sources of nutrition Information in NCAA Division III Collegiate Athletes/*n* = 331	College athletes rated SM (20.2%), coaches (16.8%), athletic trainers (15.5%), physician (12.9%), registered dietitian (8.5%), in this order, to be the top searches for nutritional requirements
Bourke et al. (2019) [5]	Cross-sectional	To assess SM usage in New Zealand athletes for their nutrition needs/*n* = 306 athletes	Sixty-five percent (females > males) used SM in last 1 year for their nutritional needs, which was more in recreational athletes than elite ones. The reasons for SM searches were ease of access, well-presented information, and a feeling of connectedness with a rich information source, though they had concerns of information unreliability
Knapik et al. (2016) [30]	Systematic review and meta-analysis	To assess prevalence of dietary supplement (DS) use by athletes/*n* = 159 studies	Elite athletes used DSs much more than non-elite athletes. Prevalence was similar for men and women except that a larger proportion of women used iron while a larger proportion of men used vitamin E, protein, and creatine
Sharp et al. (2021) [32•]	Cross-sectional	To assess SM-based communication among United States military personnel, who use weight loss and sports performance supplements and active in sports/*n* = 64	They often search online about supplements with keywords that signified their concern for legality associated with the supplement use. They also rated "preworkout" and "bodybuilding" as the most common reasons for their online supplement search
Sadek et al. (2022) [33••]	Cross-sectional	To assess knowledge, attitude and practice on dietary supplement use by athletes in Lebanon/*n* = 455 athletes	They are heavy users (prevalence 74%) of dietary supplements, half being sports supplements. They rely heavily on coaches (74%) and online SM sources (64%) to avail information on these supplements and 55% of them do not perceive health risks associated with their usage. Many such athletes (34%) did not have any specialist recommendation for using these products while 69% admitted of not going through the nutritional facts mentioned on the package
Waller et al. (2022) [34]	Cross-sectional	To assess supplement use and behaviors of athletes affiliated with an Australian state-based sports institute/*n* = 94 athletes	Athletes belonging to the "lower scholarship category" were more likely to have more reliance on non-credible information sources of like SM
Love and Schumacher (2020) [35]	Cross-sectional	To assess Division I Collegiate athletes on their SM use and protein knowledge before and after exposure to protein related Instagram posts/*n* = ?	SM could exert no significant difference in changing their protein knowledge, although they found such posts informative and helpful
Stoyel et al. (2021) [38]	Qualitative	To explore sport and social pressures on elite athletes in relation to disordered eating/*n* = 9 athletes	Athletes live with an ongoing social competition in the sports world and with the societal notions of the "athlete body." These are risk factors for disordered eating in them
Hilkens et al. (2021) [39•]	Cross-sectional	To test the hypothesis that social media is associated with the use of dietary supplements in gym users/*n* = 2269 gym users	Use of dietary supplements among male gym users is exorbitant, and there is more body image issues in those who have gone through image-centric SM posts

Table 1 (continued)

Author and year	Study type	Aims/sample size (*n*)	Results
Holland and Tiggemann (2016) [40]	Systematic review	To assess effect of social networking sites on body image and disordered eating/*n* = 20 studies	SM has been shown to have a strong association with disordered eating and health and with body dissatisfaction with respect to physical appearance
Nadobnik (2019) [46]	Content analysis, Qualitative	To identify the extent to which content related to pro-health behavior is present on selected social media	Instagram posts with hashtags related to healthy living and physical fitness like #fitness, #fitlife, #fitspiration, #fitnessfreak, etc. have been found to gather enormous number of visibility and comments so as hashtags related to posts on nutrition and health like #healthy, #health, #diet, #healthymeal, #healthyfoods, etc
Pilgrim and Bohnet-Joschko (2019) [48]	Qualitative, content analysis	To assess how influencers communicate on Instagram about dieting and exercise/*n* = 1000 Instagram posts	Instagram influencers gain the trust and friendship of their followers by posting body-shape focused visual content and targeted communication techniques. Diet and exercise are promoted as factors to be controlled for body perfection. Their posts emphasize consumption of dietary supplements and wearing tight-fitting branded sportswear as key to happiness by enhancing one's appearance
Klassen et al. (2018) [49]	Mixed method	To assess strategies used by food and lifestyle brand industry and health promotion organizations in SM/*n* = 6 posts from 10 industries	Most of this brands/industry used photos (64%) and videos (34%) to enhance their advertisement to promote their fitness/diet products. They mostly incorporated a link to the purchasable items and included body image messages compared with the food content to bolster viewer's attention
Lozano-Chacon et al. (2021) [50••]	Systematic review	To assess use and effectiveness of social-media-delivered weight loss interventions among teenagers and young adults/*n* = 14 studies	Nine studies analyzed weight loss through physical activity and healthy living, 2 only on physical activity while remaining 3 studies also included mental health in their analysis. Not all SM delivered interventions based on dietary changes were effective in promoting actual weight loss, but the authors noted that use of this strategy can provide positive feedback to participants in terms of self-management of weight control. Exercise and physical activity delivered and monitored through SM were also found to be effective in terms of weight loss

Table 1 (continued)

Author and year	Study type	Aims/sample size (*n*)	Results
Raggatt et al. (2018) [51]	Cross-sectional	To assess engagement with fitness inspiration on social media and perceptions of its influence on health and well-being/$n = 180$	Engagement of SM users with "fitspiration" content is large in their study where 59.4% of the participants accessed contents posted by athletes and personal trainers and 53.9% went through posts that were tagged with "fitspiration" hashtag. Participants also reported negative influence of such contents on their overall well-being in pursuits of healthy goal. Posts from qualified experts in the field were rated as most trustworthy
Sceery (2017) [53]	Qualitative	To assess nutrition impact on performance in student athletes/$n = 10$ Division II student athletes	They perceive nutrition to be either positively or negatively related to their health and performance, but since they may not always have access to proper nutrition knowledge, an additional nutritional education can be of benefit to them

correlated with good nutrition knowledge, even though they suffer from poor knowledge [20]. Dieticians and coaches can discuss this gap in nutrition knowledge with the athletes and can help them in making right nutrition and lifestyle choices.

With near-universal access to the internet, sophisticated search engines and widespread adoption of social media underpins the public's access to information about food and health. The public are increasingly turning to the internet for information and athletes are no exception [21]. A mobile device social media application for nutrition information and advice was highly welcomed in a study that assessed interest and applicability of this novel mode of nutrition information delivery in 72 college athletes, who majorly obtained improper nutrition knowledge from non-professional sources. These also rated their nutrition-related search in this mobile application wherein protein needs, hydration, and fueling during exercise were rated of highest priority, followed by nutrition for injured athletes and healthy food choices at restaurants. Topics of weight gain, dietary supplements, and eating disorders were lower in their list. This study also found that "internet media" (44.9%) was the second most common source of nutrition information after "parents/family" (59.4%), while "dietician/nutritionist" (13%) ranks much lower [22]. Klein et al. in another study reported that college athletes rated SM (20.2%), coaches (16.8%), athletic trainers (15.5%), physician (12.9%), registered dietitian (8.5%), in this order, to be the top searches for nutritional requirements. Bourke et al. [5] tried to assess SM usage in New Zealand athletes for their nutrition needs and found that out of 306 athletes, 65% (females > males) used SM in last 1 year for their nutritional needs, which was more in recreational athletes than elite ones. The reasons for SM searches were ease of access, well-presented information, and a feeling of connectedness with a rich information source, though they had concerns of information unreliability [23••].

SM has also pushed specific forms of diet for better living and performance, which are often accepted unedited by athletes. One such appears to be the renewed interest in veganism these days. Veganism is a form of vegetarianism that strongly opposes animal product consumption [24]. This has even been publicized in SM by some renowned athletes [25]. It goes without saying to what extent influences of these promotions globally on athletes can have. If not properly monitored, strict vegan diet in an athlete can lead to multiple macronutrient and micronutrient deficiencies which can affect performance and well-being [26, 27]. Ketogenic diet is another such specific diet which has created a huge ripple among athletes. Often pushed by SM and subjected to self-experimentation, athletes have knowingly or unknowingly accepted this diet irrespective of whether it is beneficial or harmful for them, though recent studies have showed benefit [28, 29]. Dietary supplements too are vigorously marketed and promoted through SM these days. They are used by elite

athletes in a much higher proportion than non-elite counterparts [30]. Too much reliance on them, being vigorously promoted by SM, may invite health and legal problems since they may contain doping substances [31]. Sharp et al. in their study that assessed SM-based communication among 64 United States military personnel, who use weight loss and sports performance supplements and active in sports, found that their search often included keywords that signified their concern for legality associated with the supplement use. They also rated "preworkout" and "bodybuilding" as the most common reasons for their online supplement search. The authors concluded with a caution that such military sports personnel may seek out SM-based supplement advice and spread misinformation about the effectiveness and safety of these products, which needs active monitoring [32•]. Sadek et al. reported that athletes in Lebanon are heavy users (prevalence 74%) of dietary supplements, half being sports supplements. They rely heavily on coaches (74%) and online SM sources (64%) to avail information on these supplements and 55% of them do not perceive health risks associated with their usage. Many such athletes (34%) did not have any specialist recommendation for using these products while 69% admitted of not going through the nutritional facts mentioned on the package [33••]. The growing impact of SM in facilitating a choice for these supplements among athletes is again reinforced in a study on 94 Australian athletes, where it was reported that although allied healthcare professionals and credible online resources were predominant source of information, those from a "lower scholarship category" were more likely to have more reliance on non-credible information sources of like SM [34]. With respect to knowledge about protein from Instagram among college athletes, Love in her university dissertation found that SM could exert no significant difference in changing their protein knowledge, although they found such posts informative and helpful [35].

Another burning issue with regards to diet and lifestyle in athletes is the concern for body image and eating disorders. Athletes are at higher risk for these disorders and society and SM plays a significant role in these [36, 37]. This was reflected in a study by Stoyel et al. [38] wherein they found that athletes live with an ongoing social competition in the sports world and with the societal notions of the "athlete body." These are risk factors for disordered eating in them [38].

Hilkens et al. [39•] noted that the use of dietary supplements among male gym users is exorbitant, and there is more body image issues in those who have gone through image-centric SM posts [39•]. SM has been shown to have a strong association with disordered eating and health and with body dissatisfaction with respect to physical appearance [40]. While a toned muscular "athletic" body is depicted commonly by SM, this strongly influences athletes in a drive to achieve that goal of "bodybuilding lifestyle," which may lead to undesirable health consequences [41–43]. This again calls for a word of caution to the athletes in cross matching this SM driven information with actual life and practice situations, being supported by sports dieticians and coaches. Compiling all these evidences, it remains not an overstatement to put that SM has a tremendous effect on athletes, in terms of easy availability of nutrition knowledge, choice of food, and diet planning as like image-based posts in SM that bolsters healthy living, but also gives way to body-image issues and disordered eating, the consequences of which can be deleterious for an athlete, if not filtered through a nutrition specialist.

Role of Social Media in Lifestyle and Performance in Athletes

SM also plays an important role in lifestyle and performance of athletes, though there is paucity of literature to substantiate this. Majority of these studies did not include athletes, but results from them can be extrapolated on athletes, albeit in an indirect way. The internet and social media are crowded with profiles of individuals and influencers who posts videos and pictures of their daily workouts, narrate their struggles, failures, and success stories, or share diet recipes [44]. Many of these profiles are those of sportsperson who are well known in their respective sports. In fact, they make great influencers in social media [45]. This becomes a major source of inspiration for other sportsperson who use internet-derived information to remain fit and healthy for their improved performance.

Social network delivered health behavior change interventions have been found to be having a modest effect on a targeted population in effecting a health change behavior [12]. Instagram, a photo-sharing-based SM platform has been found to be a major source of health and fitness/lifestyle-related posts, which instantly reaches out to its millions of users. Instagram posts with hashtags related to healthy living and physical fitness like #fitness, #fitlife, #fitspiration, and #fitnessfreak have been found to gather enormous number of visibility and comments so as hashtags related to posts on nutrition and health like #healthy, #health, #diet, #healthymeal, and #healthyfoods [46]. Fitness-related Instagram posts has also been found to be on top search and commented list by instagrammers in another study [47]. Influencers in social media, especially Instagram, generate a widespread impact on their followers. Pilgrim et al. in their mixed method study that analyzed 1000 Instagram posts from influencers with subsequent in-depth content analysis found that these influencers gain the trust and friendship of their followers by posting body-shape focused visual content and targeted communication techniques. Diet and exercise are promoted as factors to be controlled for body perfection. Their posts emphasize consumption of dietary supplements

and wearing tight-fitting branded sportswear as key to happiness by enhancing one's appearance [48]. It can be easily understood what impact these posts in Instagram can have on trainee athletes and sportspersons especially when the influencers are themselves renowned sportspersons. Not only SM influencers, but also the modern-day food, health, and lifestyle industry have also harnessed the potential of various forms of SM to advertise their products so as to reach millions in a short time span. Klassen et al. [49] in their study that assessed strategies used by food and lifestyle brand industry and health promotion organizations in SM found that most of this brands/industry used photos (64%) and videos (34%) to enhance their advertisement to promote their fitness/diet products. They mostly incorporated a link to the purchasable items and included body image messages compared with the food content to bolster viewer's attention [49]. The impact of these posts appears to be immense in terms of choosing what diet to follow, what lifestyle to lead, what sportswear to put on and also, how to look "healthy," and slim, thus upholding the need to lose weight. The latter remains a major goal for many of the athletes to enhance their performance and be more presentable to the general public. In a recent systematic review, Lozano-Chacon et al. [50••] reported that SM plays an important role in delivering weight loss interventions to teenagers and adults. Most of these health and lifestyle interventions were delivered through Facebook, and the studies included in this review were conducted in different parts of the world with one being from India. Out of 14 such studies, 9 analyzed weight loss through physical activity and healthy living, 2 only on physical activity while remaining 3 studies also included mental health in their analysis. Not all SM-delivered interventions based on dietary changes were effective in promoting actual weight loss, but the authors noted that use of this strategy can provide positive feedback to participants in terms of self-management of weight control. Exercise and physical activity delivered and monitored through SM were also found to be effective in terms of weight loss [50••]. Raggatt et al. [51] reported that engagement of SM users with "fitspiration" content is large in their study where 59.4% of the participants accessed contents posted by athletes and personal trainers and 53.9% went through posts that were tagged with "fitspiration" hashtag. Participants also reported negative influence of such contents on their overall well-being in pursuits of healthy goal. Posts from qualified experts in the field were rated as most trustworthy [51]. Though these studies did not include any particular population group, results can be extrapolated on athletes too since they are also big consumers of SM posts and contents [52]. They are often epitomized for their optimal health and being consumers of SM posts on food habits and diet, they expose themselves to a wide range of information which directly or indirectly impacts their health and performance. Sceery reported that student athletes perceive nutrition to be either positively or negatively related to their health and performance, but since they may not always have access to proper nutrition knowledge, an additional nutritional education can be of benefit to them [53]. Nutrition and lifestyle-related information obtained from various forms of SM need to be checked for their credibility and authenticity. Since SM can be a worrying source of misinformation [54], there needs to be a holistic blend as far as the source of diet and lifestyle-related information is concerned, that should include sports dieticians, coaches, fitness trainers, strength, and conditioning experts who can individualize these needs for an athlete, even when information is obtained from SM.

Conclusion

To conclude, it needs to be emphasized that SM has become a powerful tool in effecting a change in an athlete's choice of food, nutrition information, healthy living, and performance. They have both merits and demerits associated with such SM driven information, but what needs to be understood is an effective amalgamation of such information with those from sports dietician, coaches, and healthcare professionals. The following are some of the recommendations proposed for sportspersons, coaches, parents, care-takers, and support staff while considering social media as their source of nutrition information:

1. A prior consultation with a sports dietician/nutritionist to seek suggestions on SM sites with credible nutrition advice.
2. Information obtained from SM should lead to discussions with a dietician during consultation since nutrition-related information needs to be individualized based upon demographic, anthropometric, sociocultural, and financial needs of an athlete as also with the stages of their practice event and injuries.
3. Any particular food type/food supplement which is trending in social media should be checked with the dietician and coach before implementation. For dietary supplements, caution should be exercised to prevent inadvertent doping.
4. Educated discretion must be exercised as not all SM influencers with wide follower base deliver credible information source for nutrition and/or lifestyle.
5. Coaches and athletes should not fully rely on SM information for diet and lifestyle, rather should consult a specialist for a practical advice.

Compliance with Ethical Standards

Conflict of Interest The authors declare no competing interests.

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Papers of particular interest, published recently, have been highlighted as:
- • Of importance
- •• Of outstanding importance

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