



Radboud Universiteit

‘Eat big to get big!’

Discourses on obtaining an athletic body through high protein diets and their environmental impact.

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Word count:	23011

Summary

Human diets contribute to anthropogenic (human-induced) climate change. The Agriculture, Forestry and Other Land Use sector contributes nearly a quarter of anthropogenic greenhouse gas emissions, primarily due to deforestation and agricultural activities including livestock, soil and nutrient management (IPCC, 2019; Smith et al., 2014).

Multiple studies have stated that livestock protein (meat) consumption is one of the driving forces of global warming and negatively impacts the environment (Smith et al., 2014; IPCC, 2019; Aiking & de Boer, 2019). In contrast, diets that prioritise plant-based proteins, and minimising meat and dairy consumption, are strongly linked to reduced GHG emissions (Smith et al., 2014; IPCC, 2019).

Scientists have linked environmental impact, nutrition, and health in the discourses of dietary change (Donini et al. 2016; Macdiarmid, 2013; Hällstrom et al., 2015; Tillman & Clark, 2014). When considering dietary change as a practical pathway to reduce greenhouse gas emissions, land, and water use, a straightforward approach is to adhere to healthy dietary guidelines. There appears to be a positive trend where individuals are actively pursuing healthier lifestyles and diets, potentially yielding positive effects on the environment. According to Arenas-jal et al. (2019), clean and healthy living is emerging as the foremost rising trend influencing the food industry.

However, a possible caveat of the clean and healthy trend is emerging in the form of increased protein intake as protein is becoming the preferred food component (Arenas-Jal et al., 2019). Simultaneously with the trend towards healthy lifestyles, there is a growing interest in physical activity and fitness. Multiple publications have linked the concept of physical exercise as a means for enhancing body image as opposed to being motivated by the pursuit of increased health and well-being (Corossa et al., 2019.) The athletic body phenomenon is part of a broader online discourse. These ideals of the perfect body are widely distributed across the internet and social media (Corossa et al., 2019.). People turn to social media for connection, self-expression, and health information (Meng et al., 2017; Vasterlaus et al., 2015; Zhao et al., 2008). Protein has obtained prospects of goodness, and consumers are progressively seeking out high-protein foods, as they are typically linked to satiety and preservation or gain of lean body mass, advantages to bone and heart health, and anti-ageing attributes (Arenas-Jal et al., 2019).

If protein consumption discourses gain widespread recognition among fitness club members, it could render their dietary choices incompatible with the sustainability goals and objectives of the Paris Agreement. The primary objective of this study is to explore online discourses about the obtainment of an athletic body to understand the role of protein consumption within the online fitness community, and ascertain if the adoption of environmentally sustainable protein alternatives is in coherence with the fitness community.

The overarching goal of the study is to explore the degree of alignment with sustainability criteria within these discourses, uncovering prevailing cultural motifs and shared thematic constructs, while concurrently gaining insights into the extent to which these elements align with or deviate from broader sustainability considerations.

Methodology:

This study employs an exploratory qualitative design, using the principles of netnography as originally coined by Kozinets (2019), and the cultural discourses analysis (CuDA) as

designed by Carbaugh (2007). Netnography provides this study with a comprehensive and precise methodology for conducting a qualitative study with social media as the primary source of data (Kozinets, 2019). This approach encompasses various techniques of qualitative study, including interviews, data collection, archival work, and online observation. While CuDA provides this study with a systematic framework for analysing discourses and social interaction, it focuses on how communication practices encompass participants' interpretations of their identities, actions relationships, emotions, and their connections to locations (Carbaugh, 2007). This study collected data from the search engine Google and the following social media sites: YouTube, TikTok, and Reddit.

Results:

During data analysis, three main themes emerged: the pursuit of physical goals, self-improvement aspirations, and the identification of essential resources for the achievement of set goals. Gender differences were noted, showing varied perspectives on these themes. Interest in body recomposition was consistent across genders, with males expressing a higher frequency in muscle gain goals. Weight loss was a recurrent theme prominent within all gender categories, especially in discourses meant for a female audience.

Notable distinctions appeared within themes. Self-care, self-discipline, and mental health were emphasised in weight loss discussions for females, while physical health played a crucial role in discussions about body composition and muscle gain. Fitness and exercise were highlighted in muscle gain and body recomposition discussion, with less emphasis on discussions for females and weight loss. The significance of prioritising health is prevalent in all discussions, with a particular emphasis on weight loss discussions with female audiences. The prominent inclusion of study references, aimed at bolstering the credibility and strength of shared messages, emphasising the community's commitment to efficiency and goal achievement, is a notable commonality across all identified discourses. Furthermore, the importance of protein is emphasised in discussions centred on muscle gain.

The examined online discourses support the assertions that clean and healthy living is a dominant trend influencing consumer choices. Protein has become an integral part of the community's culture, influencing discourses and nutritional practices that serve as the foundation for a wide range of fitness activities. Differences in dietary patterns also became evident. In recipes and photos shared online: vegetables, fruits and plant-based proteins emerged more frequently in discussions meant for a female audience. While recipes and photos catered to a male audience emphasised meat, eggs, dairy, and protein more commonly.

Investigations in discourses within male and female and vegan communities confirmed differences within the communities, showing differences in attitudes towards physical goals, nutrition, health, and lifestyle. Within the content and interactions of male communities, engagement within the realms of fitness and diet enriches the shared cultural experience wherein physical improvement of the body and gaining muscle mass, through hard work and eating an excess of food, are at the centre of the discourses. On the contrary, engagement within realms of health, diet, and fitness, contributes to the shared cultural experience wherein healthy and sustainable self-improvement are at the centre of the discourses within the content and interactions of female communities.

Just like their non-vegan counterparts, vegan fitness communities are influential in the health and wellness world, openly sharing their journeys to gain muscle, lose weight, and

improve their overall health. Through detailed content, both groups provide insight into their dietary choices, emphasising nutrient-rich sources for their respective fitness goals. The community emphasises the positive impact on mental well-being, energy levels, and overall vitality, in addition to physical changes. As a result, they aim to inspire a vegan approach to health by demonstrating that vegan dietary choices can result in similar wellness outcomes.

Discourses about environmental considerations were not obtained outside of protein recommendations within vegan or “scientific” fitness and diet discourses. This highlights the possibility of a gap within the discourses considering the environmental effects of food and protein consumption. Discourses about plant-based diets and proteins, within online fitness and exercise communities appeared within three topics: ethical lifestyle considerations, health and the absorption and quality of plant-based protein versus animal protein sources. Two themes surfaced analysis of these two topics: debate and resistance. The theme debate within online discussions surrounding plant-based diets and proteins explores ethical lifestyle considerations, health implications, and the absorption and quality of plant-based protein versus animal protein, while the theme of resistance represents resistance and emotions regarding the change in consumption patterns. Interaction and communication wherein the themes of debate, friction, or both are prevalent, appear to derail constructive discourses about environmental concerns.

Conclusion:

In all discourse about the athletic body collected within this study, the main cultural premisses are the achievement of physical fitness goals, the pursuit of personal growth, and maintaining consistency in utilising the right resources to achieve these objectives. The importance of these cultural premisses is continually emphasised with the language of the discourses. The results indicate that protein has become an integral part of the community's culture, influencing discourses about nutritional practices and preferences which serve as the foundation for a wide range of fitness activities. Protein is seen as a healthy essential resource for gaining muscle and preventing muscle loss.

Analysis of the discourse suggests that the discourses about the pursuit of an athletic body do not align with environmental considerations. Discussions of the environmental and societal consequences of proposed dietary options were limited, revealing a significant gap in the discourses. Multiple barriers were observed disabling dietary shifts.

The discourses of protein consumption in online fitness communities tend to prioritise animal-based protein sources, emphasising their perceived superiority in quality for muscle development. While some discourse acknowledges the environmental impact of meat consumption, there is significant resistance within the community to address ethical and environmental concerns. The fitness community's preference for animal proteins is deeply ingrained in its cultural identity, making constructive discussions about the broader environmental implications of protein consumption difficult. Despite occasional mentions of plant-based alternatives, the prevailing discourse reflects a reluctance to shift away from traditional animal protein sources, emphasising the difficulties in fostering meaningful change within these communities.

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1. Introduction

Human diets contribute to anthropogenic (human-induced) climate change. The Agriculture, Forestry and Other Land Use (AFOLU) sector contributes nearly a quarter of anthropogenic greenhouse gas emissions (GHG), primarily due to deforestation and agricultural activities including livestock, soil and nutrient management (IPCC, 2019; Smith et al., 2014). Livestock is responsible for about 9% of total anthropogenic GHG emissions and rises to 18% when considering the entire production lifestyle, which includes factors like land-use changes and fossil fuel use (IPCC, 2019; Steinfeld et al., 2006).

Multiple studies have stated that livestock protein (meat) consumption is one of the driving forces of global warming and negatively impacts the environment (Smith et al., 2014; IPCC, 2019; Aiking & de Boer, 2019). Livestock production significantly impacts climate change through both direct and indirect mechanisms (Grossi et al., 2018). Livestock contribute directly through methane emissions from digestion and nitrogen emissions from manure. Additionally, fossil fuel consumption in livestock production is a substantial source of carbon dioxide emissions (Grossi et al., 2018). Livestock contributes indirectly through livestock feed production, with nearly 45% of associated emissions arising from the production of livestock feed. Subsequently, agricultural land, covering 38% of the earth's surface, allocates two-thirds to livestock, affecting natural carbon cycles (Grossi et al., 2018).

In contrast, diets that prioritize plant-based proteins, and minimizing meat and dairy consumption, are strongly linked to reduced GHG emissions (Smith et al., 2014; IPCC, 2019). In affluent regions, dietary changes can greatly benefit environmental goals, potentially cutting GHG emissions and land demand by up to 50% (Hallström et al., 2015). The impact depends on meat quantity/ type and the environmental effect of meat substitutes. Diets excluding all animal products or meat, particularly ruminant meat, show the lowest GHG emissions. Substituting all animal products with plant-based food can reduce land demand by up to 60% (Hallström et al., 2015).

A transition towards diets characterized by a higher proportion of plant-based protein and reduced consumption of animal-derived foods holds significant potential for substantial GHG emission reductions (Smith et al., 2014; IPCC, 2019). Additionally, this shift would yield other advantages such as decreased land usage, reduced nutrient losses to the environment, improved health outcomes, and a decrease in mortality to diet-related diseases (IPCC, 2019; Smith et al., 2014). Diets low in animal proteins are considered necessary for achieving the climate goals set in the Paris Climate Agreement (IPCC, 2019). Nevertheless, trends in protein consumption emerge which do not align with environmental concerns.

1.1 Exploring dietary shifts

Studies suggest that altering dietary patterns can effectively diminish the impact of agriculture on global warming, land, and water use. Scientists have linked environmental impact, nutrition, and health in the discourses of dietary change (Donini et al. 2016; Macdiarmid, 2013; Hällstrom et al., 2015; Tillman & Clark, 2014). When considering dietary change as a practical pathway to reduce greenhouse gas emissions, land, and water use, a straightforward approach is to adhere to healthy dietary guidelines. A diet including a reduction in calories (Hällstrom et al., 2015), by increasing fruit, vegetables, and dietary fibre and a reduction of meat consumption, can lead to weight loss and improved health, with significant societal impacts, including healthcare cost reductions (de

Boer et al. 2016; Friel et al., 2009; Masset et al., 2015; Sabaté et al., 2016; Westhoek et al., 2014).

There appears to be a positive trend where individuals are actively pursuing healthier lifestyles and diets, potentially yielding positive effects on the environment. According to Arenas-jal et al. (2019), clean and healthy living is emerging as the foremost rising trend influencing the food industry. Utilising access to the internet and media, consumers are making better-informed choices, preferring healthy, more sustainable food choices, and moving away from processed foods (Arenas-Jal et al., 2019). However, a possible caveat of the clean and healthy trend is emerging in the form of increased protein intake as protein is becoming the preferred food component (Arenas-Jal et al., 2019).

Throughout history, protein has been universally recognized as a vital macronutrient essential for human health, forming a building block for human life (Siever et al, 2021). Protein desirability is grounded in both its inherent material properties and broader social significance. Protein has obtained prospects of goodness, and consumers are progressively seeking out high-protein foods, as they are typically linked to satiety and preservation or gain of lean body mass, advantages to bone and heart health, and anti-ageing attributes (Arenas-Jal et al., 2019). While the benefits of proteins are becoming well-known, more consumers are becoming aversive towards carbohydrates (Spano & Antonio, 2008). There is a growing worry among some consumer groups about the source and content of carbohydrates, as they have become a focus in weight-loss diets, leading to the increasing popularity of carb-free foods, such as animal proteins (Spano & Antonio, 2008).

As the benefits of protein become more widespread, livestock-arrived protein could become more prevalent in the diets of consumers, thus negatively affecting the environment. According to de boer et al. (2017), health considerations are a significant factor in favour of consuming meat. Meat is recognised as a healthy and vital source of nutrients (Backer & Hudders, 2014; Kemper & White, 2021; Lea & Worsley, 2003). Moreover, the perception that meat is essential for muscle growth tends to anchor consumers to meat consumption (Rothgerber, 2013).

1.2 Fitness trends and protein consumption

Simultaneously with the trend towards healthy lifestyles, there is a growing interest in physical activity and fitness. This is evident in the increasing popularity of fitness clubs in developed countries. In the Netherlands, data indicates substantial growth in the national fitness industry from 2001 to 2020 (Mulier instituut, 2022). As of 2022, 18% of the Dutch population engages in regular exercise at fitness clubs, making it the most practised sport (NOCNSF,2022).

Multiple publications have linked the concept of physical exercise as a means for enhancing body image as opposed to being motivated by the pursuit of increased health and well-being (Corossa et al., 2019.) The prevailing ideals for achieving the perfect physique often entail muscularity and a 'V-shaped' figure for males, while females are often associated with a slender and toned body (Corossa et al., 2019.) Both ideal physiques encompass the importance of a more muscular physique with lower body fat, attributes that are enabled by exercise and protein intake.

Elite athletes typically meet or exceed daily protein recommendations (1.2-2 gram protein/kg of body weight) by following practical guidelines, such as distributing intake every 4 hours, and intake before sleep (Atherton et al, 2010; Areta et al., 2013; Moore et al., 2015; Res et al., 2012; Thomas et al., 2016). Recent Dutch studies have confirmed

adherence by athletes to such guidelines (Gillen et al., 2016). If protein consumption recommendations are widely recognised among members of the online fitness community, it could make their dietary choices incompatible with sustainability goals and objectives.

1.3 Cultural discourses

The athletic body phenomenon is part of a broader online discourses. These ideals of the perfect body are widely distributed across the internet and social media (Corossa et al., 2019.). People turn to social media for connection, self-expression, and health information (Meng et al., 2017; Vasterlaus et al., 2015; Zhao et al., 2008). Fitness is a prevalent health phenomenon on social media platforms like Instagram, YouTube, TikTok and Reddit. Users share images, quotes, and advice related to fitness and nutrition, contributing to the formation of an online 'fitness culture' (Tiggemann & Zaccardo, 2015). Discussions within the culture often revolve around perceptions of a 'healthy' appearance and correct dieting and exercise behaviours (Jong & Drummond, 2020). Moreover, a study by Jong & Drummond (2020) indicates that fitness accounts on social networking sites present alternative and competing realities, yet users predominantly follow the normalised and dominant health discourses. Notably, the central responsibility is firmly placed on the individual within these health and fitness messages to adhere to norms of correct health practices and choices (Jong & Drummond, 2020).

Cultural discourses theory could be used to comprehend what significance protein has within the dominant online discourses within the fitness community, how the discourses is shaped, and how environmental considerations on protein consumption contribute to the discourses on protein. Cultural discourses theory explores communication within specific cultural contexts. The theory examines how people in cultural contexts engage in conversation, the cultural patterns in their interaction, the embedded cultural meanings, and their societal significance (Carbaugh, 2007, 2015). Cultural discourses theory could help explore communication within the specific cultural contexts of both protein consumption and the obtainment of an athletic body. Carbaugh's theory states that cultural discourses serve as a foundation for shared beliefs and values within communities that emphasise the importance of athletic bodies, assigning specific expressions with meaning (Carbaugh, 2007, 2015), such as 'eat big to get big', 'getting lean', 'bulking', 'stay consistent'. Cultural discourses address the question of what beliefs and values must be assumed or held to contribute to meaning within a conversation. Cultural discourses theory delves into the dynamic interrelationship among communication, culture and meaning, illustrating that communication within communities that emphasize the importance of athletic bodies, is an integral and shaping component of its sociocultural existence (Carbaugh, 2007, 2015). Cultural discourses theory enables this study to understand the culture and language of the community and thus examining the role of protein within the discourses of the community.

In a recent interview, by professor of physiology of exercise and nutrition Luc van Loon, emphasises the reach of information within the discourses of fitness communities. When asked what his largest nutritional frustration would be he answered: 'No, I don't have any specific nutritional frustrations, but I must be honest that you increasingly encounter many students who have taken their information from YouTube, where concepts like 'more is better', ridiculous supplements, enormous quantities, and such matters prevail, often at the expense of attention to proper nutrition' (Werkhoven, 2023).

1.4 Problem statement

If protein consumption discourses gain widespread recognition among fitness club members, it could render their dietary choices incompatible with the sustainability goals and objectives of the Paris Agreement. Exploring the discourses surrounding the principles of both achieving an athletic body and protein consumption within online fitness communities is essential to gaining an understanding of the behaviour and preferences of members of the community. Our modes of expression not only serve as reflections of worldviews, ideas, and preferences but also actively contribute to their creation and transformation.

Therefore, a comprehensive investigation of online discussions on high-protein diets and the trend towards the obtainment of athletic bodies is crucial. Understanding how these discourses shape perceptions and influence choices can provide valuable insights into the dynamic relationship between discourses within the community, individual behaviour, and the broader context of sustainability goals.

1.5 Study objective

The primary objective of this study is to explore online discourses about the obtainment of an athletic body to understand the role of protein consumption within the online fitness community, and ascertain if the adoption of environmentally sustainable protein alternatives is in coherence with the fitness community. The overarching goal is to explore the degree of alignment with sustainability criteria within these discourses, uncovering prevailing cultural motifs and shared thematic constructs, while concurrently gaining insights into the extent to which these elements align with or deviate from broader sustainability considerations. By these inquiries, this study aspires to provide a nuanced comprehension of the intricate interplay among the previously mentioned discourses, establishing the significance of protein and the alignment with sustainable consideration within the discourses. Such insights may facilitate the alignment of dietary preferences aimed at achieving athletic physical goals with the environmental considerations advocated by scientific studies. This exploration may shed light on potential areas for intervention, education, or policy development to align dietary practices with environmentally conscious objectives.

1.5.1 Research questions

The following main question will be used:

How do the discourses on protein consumption within online fitness communities align with considerations for the environment?

The following sub-questions will be used to help answer the main study question:

Which elements shape the discourses within online fitness communities regarding protein consumption?

In the first sub-question, the online discourses about protein intake within online fitness will be analysed on similarities between characteristics, themes, and narratives. Answering this question will make it possible to understand what kind of information, narratives, themes and perceptions structure the discourses.

What significance does protein hold in the discussions within online fitness communities?

The second sub-question will help establish the role of protein within the discourses. Establishing significance will help link prevalent information, narratives, themes and perceptions within the discourses to protein consumption.

How do environmental considerations on protein consumption contribute to the discourses on protein consumption within online fitness communities?

The third sub-question studies to what extent the online discussions about protein intake within online fitness include environmental considerations about protein.

1.6 Relevance

Recognising the significance of sustainable protein sources and dietary choices is crucial for mitigating the environmental impact of food production. This study carries scientific relevance by examining the various viewpoints and discourses surrounding protein consumption within online fitness communities. The study provides a comprehensive understanding of how the discourses align with the principles of a sustainable diet. It aims to explore how a growing online trend of increased protein intake can align with the principle of a sustainable diet. In essence, the study contributes to its exploration of the complex relationships between protein consumption patterns, sustainability goals, and the societal impact of online platforms.

By shedding light on these interconnections, this study endeavours to provide evidence-based insights that can guide society to more environmentally conscious dietary practices and policies, while considering the societal influence of online media on body image ideals.

2. Theoretical framework

Understanding notions of communities and communications about athletic bodies is necessary to uncover patterns and shared themes, making it possible to assess how these elements contribute to/ or diverge from broader sustainability considerations (Carbaugh, 2015; Littlejohn & Foss, 2009).

2.1 Theory of ethnography of communication

The Theory of Ethnography of Communication, coined by Hymes (1962) is a theory aimed at comprehending the intricacy between communication and culture. Hymes argued that everyday speech possessed structure that could be explained through patterns or rules of use, in contrast to prevailing notions that everyday speech was primarily improvisational and creative (Carbaugh, 2015). Hymes highlighted the study of cultural specificities and actual practices grounded in speech communities. The field of Ethnography of Communication (EOC) has expanded on these initial foundations, operating under four core assumptions (Carbaugh, 2015).

Firstly, 'Communication is what people have made of it' (Carbaugh, 2015): Ethnographers have discovered that communication is shaped by individuals, going beyond human action to include animals, natural elements, and lifeless forces or objects as expressive agents. Communication involves both the human and nonhuman, with its structure being influenced by agents present and absent (Carbaugh, 2015). The meaning of agents and act sequences are not simply literal, they carry symbolism, as communication actions include shared awareness of preceding and following actions. In communities that emphasize the importance of athletic bodies, cultural knowledge is constructed based on participation in these aspects. Communication within the community is an evolving, constructive process shaped by the community's beliefs and values, shaping the perception of what exists and how things should be conducted (Carbaugh, 2015).

Secondly, human communication about athletic bodies exemplifies systemic social organization, as it involves creating and assuming features of social structure (Carbaugh, 2015). This highlights the role of communication in activating social norms in both behaviour and interpretation. Communication also reflects distinct social identities and relationships. As language and communication are used by people they form humans, their bonds, and their institutions (Carbaugh, 2015). A fundamental aspect of EOC involves understanding the knowledge that speakers in communities that prioritize athletic bodies rely on during their communication, what they believe to be doing while acting, the form it takes, and the meaning it conveys as an action (Carbaugh, 2015).

Thirdly, culture plays a profound role in shaping communications in its nature, function, forms, and meanings (Carbaugh, 2015). In essence, communication, language and social interaction are cultural according to EOC, emphasizing cultural dialects, functions forms, styles, codes and more. Focusing on these aspects of culture within communities that emphasize the importance of athletic bodies, enables this study to uncover how individuals, within their specific historical and social interactive settings, express their perspectives on tradition, politics, and challenges (Carbaugh, 2015).

Finally, Hymes introduced the notion of 'way of speaking,' which encompasses the concept that local speech patterns both assume and recreate ways of life (Carbaugh, 2015). Through communication within communities that emphasize the importance of athletic bodies, members give shape and meaning to our existence and surroundings, their concepts of history, religious beliefs, political stances, and their institutions (Carbaugh, 2015). The languages and other communicative tools members employ

actively shape the shared and contested meanings of their social and cultural world (Carbaugh, 2015).

In summary, EOC states the fundamental concept that culture and communication are inseparably intertwined (Carbaugh, 2015; Littlejohn & Foss, 2009). In communication, culture's shared beliefs and value systems are constructed. Within communication, people create their social structures through communication, shaping their everyday collective life. As they communicate, they express their society's unique verbal and nonverbal aspects while simultaneously creating and recreating its value system (Carbaugh, 2015; Littlejohn & Foss, 2009). By closely examining people's everyday communication, this study can observe, understand, compare, contrast, and theorize the fundamental abstract elements that define their worldviews and cultural life within communities that emphasize the importance of athletic bodies (Carbaugh, 2015; Littlejohn & Foss, 2009).

2.2 Cultural Discourses Theory

Cultural Discourses Theory (CDT) emerged from the foundation of the ethnography of communication (Carbaugh, 2007, 2015). In his cultural discourses theory, Carbaugh explores communication within specific cultural contexts. The theory examines how people in cultural contexts engage in conversation, the cultural patterns in their interaction, the embedded cultural meanings, and their societal significance (Carbaugh, 2007, 2015).

CDT centres on two core cultural discourses (Carbaugh, 2007, 2015). The first discourse relates to personhood, involving personal and political codes emphasizing individuality, choice, and challenges to traditional social roles. The second relates to speaking itself and thus communication itself, emphasizing codes of sharing and honesty (Carbaugh, 2007, 2015). These discourses form how members of a community make sense of the essence and characteristics of persons as individuals with a unique self, and of speaking as the interactional expression of self (Carbaugh, 2007, 2015). Both cultural discourses influence various aspects of popular culture, including politics, decision-making and theory development, shaping communication practices within communities that emphasize the importance of athletic bodies (Carbaugh, 2007, 2015).

Two key concepts in cultural discourse theory are communication practices and cultural premises (Carbaugh, 2007, 2015). Communication practices encompass a sequence of actions or behaviours that occur within a specific context or situation. These actions are imbued with meaning or significance, follow a particular structure, or carry intentions or messages within the context they take place (Carbaugh, 2007, 2015). Cultural premises are presumed messages that form an ongoing commentary about social interactional life, situated in culturally coded conversations. Cultural premises are compositions of shared understanding about fundamental dimensions of human experience and expression, such as identities, communicative actions, social relations, emotions and living space (Carbaugh, 2007, 2015).

Carbaugh's theory thus states that cultural discourses serve as a foundation for shared beliefs and values within communities that emphasize the importance of athletic bodies, granting specific expressions with meaning (Carbaugh, 2007, 2015). They address the question of what beliefs and values must be assumed or held to contribute to meaning within a conversation. Cultural discourses theory delves into the dynamic interrelationship among communication, culture and meaning, illustrating that communication within communities that emphasize the importance of athletic bodies, is an integral and shaping component of its sociocultural existence (Carbaugh, 2007, 2015).

2.3 Fitness Culture and Discourses

A study by Ragat et al. (2018) on online fitness culture recognised the influence of fitness discourses, on members of online fitness communities and their health beliefs and behaviours. The online community enabled the sharing of health and fitness journeys, fostering a joint commitment to improving health (Ragat et al., 2018). Members drew inspiration not just from role models or celebrities, but also from regular individuals sharing fitness content. Learning about health and fitness through online communities gave access to recipes, exercise ideas, and nutrition knowledge (Ragat et al., 2018).

Members used images of athletic bodies as ideals for their health and fitness goals, working diligently and determined towards their physical goals (Ragat et al., 2018). The ideal female appearance shifted from thin to strong, reducing the stigma around weight training (Ragat et al., 2018). For a minority of male members, the ideal body goals were slimness and strength, although most members emphasised the importance of a muscular appearance (Ragat et al., 2018).

Most members reported positive outcomes through interaction with online fitness communities leading to increased physical activity, including motivation and social support (Ragat et al., 2018). However, some members experienced negative impacts, feeling inadequate or facing psychological distress. Some participants felt inadequate through failure to achieve their goals, wanting to be 'better' or 'stronger'. While the online fitness community's social connection was seen as a stimulus for behaviour change, concerns were raised by members about unattainable ideals and unrealistic practices (Ragat et al., 2018).

According to Ragat et al. (2018), online fitness discourses have complex effects on individuals with both positive motivators and potential negative consequences. Despite highlighting the positive effects of online fitness discourses, the language and implicit meaning expressed by the members of the community unveiled disconcerting elements in their beliefs (Ragat et al., 2018). Members appeared oblivious to the consolidation of their desired appearance with optimal health. Members justified pursuing an athletic body by claiming it contributes to overall health and well-being (Ragat et al., 2018). This is in accordance with other studies on online fitness communities, indicating that online fitness discourses frequently portray an ideal which is slim, muscular, and athletic (Jong & Drummond, 2020; Tiggemann & Zaccardo, 2015). The findings suggested that members internalise specific appearances, regarding it as a representation of health (Jong & Drummond, 2020; Ragat et al., 2018).

2.4 Alignment with sustainable protein consumption

A transition towards diets characterized by a higher proportion of plant-based protein and reduced consumption of animal-derived foods holds significant potential for substantial GHG emission reductions (Smith et al., 2014; IPCC, 2019). Additionally, this shift would yield other advantages such as decreased land usage, reduced nutrient losses to the environment, improved health outcomes, and a decrease in mortality to diet-related diseases (IPCC, 2019; Smith et al., 2014).

Multiple studies have established enablers and barriers to meat reduction. Consumers reduce their meat consumption for a variety of reasons (Dagevos & Voordouw, 2013; De Boer, Schösler, & Aiking, 2017), and they can hold both favourable and unfavourable beliefs about meat at the same time (Collier, Normann, Harris, Oberrauter, & Bergman, 2022). Depending on an individual's stance, various motivating factors (for example, health) can act as both encouragers and deterrents to reducing meat consumption.

Numerous studies show that the topic of health is central to influencing meat consumption and moderation (Collier et al., 2022; de Boer et al., 2017). Meat is regarded as an essential nutrient source (Backer & Hudders, 2014; Kemper & White, 2021; Lea & Worsley, 2003). At the same time, there are multiple concerns about health risks such as type 2 diabetes, cardiovascular disease, and cancer (Boada et al., 2016; Geiker et al., 2021). Consumers are bound by their belief in the necessity of meat for muscle building, while concerns about weight control and perceived high-fat content drive reduced intake (Lea & Worsley, 2003). These competing beliefs create internal tensions that influence behaviour.

Aside from health concerns, environmental concerns motivate meat reduction (Carlsson et al., 2007; Collier et al., 2022; Hielkema & Lund, 2021; Whitmarsh & O'Neill, 2010). However, many people are unaware of the environmental impact of meat (Collier et al., 2021; Pohjolainen et al., 2016) or underestimate the impact of meat production on the environment (de Boer et al., 2013; Hartmann et al., 2022). (Hartmann et al., 2021).

Subsequently, concerns about animal welfare are a driving force behind a plant-based diet (Sanchez-Sabate & Sabaté, 2019; Schösler et al., 2014; Tobler et al., 2011). Concerns about animal welfare drive reduction (Lea & Worsley, 2003; Ruby, 2012), but conflicting beliefs about animal harm prevent meat eaters from changing their behaviour (Festinger, 1957; Loughnan, 2010). Because of these contradictory beliefs, consumers try to justify their meat consumption or avoid learning about animal cruelty (Bouwman et al., 2022; Bryant et al., 2022; Hartmann & Siegrist, 2020; Kwasny et al., 2022; Rothgerber, 2013).

Taste is a major impediment to meat reduction (Boer et al., 2007; Corrin & Papadopoulos, 2017; Graça et al., 2015; Lea & Worsley, 2003; Piazza et al., 2015; Schenk et al., 2018), but it also allows for reduction due to preference or dislike (Schenk et al., 2018). While positive taste expectations for plant-based foods encourage meat reduction (Michel et al., 2021).

The impact of social acceptance is mixed (Stoll-Kleemann & Schmidt, 2017; Cheah et al., 2020). Significant others can be both a barrier and an enabler of meat reduction, depending on their beliefs and the availability of social support.

Knowledge gaps, uncertainty about meal replacements, and cooking skills are all barriers to changing habits to a plant-based diet (Cheah et al., 2020; Lea & Worsley, 2003; Collier et al., 2021; Elzerman et al., 2013; Hagmann et al., 2019; Kemper, 2020; Lea et al., 2006). Resistance to changing one's eating habits is a significant impediment (Cheah et al., 2020; Rees et al., 2018). Finally, the effects of meat cost reduction are unclear to consumers (Schenk et al., 2018; Leitzmann, 2014).

2.5 Conceptual framework

The conceptual model below shows the concept that culture and communication are inseparably intertwined. In communication, culture's shared beliefs and value systems are constructed. Within communication, people create their social structures through communication, shaping their everyday collective life. Online fitness discourses influence members of online fitness communities and their health beliefs and behaviours. The online community enabled the sharing of health and fitness journeys, fostering a joint commitment to improving health and changing ideals, norms, and values.

Subsequently, communication and culture create discourses of personhood and discourses of speaking. The discourses of personhood encompass individual members' beliefs and views, which agree or disagree with the online fitness culture, and are

influenced by language used within the community, thus again changing how members communicate.

By closely examining discourses, this study can observe, understand, compare, contrast, and theorize the fundamental abstract elements that define their worldviews and cultural life within communities that emphasise the importance of athletic bodies and understand if these elements align with fundamental abstract elements about animal protein intake and plant-based protein consumption, thus influencing dietary choice.

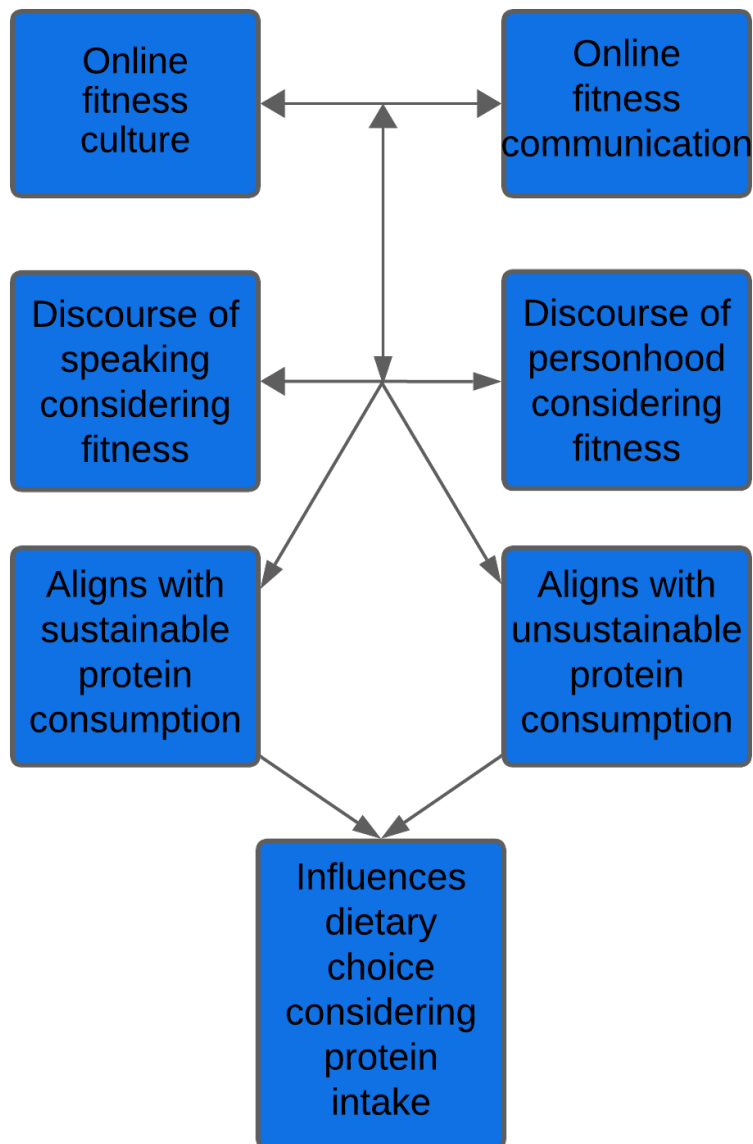


Figure 1: Conceptual framework

3. Methods

3.1 Study strategy

This study explores how prevalent online discourses about the pursuit of an athletic body, animal protein intake and environmentally sustainable protein alternatives intersect, and to what extent they align with sustainability considerations. This study employs an exploratory qualitative design, using the principles of netnography as originally coined by Kozinets (2019), and the cultural discourses analysis (CuDA) as designed by Carbaugh (2007).

Netnography provides this study with a comprehensive and precise methodology for conducting a qualitative study with social media as the primary source of data (Kozinets, 2019). This approach encompasses various techniques of qualitative study, including interviews, data collection, archival work, and online observation. While CuDA provides this study with a systematic framework for analysing discourses and social interaction, it focuses on how communication practices encompass participants' interpretations of their identities, actions relationships, emotions, and their connections to locations (Carbaugh, 2007). Both methods require active engagement by the researcher with data collection methods, data visualization, thematic analysis, and field-level interpretation (Kozinets, 2019).

3.1.1 Netnography of social media

Netnography focuses primarily on social media communications (Kozinets, 2019). Social media encompass applications, websites, and various online technologies, that facilitate users to participate in creation, distribution, commenting, and connecting, thus creating discourses. Netnography has previously been used in a study researching mental health implications of fitness and health information about obtaining athletic bodies and healthier lifestyles (Jong & Drommund, 2020). The study used a mix of online and offline data collection methods. Online data was collected and analysed shaping the scope of the project, enabling interpretation of the data and creation of an interview guide. Thereafter, interviews were used to explore how online fitness culture is created and experienced and the role of individuals within the culture.

This study collected data from the search engine Google and the following social media sites: YouTube, TikTok, and Reddit. Google could be seen as the first step to finding information regarding obtaining an athletic body (Kozinets, 2019). YouTube can be used to find informational videos about exercising, nutrition, and motivation. It is also home to many influencers sharing vlogs about their fitness journeys (Kozinets, 2019). TikTok is primarily a visual platform with short video's, but therefore can influence ideals and discourses about how human bodies should look, and what body types are preferred. Both platforms are also used to share information similar to YouTube (Kozinets, 2019). Reddit hosts numerous communities dedicated to fitness and health pages called subreddits. Reddit is valuable due to its active communities and the ability to analyse textual conversations (Kozinets, 2019). Because Instagram restricted the researcher's usage of numerous accounts and provided few search possibilities, the site was not used for this study. The majority of Instagram search results show user accounts.

As the objective of this study is to analyse discourses surrounding the obtainment of athletic bodies and their similarities with discourses on animal protein and plant-based protein, this study will centre around communication. According to Kozinets (2019), the

method of netnography is particularly suited to studies about public discourses on social media platforms.

3.1.2 Data collection strategy

The role of the researcher is essential in the process of data collection within netnography (Kozinets, 2019). In netnography there is no data before the researcher classifies or samples online social information, such as comments or messages. However, Kozinets (2019), makes an important remark that the researcher's own experiences with social media and the study object influence data collection. Similar to the researcher's own experiences the method used by the researcher colours the information that is collected (Kozinets, 2019). The data collection will be performed solely by the main researcher.

Netnography employs three main data collection methods: investigation, immersion, and interaction (Kozinets, 2019). These three different phases of data collection can be used separately or together in netnography, depending on the study question and the study conditions. Triangulation of the three phases is preferred by Kozinets (2019) as a combination of these methods strengthens the study argumentation of a theoretical framework. This study had scheduled three months for data collection and analysis, and used the following data collection methods:

Firstly, the main data studied in this study will be discourses, therefore the main method of data collection will be investigation (Kozinets, 2019). Investigation is the process of mapping the investigating space of the project, helping in answering the study question. By utilising investigative data operations, a structured approach to the conduct of search processes that replace the inscription of fieldnotes in traditional ethnography, with data sites. The data will be collected with newly made accounts. The new account will enable the study without interference by algorithms using previously recorded data. Data sites are revealed through processes of search and filtering, which is enabled by the double-funnel process of netnography (Kozinets, 2019). The initial data collection looks at the overall general site of investigation, the findings will subsequently lead to a narrower investigation.

Secondly, the process of immersion will be used to better enable conceptualization and reflectivity (Kozinets, 2019). Netnography finds its roots in ethnography, similar to ethnography the researcher does not know beforehand what should be noticed, this makes the process of data collection emergent and inductive (Kozinets, 2019). In netnography, the researcher immerses in the vast destabilized social media landscape. The interconnectedness of social media dissolves stable study sites as data sites encompass vast layers of interconnectedness, therefore the use of an immersion journal is necessary (Kozinets, 2019). According to Kozinets (2019), the immersion journal acts as a reflective, catalytic, and analytic guide that helps the researcher with the process of study and decision-making.

Finally, the process of interaction will not be included. Interaction is a phase of data collection which requires engagement or participation with the online participants, such as interviewing and commenting. Interaction adds multiple benefits to research as it enables the researcher to check for the accuracy of the collected data and subsequent findings by the researcher and it enables possibilities for new insights (Kozinets, 2019). This study is solely interested in exploring the online discourses available within the fitness community and determining whether they align with sustainability considerations. Although interaction could be beneficial, it will not be included due to the timeframe of this study, the decision was made to not apply the process of interaction.

3.1.3 Data analyses strategy

Netnography (Kozinets, 2019) and CuDA use a similar principle for data analyses as the principles of qualitative data analyses as written by Miles et al. (2014). Although these principles are similar, they differ in key concepts, because both netnography and CuDA encompass ethnographic study methodology, differing with the use of grounded theory and the need to find coherent explanations for all aspects of the social study by qualitative data analysis, and the iterative nature of data analyses (Kozinets, 2019).

This study employs various inquiry modes during data analysis used in CuDA (Carbaugh, 2007): The theoretical mode establishes the study's theoretical framework, while the descriptive mode investigates real-world communication instances. The interpretive mode seeks to understand the meaning of communication practices, exploring underlying beliefs. Lastly, the comparative mode identifies similarities and differences across cultural discourses, serving as a key element in addressing the main study question.

Due to the extensive scope of the digital study site, this study adopts the five data analysis operations of netnography, as proposed by Kozinets (2019). The process begins with collating, where data is prepared for coding. Coding involves breaking down data into meaningful parts, akin to qualitative data analysis. The combing operation unites conceptually related codes into high-order codes, fostering a more comprehensive understanding. Counting is employed as a quantifying procedure to facilitate comparisons of elements, themes, or codes. Finally, the analysis is completed with charting which involves visualising the processed data to enhance interpretability. This structured approach ensures a thorough examination of the digital landscape under investigation.

Finally, this study will use the concept of interpretation, whose importance is emphasized in both netnography (Kozinets, 2019) and CuDA (Carbaugh, 2007). When studying a discourses, the goal is to understand the full range of meanings embedded in it. This study is tasked to interpret the communication practice and uncover underlying assumptions made by participants. The scientist's background is an important aspect of interpretation in this study. The researcher is a white Dutch man in his late twenties. The researcher is interested in environmental issues as a result of his research, which includes environmental theory. The researcher has been interested in fitness for over a decade and has been a passive participant in the online fitness community for many years. The process of data collection and analysis is influenced by both environmental concerns and the fitness community.

In the CuDA framework, interpretation relies on two foundational theoretical assertions proposed by Carbaugh (2007) Firstly, conversation as a practice is independently analysed, considering its language patterns. The recording and description of actual conversation segments serve as a valuable tool, offering insights into the unfolding dynamics. The recordings act as a window into real-world interactions, providing a basis for understanding relevance. Secondly, conversation and conversation in CuDA involve a complex metacultural commentary encapsulated in five key elements known as 'discursive hubs' (Carbaugh, 2007). These hubs include reflection on identity, actions, emotions, relationships, and the sense of living in a specific place. Each of the elements is intricately coded into the practice of conversation, shaping perceptions, understanding, and the overall dynamics of social interaction.

Data will be analysed by only the main researcher. While interpreting, the researcher clarifies the meaning of words, phrases, symbols, and language of social interaction, CuDA accomplishes this by using a social technical vocabulary (Carbaugh, 2007). First, to construct cultural premises, this study will identify discursive hubs of being, acting,

relating, feeling and sense of living through the key cultural terms and concepts expressed in the language which is significant to the community (Carbaugh, 2007). These statements are known as cultural propositions, forming the foundation for interpretive claims derived from descriptive records. Secondly, semantic dimensions are uncovered in this study, encompassing sets of opposing values used by community members in formatting conflicting beliefs and values (Carbaugh, 2007). Finally, cultural norms will be formulated, capturing members' convictions about the preferred and prohibited types of communicative conduct by the community (Carbaugh, 2007).

3.2 Data collection

This study used the double funnel method as recommended by Kozinets (2019). The Double-funnel method uses two phases for data collection. The first phase encompassed a general search into the study topics, while the second phase narrowed the data collection to specific topics perceived as significant by the researcher.

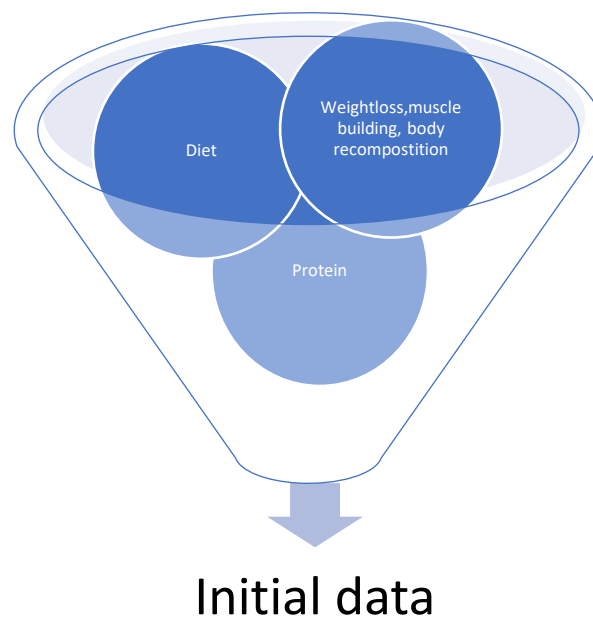


Figure 2: Initial data funnel

In the first search phase, the researcher deemed it important to search with goal-oriented keywords. Therefore, three keywords were utilized concerning achieving a more athletic body, commonly used within the online communities: weight loss, muscle building, and body recomposition (a combination of both losing weight and gaining muscle mass). Subsequently, these terms were employed in conjunction with the keywords diet or protein, enabling the researchers to simulate potential outcomes when an individual searches for ways to achieve their fitness goals. Crucial to this process was ensuring that proteins played a role in the discourses of the search results. Data was collected from written articles, video's and photos. The information gathered from the Google search engine was limited to the top ten results for each topic, mimicking the queries of someone looking for fitness-related information. Using the filtering tools, views and relevancy were considered while applying filtering to TikTok and YouTube. Data was gathered from popular fitness-related subreddits on Reddit. These pages included what are known as wikis, on which moderators provided explanations on how people may use nutrition to assist them in reaching their fitness objectives. Using the three primary search phrases, a total of ten search results per topic were obtained from the platforms Google, YouTube, and TikTok, yielding a total of 90 data sources. Furthermore, two additional data sources

were discovered on Reddit for the topics of muscle gain and weight loss, but none for the issue of body recomposition.

Since the phases of data collection and analysis are entwined in netnography, as previously mentioned, the researcher analysed the data acquired up to that point. After assessing the initial data collection, the researcher proceeded to search for information that could help answer the study questions. Considering the findings from the initial data analysis phase, the study direction had been adjusted to place a greater emphasis on gender disparities and environmental concerns within the community. Another eleven data sources were collected in the second collecting phase.

In the second phase, data collection primarily occurred on the platforms YouTube and Reddit. YouTube provided rich data, enabling better analysis, and extensive insights. First, a more in-depth investigation was carried out to investigate athletes or influencers with a large female following and with a large male audience. Thereafter, an investigation was carried out to find discourses on environmental concerns. Keywords such as “vegan fitness” and “plant-based proteins” were used for searching on YouTube. On Reddit, the investigation delved into discussions on environmental concerns within the community. Specifically, searches were conducted within the r/fitness and r/veganfitness communities on Reddit to identify threads discussing the impacts of consuming animal products on climate.

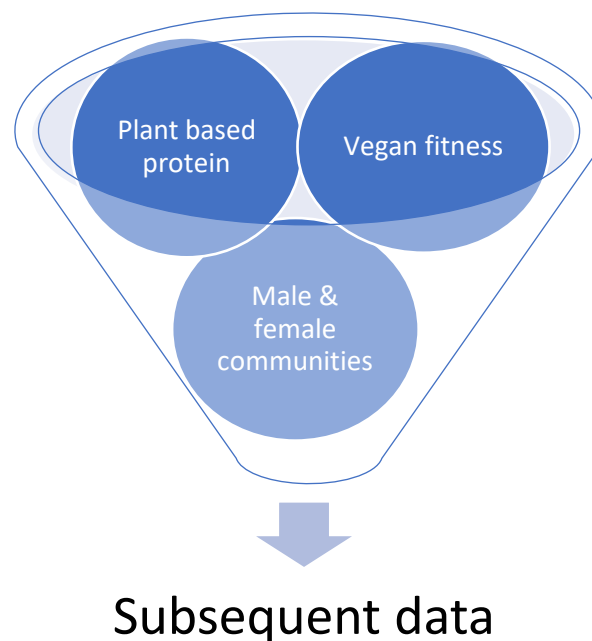


Figure 3: Subsequent data funnel

To capture discourses from visual data, transcripts were collected by tools provided by the social media sites TikTok and YouTube, and all transcripts were verified for accuracy. Textual data was manually collected by the researcher, and visual data was acquired by taking screenshots. A list of data sources, their origins, owners, and links to the documents is provided in the appendix. The choices made during both data collection phases have been documented in the immersion journal and data collection journal provided in the appendix.

3.3 Data analysis

Data were analysed in Atlas.ti (version 23.1.0), using the coding approach mentioned in the data analysis strategy. All data was read, viewed, or listened to by the researcher enabling the immersion progress which is essential for ethnographic study. In the first data collection phase the five data analysis operations as described by Kozinats (2019) were applied. Following coding, the data was categorized and examined according to the suggested gender of the data source's audience and the primary search terms for muscle growth, weight loss, and body recomposition.

In the second phase of analysis, the five data operations as described by Kozinats (2019) were again applied. Initially, individual codes were generated and subsequently combined into broader codes. Subsequently, the analysis principles of CuDA (Carbaugh, 2007) were applied. First crucial cultural terms and concepts, expressed in the language of the community in the data gathered, were coded to enable the researcher to make interpretive claims on the study subject from the data. Secondly, the codes were filtered on the beliefs and values within the online community on the study subject. Finally, cultural norms were formulated capturing the conviction about the preferred conduct of communication regarding the study subject by the community.

3.4 Trustworthiness

This study complied with the condition of credibility, by committing to transparency, and providing detailed descriptions of the study procedures and criteria. Furthermore, it's notable that both the methodology netnography and CuDA, prioritise transparency through journaling, solidifying the study's commitment to openness throughout the study process.

This study will comply with the condition of dependability, by use of systematic data collection based on the methodologies of netnography and CuDA and clear documentation of all stages of the study. This study mentioned that collection and analysis are solely conducted by the main researcher. This is relevant to dependability, as it highlights the importance of rigorous documentation for ensuring the reliability of the study. The use of data collection, analysis techniques, and rigorous documentation ushered by Kozinets (2019) and Carbaugh (2007) will maintain the dependability of this study. The use of the two data collection methods, as prescribed by Kozinets (2019), immersion and investigation ensures triangulation of the data.

This study will comply with the conditions of transferability, by using thick descriptions of the data, providing detailed and context-rich information about the studied online community making it possible for other researchers to understand the context and apply findings to similar study contexts.

This study will comply with the conditions of confirmability, as the immersion journal enables the researcher to provide detailed descriptions of the study methods, criteria and analysis procedures used and reflection by the researcher.

3.5 Ethical considerations

Under the General Data Protection Regulation(GPDR) by the European Union, the gathering of public data for study is allowed by study actors engaged in data processing for the public benefit, such as scientific and historical study purposes, provided that the researcher adheres to established standards for scientific study. Nevertheless, studies have shown that 60% of the public does not want their social media data used for scientific study(Martin & Shilton, 2016). For this reason, this study must follow the ethics flowchart made by Konizets (2019) based on the GDPR.

This study will use public data on insensitive topics to analyse the online discourses available online, as all personal information and information regarding online personas will be anonymized when collected, therefore no personal data will be saved. The only caveat is the possibility of collecting data from a vulnerable population, since social media posts about obtaining an athletic body have been extensively linked to psychological conditions (Corossa et al., 2019.). Appropriate precautions will be taken to keep such data anonymised and as such psychological conditions are not the subject of this study there will not be the possibility of harm. The transcripts will be labelled and stored confidentially and anonymously, accessible only to the main researcher.

4. Results

The results derived from the data analysis are expounded upon within this chapter, presented in a chronological sequence corresponding to the order of data collection and analysis. This study used two phases for data collection. The initial phase encompassed a general search into the study topics, while the subsequent phase narrowed the data collection to specific topics perceived as significant by the researcher. The overall results from the initial phase of the data collection and analysis will be described in chapter 4.1. Subsequently, these results are delineated based on the inferred gender of the target audience of the data source and the primary search terms of muscle growth, weight loss, and body recomposition. Thereafter, the results of the subsequent phase of data collection and analysis are mentioned in chapter 4.2. Refining the scope of the analysis to encompass new insights found within online discourses related to achieving athletic bodies, gender, and the environment, and as a means of corroborating the results derived from the initial data analysis.

4.1 General results

During data analysis, the gender of the audience emerged as an influencing factor within the discourses at an early stage. Three themes emerged during data analysis: Physical goals, self-improvement goals, and resources. The analysis of discourses within the online fitness community revealed prominent physical goals: including weight loss, muscle gain, and body recomposition (a combination of both losing weight and gaining muscle mass). In addition to achieving physical goals, it is considered important for members to improve themselves by attaining both internal and external objectives, such as improved health and self-esteem. Members actively engaged in extensive discussions about nutrition, diets, and training performance to achieve their physical goals. These themes will be elaborated further in the subsequent subchapters considering the corresponding discourses topics. Comparisons will be made and illustrated with quotes between the categories of muscle-gaining diet, weight-gaining diet, and body recomposition diet, as well as the gender of the audience.

The prominent inclusion of study references is a notable commonality across all identified discourses. The inclusion is aimed at bolstering the credibility and strength of shared messages, emphasising the community's commitment to efficiency and goal achievement. Furthermore, the community consistently emphasises the importance of protein, recognising its critical role not only in muscle gain but also in preventing muscle loss during weight loss. Protein has become an integral part of the community's culture, influencing discourses and nutritional practices that serve as the foundation for a wide range of fitness activities. Notably absent were discussions of the environmental and societal consequences of proposed dietary options, revealing a significant gap in the discourses.

Within discourses about obtaining an athletic body, the central cultural premises regarding the achievement of physical fitness goals, the pursuit of personal growth, and maintaining consistency in utilising the right resources to achieve these objectives. Protein has become the integral nutrient within the community's culture, influencing discourses and nutritional practices that serve as the foundation for a wide range of fitness activities. Protein is seen as the essential resource for gaining muscle and preventing muscle loss. Figure 4 illustrates the general themes emerging within the discourses and the

relationship with protein:

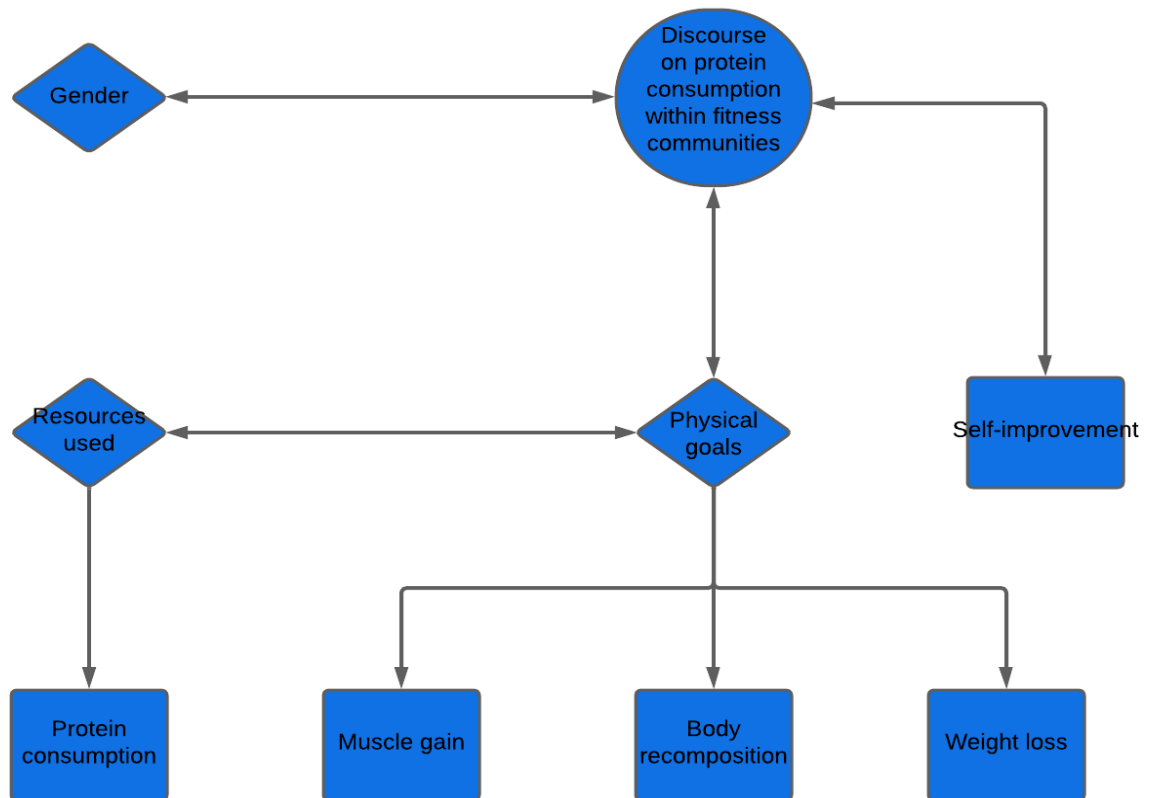


Figure 4: Emerging themes and relations within the discourses of online fitness communities.

4.1.1 Gender

Gender differences were observed at an early stage, indicating different perspectives and interests on the themes present in the discourses. Discourses intended for male audiences expressed a higher frequency of muscle gain goals than discourses for female audiences. Visual data showed muscular bodies, shredded ‘abbs’, and heavy weights. Weight loss was a recurring theme that was prevalent in the community, particularly in discourses intended for female audiences. Visual data showed ‘lean’ or ‘thin’ bodies emphasising fat loss, or muscle gain within the legs and glute muscles, through cardio, and weightlifting.

There were notable distinctions in topics concerning self-improvement. Female weight loss discussions emphasised self-care, self-discipline, and mental health. Body recomposition and muscle gain discussions for both male and female audiences emphasised physical health. Fitness and exercise were highlighted in discussions about muscle gain and body-composition, with a less emphasis in discourses intended for females and weight loss.

Prioritizing health and incorporating protein into diets is prevalent in discourses intended for both genders. Furthermore, protein is emphasised in all discussions about muscle gain, and weight loss discussions intended for female audiences. Dietary patterns also differed. Vegetables, fruits, and plant-based proteins appeared far more frequently in recipes and photos shared online intended for female audiences. While recipes and photos geared toward a male audience frequently emphasised meat, eggs, dairy, and protein.

4.1.2 Physical Goals

The overarching theme of physical goals within discourse, in which the topics of diet and protein are discussed, emerged prominently in the collected data. The analysis of the data sources revealed that the pursuit and attainment of physical goals is the most important theme within the discourse. The discourses and information collected from these sources consistently emphasised the importance placed on achieving various physical goals. Within the theme of physical goals, three major discourses topics encompass a need to attain muscles, lose weight or change body composition.

The analysis of muscle, body composition and weight loss goals reveals a wide range of desires: The data expresses desires for health benefits, improvements in body image, fat reduction (getting lean/ toned), overall body composition enhancement, transformative changes, controlled weight gain (bulking), consideration of genetic factors, strength gain, and specific weight gain under the category of body-related goals. These desires refer to a will to improve, become 'better'.

A consistent inclination is discernible across all gender categories in the realm of body recomposition. This demonstrates a shared interest that transcends gender distinctions in reshaping one's body, through weight loss and simultaneous muscle gain. Community members aim for muscle preservation, understanding muscle protein synthesis, targeting specific muscle groups, adhering to bodybuilding principles, preserving 'lean' mass, achieving a 'lean' 'muscular' physique, overall muscle development, minimising muscle loss, and prioritising muscle recovery within the domain of muscle-specific goals. When it comes to the Muscle Gain category, the increased frequency observed among males is especially striking, indicating a more pronounced preference for muscle-building goals in this demographic, inclining male characteristics: "You wanna gain more strong, sexy muscle. Gentlemen." (alphmanoffical, n.d.) Female audiences were more interested in increasing muscle size of feminine characteristics: "This a full day of eating, to get a skinny waist and a fat ass." (Isabelle_Jayde, n.d.).

Weight management objectives include maintaining a healthy weight, losing weight, optimising metabolism, calorie tracking, managing energy expenditure, fat loss, and appetite control: "I'm going to take you through a typical day of eating that helped me transform from this to this, but before I do, let's take a look at what truly makes a diet effective for fat loss." (Redefining strength, 2021) Weight loss emerges as a recurring theme, with common goals crossing gender lines. Interestingly, data intended for female and non-specific audiences express increased weight loss aspirations, whereas males have a lower rate. These nuanced patterns point to gender differences in the prioritisation of weight-related goals.

Throughout multiple video's and blogs, a trend emerged underscoring the importance of physical resemblance to celebrities. Members shared their favourite diets and exercises of influencers or celebrities, hoping to achieve similar results. Videos called "Eating like Bella Hadid", and "The only 10 exercises you need to get big according to Chris Bumstead" are shared online, reinforcing the significance of acquiring information from individuals who resemble the way they aspire to look themselves.

4.1.3 Self-improvement goals

The data collected revealed an overarching theme of self-improvement. The discourses and information consistently emphasised the importance of improving internal and external aspects of yourself. Across diverse audiences, a shared interest in goal setting emphasises the importance of structured objectives. This collective recognition emphasises the value of clear goals for personal growth and self-improvement.

Within the realm of health, a significant number of content expressed the importance of reaching goals centred on health, including fitness, nutrition and overall well-being. For instance:

“Before you set out on your effort, make sure you know exactly what you’re trying to achieve. Ask yourself, ‘How much weight do I need to lose to be healthy?’ Then set personalized goals, in achievable increments and introduce lifestyle changes to gradually lose weight and keep it off. Be prepared to adapt your lifestyle as necessary to maximize your chances of success.”(Harvard, n.d.).

Mental Health is specifically highlighted, emphasising the synergetic relation of physical and mental well-being within the discourse. Specific physical health goals indicate a focus on fitness, strength, and vitality, while mental health goals, recognise an integral relationship between a healthy body and mental well-being: “Regular exercise is vital for both physical and mental health. Increasing the frequency of physical activity in a disciplined and purposeful way is often crucial for successful weight loss” (Medical News Today, 2023).

Prioritising wellbeing is seen as crucial for health. Self-care, vital for self-improvement, involves practices promoting both practices and self-reflection which emphasise having a positive image of yourself.

“Just in case you need to hear this: You don't need to lose weight. Not to be happy. Not to fall in love. Not to get the job of your dreams. If you want to lose weight to get healthier? Great. Just know that body size isn't the end-all, be-all of determining your health. Feeling good about your body and taking care of your body is the goal — and that can look like a lot of different things.” (Savage, 2021).

Multiple data sources recognized the importance of self-discipline, reflecting a strong commitment to be consistent and intentional. Remarks were made about resisting immediate gratification, prioritizing long-term goals, and monitoring food consumption and exercise progress while staying consistent. “Self-monitoring is a critical factor in successfully losing weight. People can use a paper diary, mobile app, or dedicated website to record every item of food that they consume each day. They can also measure their progress by recording their weight on a weekly basis.” (Medical News Today, 2023).

Finally, sustainability in self-improvement involves the enduring commitment to stability and maintaining positive changes over the long term. Multiple data source emphasises the need for habits to withstand challenges while creating healthy habits that are appropriate for someone's life: “Sustainable Changes: Body recomposition is a long-term process that also involves making sustainable lifestyle changes. It's not about crash dieting or extreme exercise regimes, but rather creating habits that you can stick to over time.” (Aneesh, 2023).

4.1.4 Resources

The collected data revealed an overarching theme of using resources to achieve their physical goals. The discourses and information consistently emphasised the importance of means and information on how to obtain physical and self-improvement goals, which will be dissected in the next subchapters.

Perseverance

Perseverance in fitness, within the discourses, refers to a steadfast and determined commitment to pursuing fitness goals by members of the online community, despite challenges, setbacks, or obstacles. It entails a consistent commitment to engaging in

physical activities, maintaining healthy habits, and working toward specific goals related to one's physical well-being.

Multiple data sources underscore the importance of achieving your goals. Striving to reach specific milestones of goals, such as weight loss, muscle gain, or athletic performance. Achievement of goals is reached by ensuring commitment and consistency. Demonstrating dedication to a fitness routine, and lifestyle, adhering to diet and exercise plans, and making conscious choices that align with health:

“Muscle building is a lifestyle, and it’s more than just being in the gym. Your diet plays a huge role in helping you build muscle, which is why we’ve created this muscle gain diet plan. This plan will help you eat the right foods to help you reach your goal of building lean muscle mass.” (Kaur, 2023).

While regularly engaging in physical activities and diet, even when confronted with distractions, busy schedules, or more pleasurable activities: “Be consistent! If you miss a workout day or overeat at a meal that’s okay! Just don’t let it become a pattern. If you can be consistent with your workouts and nutrition on a daily basis you will start to see body composition changes.” (Smith, 2023).

To stay committed and consistent, multiple sources emphasise using efficient and enjoyable exercise and diet strategies. Adopting successful strategies to optimise diet and fitness efforts “Compound lifts are the most efficient use of your time and effort because they involve multiple muscle groups and joints, maximizing calorie burn and muscle gain.” (Zieminski, 2023) . While simultaneously finding fulfilment and satisfaction in fitness activities, which increases the likelihood of long-term engagement. “Try to make your additional eating sessions as appealing as possible. For example, stock the fridge and cupboard with snack foods you love.” (Better Health, n.d.).

Using internal and external sources of motivation ensuring commitment to achieving fitness goals, like aesthetics, health and personal growth is regularly mentioned. “The important thing is to keep a positive outlook and be persistent in working toward overcoming the barriers to successful weight loss.” (Medical News Today, 2023).

The data analysis illuminates the critical role of perseverance in the context of various physical aspirations among various audience groups. There are notable distinctions, especially in the areas of achievement, commitment, consistency, and stress management. The achievement of goals takes precedence in discussions about muscle gain and weight loss, emphasising its importance in fostering perseverance. Commitment is especially noticeable in muscle gain datasets tailored for a male audience. The theme of consistency, on the other hand, emerges as critical in both muscle gain and body recomposition discussions across all genders.

Exercise and performance

In all categories and genders, engaging in regular exercise was perceived as important, with an emphasis being placed on regular physical activity and consistency. There is a significant interest in obtaining information on the most effective training methods. Numerous videos, websites and blogs share lists of the best exercises for weight loss, muscle growth, and how to enhance athleticism or increase lifting capacity.

Analysing discourses about fitness performance across diverse demographic audiences reveals intriguing patterns and variations in body composition, muscle gain goals, and weight loss. The importance of fitness and exercise performance becomes clear in discussions about muscle gain and body recomposition, as performance is viewed as a

key driver of muscle gain: “Train harder than last time, aka progressive overload. You can't keep doing the same thing over and over again at the same intensity with the same weight and expect your body to get better. Your body needs a stimulus for growth.”(Doucette, 2021).

Nutrition

The role of dietary choices and the intake of essential nutrients in supporting and optimising physical health, exercise performance, and overall well-being persists within the collected discourses. It's often seen as the main resource necessary to reach fitness goals. Maintaining an appropriate macronutrient balance, timing meals for energy optimization, staying hydrated, considering supplementation, and tailoring nutrition to individual needs are all emphasised within the online fitness community.

The importance of prioritising health and incorporating protein into diets is prevalent in all discussions, with a particular emphasis on weight loss discussions with female audiences. Furthermore, the importance of protein is emphasised in discussions centred on muscle gain. Differences in dietary patterns also became evident. In recipes and photos shared online: vegetables, fruits and plant-based proteins emerged much more frequently. While recipes and photos catered to a male audience emphasized meat, eggs, dairy, and protein more commonly.

The examined online discourses support the assertions that clean and healthy living is a dominant trend influencing consumer choices. Online discussions confirm the importance of making informed decisions, choosing healthier and more sustainable options, and avoiding processed foods. Many recommendations are provided within the dietary discourses, including complete lists of dietary foods and vlogs showing what fitness influencers eat to obtain their bodies.

Subsequently, the conversations confirm that online audiences actively seek high-protein foods because of the associated health benefits. Protein has gained social popularity as a vital macronutrient. Furthermore, the growing preference for carbohydrate-free foods, particularly animal proteins, corresponds with the growing concerns and focus on carbohydrate content in weight-loss diets discussed in the analysed online discourses. The following quote displays this preference: “Good morning, guys. So, I want to take you through a full day of eating 200 grams of protein” (Ryan Humiston, 2021)

Various protein intake recommendations occur on social media, reflecting the diverse perspectives within the health and fitness community. There's variety in the amount of protein one should consume, some sources just prescribe the importance of consuming enough protein, while others prescribe a minimum amount which one should reach. Influencers, fitness enthusiasts, and nutrition experts frequently share their perspectives, offering advice on optimal protein consumption for various purposes. A common recommendation for protein intake is 1 gram per pound of body weight to maximize muscle loss prevention and muscle gain.

“So, the biggest thing I see with people is they're not consuming enough protein. You really need to make sure you're getting about a gram of protein per pound of body weight, right? If you're 180 pounds, try to get 180 grams of protein. If you're 200 pounds, aim for 200 grams of protein. Because, again, if you're going to the gym, if you're putting in the work, if you're training hard, you've got to be giving your body the raw materials it needs to repair and rebuild the muscle tissue” (TikTok, 2023.).

There is uncertainty about how much protein one should consume. Protein's importance is widely acknowledged, but the specific information varies. This uncertainty is even

acknowledged in a YouTube video about muscle gain before presenting the "real facts" based on scientific studies: "Obviously, there's a lot of conflicting information about protein out there. So in this video, I wanna condense all the best science-based information down to give you a final answer on every protein-related question you've ever asked." (Nippard, 2022).

Many discussions about protein sources tend to focus on animal-based options. Animal protein sources are frequently mentioned first, followed by plant-based protein sources. Plant-based meat substitutes are mentioned in the discussion, with a particular emphasis on muscle gain and weight loss in female audiences. However, these alternatives are primarily discussed in terms of vegetarian or vegan diets as alternatives for meat consumption, with no consideration given to their environmental impact:

"If you are a vegan, you can still get high-quality protein from foods like tofu, tempeh, beans, and edamame. Protein powders made from plant sources, like pea protein or soy protein are also great options. However, you will still need to get essential nutrients that are only found in animal-based proteins, such as B12, from other sources." (Smith, 2023).

4.2 A closer look into Gender & Environment

Analysis of the cultural communication and interaction within the content and the comments revealed similarities within the language of the online fitness communities, establishing communalities in being, acting, relating, feeling and sense of place. Members of the community actively embody advocated principles, sharing their experiences in the comments. Cultural values are reinforced by this dynamic feedback loop. Differences within discourses became clear when examining the varied topics, goals and areas of importance for each community and their respective influencers, which could influence perspectives on protein consumption. Therefore the study direction was adjusted to place a greater emphasis on gender disparities and the lack of environmental concerns within the community.

In the following paragraphs, rich descriptions are used to paint a picture of the gender differences, vegan communities and the relationship between proteins in the discourses. Following that, the same approach of rich description is used to outline the role of plant proteins in the discussion.

4.2.1 Discourses intended for male audiences

To provide a better understanding of the gender differences, a video featuring Mr. Olympia Chris Bumstead will now be described and analysed (Muscle & Strength, 2020). Chris Bumstead holds the distinction of being the most followed fitness influencer on Instagram and is the winner of the most prestigious bodybuilding competition. He creates YouTube videos covering topics such as training dieting, an posing, garnering millions of views worldwide.

The video starts with a logo appearing on the screen: "Muscle & Strength. The tools you need to build the body you want". The most popular male bodybuilder wears a t-shirt with the word "jacked" on it and greets its followers: "What's going on guys, Chris Bumstead here back with Muscle & Strength for a full day of eating. I am starting with breakfast right now; I'll take you through everything I eat in a day." (Muscle & Strength, 2020). A video reel plays, showing short bursts of video portraying cooking, meals, and the bodybuilders muscular body.

It is morning 10 o'clock, the influencer is standing in the kitchen ready to start cooking. A big basket of potatoes is being prepared in the air fryer, eggs are measured to calculate

macronutrients and prepared. The influencer explains he measures everything he eats: "It's not so much that I eat too much or too little, but so that I know I am being consistent...The more consistent everything is, and you understand all your variables, it's much easier to manipulate them and target them specifically towards your goals." (Muscle & Strength, 2020). The end product is a large bowl with potatoes, eggs, extra egg whites and tomato ketchup for taste.

The macronutrients carbs, proteins and fats are shown. The video is cut and on to the next scene. Meal two the "pre-workout meal": 180 grams of chicken, spinach and 280 grams of rice, "sticking to the basics". The influencer prepares the food and gives advice on preparation and adding flavour to the dish. Nut oils are added to the meal: "Dense calories you sprinkle on top of your meal helps you get a little more food in throughout the day".

Cut, driving to the gym, chest workout, bench pressing. The influencer shows his muscles. Cut back to the kitchen, "Post workout meal", 420 grams of mashed sweet potatoes, 180 grams of shredded chicken and ketchup for taste. The macronutrients are shown again.

Meal four: 180 grams of chicken, 280 grams of rice and vegetables. With coconut aminos and humus to add taste: "I just slap some on there, you get a few bites of it, and it helps it go down" (Muscle & Strength, 2020). More macronutrients, cut to meal number five. More meat, sweet potato, and avocado. The cameraman remarks: "Your food game is on point man." The influencer responds: "It takes skills to be a bodybuilder you know, you think it's easy but you gotta be a master chef, a master sleeper, master calm yourself, master trainer" (Muscle & Strength, 2020). The last meal before bed is, salmon and rice.

In the video, the male influencer shared personal aspects of his life, showing his community what he eats in his pursuit to improve his body's muscle mass and looks. Commenters frequently share their recipes and cooking tips, particularly emphasizing clean eating, protein intake, and strategies for gaining strength and muscle. The admiration for the influencer's physique is a common occurrence, contributing to a supportive environment that cultivates a shared sense of purpose. In these spaces designed for exercise and cooking, individuals feel a profound connection, incorporating these areas as crucial shared spaces within the community. Commenters expressed a range of emotions, from excitement about fitness achievements to challenges they have with diets in the pursuit of their goals. This engagement within the realms of fitness and diet enriches the shared cultural experience wherein physical improvement of the body and gaining muscle mass, through hard work and eating an excess of food, are at the centre of the discourses.

Another video illustrates the significance attributed to optimal protein intake for muscle gain within the community (Fouad Abiad Media, 2023). The video shows three big muscular bodybuilders and their guest talking in their weekly podcast, called Bro Chat. The guest on the podcast is both an exercise scientist, bodybuilder, and influencer. The video starts with a video intro: images of heavy weightlifting, big hamburgers, and a bodybuilding competition are shown.

The attendees of the podcast join each other through a digital meeting. There prevails an atmosphere of 'locker room talk'. The first subject discussed is performance-enhancing drugs, and jokes are made. Their decision to use performance-enhancing drugs inclines a choice to risk health for more muscle gain. The discussion switches to the advice within the fitness community, a comparison is made between information based on science and personal experiences, called 'bro talk' or 'bro science', and how bro science sometimes

matches scientific research: “Somehow those bro things that work for us and makes us all huge ending up playing out in science sometimes” (Fouad Abiad Media, 2023).. A study on the influence of the amount of protein consumed on muscle production is cited: “The Anabolic response to protein digestion during recovery from exercise has no upper limit in magnitude and duration”.

A question is asked to the scientist/ influencer about the amount of protein per meal and its origins. The scientist proceeds to explain the design limitation of older studies and thereafter responds in a jokily meaner: “Basically, they tested essentially untrained people that weighed, I don't know, 75 kgs, 165, just regular dudes, like mortals.” (Fouad Abiad Media, 2023).

The scientist/influencer continues:

“Throughout my career, I've advocated for significantly higher protein intake than the norm. For instance, I aimed for two grams per pound of lean body mass. This might sound extreme, but during my peak, I consumed around 400-500 grams of protein daily. While this seems excessive, it was part of a trial-and-error process. Bodybuilders often experiment on themselves, adjusting their approaches based on observed results.” (Fouad Abiad Media, 2023).

The scientist is asked what the optimal amount of protein would be for bodybuilders. He responds: “Most of the studies say it's almost golden for everyone to do significantly less than that, like 20% less even. But at a gram per pound, you can spin the narrative of it's for sure covering almost every physiological use case ever demonstrated”. Subsequently, the discourse changes to the question if performance-enhancing drugs could influence the optimal amount of protein for muscle mass if it could increase the amount. An answer is given in a jokily meaner stating a gap in the literature while comparing performance enhancement use by bodybuilders with its original use on farming animals. Finally, the discussion changes to the ‘anabolic window’ for protein consumption and recommendations for “post-workout meals”, comparing recommendations and anecdotal experiences within the community:

“I don't know, just eat your four or five meals a day, and you know like the kids that are like bringing their shake to gym, like the second I'm done training I gotta fucking get that shit in me. If you just eat your meals the day and like not sweat it, it's fucking fine; almost all the effect right there.” (Fouad Abiad Media, 2023).

Analysis reveals a strong emphasis on protein in online fitness communities, emphasising its importance in reaching fitness goals. There are numerous stories about clean eating, macronutrient tracking, and gaining muscle mass. Common threads in the debate include meticulous macronutrient tracking, adherence to traditional bodybuilding diets, and the use of performance-enhancing substances. While the discussion is primarily about personal fitness goals, there is no mention of environmental concerns. The ‘full day of eating’ video includes a detailed breakdown of the influencer's meals, with an emphasis on traditional bodybuilding diets. Environmental concerns about protein consumption are not addressed. The podcast goes into great detail about protein consumption, delving into ‘bro science’ and scientific research. The environment is not mentioned, and the primary focus remains on optimal protein intake for muscle gain. There is no overlap between the discourse on protein consumption in online fitness communities and environmental considerations. The focus remains on personal fitness objectives. The identified discourses point to a lack of environmental awareness in online fitness communities. The emphasis on personal goals overshadows larger environmental concerns.

4.2.2 Discourses intended for female audiences

To offer a more comprehensive insight into discourses intended for female audiences, a video featuring Kayla Itsines will be discussed and analysed (Woman's Health, 2020). Kayla Itsines stands out as a highly influential figure in the fitness realm, with the largest following on Instagram of all fitness influencers. As the creator of the Bikini Body Guide, she shares valuable insights on fitness, nutrition, and overall well-being through her Instagram account and YouTube channel, attracting millions of viewers keen on adopting a healthier lifestyle.

The description of the video states: "SWEAT trainer Kayla Itsines opens up her fridge to show us how she fuels her healthy lifestyle! Get a peek at her meal plan for breakfast, lunch and dinner, plus the treats she loves snacking on." (Woman's Health, 2020). The videos open with a thin athletic-looking woman greeting her community: "Today, I am taking you through a little fridge tour, so here is a sneak peek into my very nice, very organised fridge." The female influencer showed the contents of her refrigerator, highlighting various foods and dishes, emphasising the significance of her Mediterranean cultural roots, and the importance of eating meals that reflect her heritage: "So if you don't know already, my family is Greek, so I grew up having a Mediterranean diet, and what that means is a lot of fresh fruits, vegetables, olive oil, pasta, rice, so as you can see, this is represented in my fridge." (Woman's Health, 2020).

For breakfast, the influencer eats toast, anchovies, and olives. While describing her breakfast she notices that her audience probably does not enjoy such a breakfast: "I know this is not going to be everyone's cup of tea, but for breakfast, I have two pieces of toast and olive oil. I've got some anchovies in here, which I have on my toast." The female influencer also shares the breakfast of her young daughter, thus sharing information about her family: "For Anna, I make her a healthy pancake mix here. She has that with some jam and also some berries as well." (Woman's Health, 2020).

For lunch and dinner, the influencer emphasises the importance of meal planning and preparation, to help her with her busy life and her child: "Now, this brings me to lunchtime. So at lunchtime, I do not have a lot of time; I am on the go, I am busy with Anna. So I need something that is quick and easy" (Woman's Health, 2020). She makes a salad with pre-cooked rice, vegetables, and canned tuna or eats leftovers such as a lasagna meal. For dinner, she prepares some chicken breast skewers in the morning, which she pairs with a salad, some rice or the leftover lasagna.

The influencer often gets comments about what kind of sweets she eats. In her answer she again notices her personal life and her family:

"I have not everyone's favourite but mint chocolate, which I absolutely love. And I have my favorite which I got addicted to when I was pregnant. These, I think they're kids' ice creams; I'm not even kidding rainbow ice cream creams ice cream on a stick. Yes, they are so good. Okay, so that is my guilty pleasure." (Woman's Health, 2020).

Finally, she mentions healthy snacks and healthier alternatives to sweets, such as greek yoghurt and tzaziki dips. Again mentioning her Greeky heritage in the food recommendations.

Analysing the content of the prominent female fitness influencer featured a variety of workout routines, which encompasses home cardio routines, bodyweight exercises and home strength training with dumbbell equipment. Aside from fitness, the influencer provides content about nutrition, emphasizing balanced and sustainable diets. Her content often aims to inspire and empower the audience in their fitness journeys. Success stories

and transformations are frequently shown, demonstrating the impact made by her content and fitness guides. Lifestyle vlogs give viewers insight into her routines and experiences, creating a personal experience with her audience. Protein sources are mentioned within the content, though much less extensive than in video's about muscle gaining, making healthy nutrition central to the discourse. No environmentally sustainable diet advice was given.

In another video popular health and fitness influencer Blogilates (2019) shares her ninety-day journey of weight loss with her community members. The video starts with a warning concerning "getting triggered by numerous transformation videos" and a statement in which she declares she does not have an eating disorder.

Thereafter she looks back to a period in which she questioned herself: "I felt lost, I felt stagnant, and I no longer knew who I was." (Blogilates, 2019). She mentioned that as her reach grew as a fitness and health influencer, she became afraid to hurt other's feelings and of community backlash: "Anytime I shared what I ate, someone would call me a murderer. Anytime I talked about my body, someone would say I was too fat to be a trainer. Anytime I talked about my heritage, someone would tell me to take the race out of it." (Blogilates, 2019). She felt unhappy and questioned her identity. Because of this realisation, she wanted to start a new fitness journey and took measures enabling her to make sure she would achieve her goal: "I wanted to go on a 90-day journey to get in the best shape of my life physically and mentally. I told him that I wanted to document the entire journey on my blog in order to keep myself accountable." (Blogilates, 2019). During her journey, she wrote down her goals: "I wrote that my physical goals were to reach 120 pounds and an athlete-level body fat percentage of 20%. In terms of wellness goals, I said I would reward myself with one self-care thing a week like deep tissue massages." (Blogilates, 2019).

She started following a ketogenic diet in which predominantly fats and proteins were consumed, while not counting macronutrients and calories. The diet turned out to not be compatible with her, she felt fatigued and regularly had headaches. She switched to a more balanced diet which fitted her better. When weight-loss stagnated she started to count her macronutrient intake: "So I decided to get honest with myself. I started calorie counting. I didn't wanna do this originally, but I suspected that I was overeating." (Blogilates, 2019). The process of journaling her weight sleep and nutrition made her happy, it was her own "science experiment" and she felt "accountable".

The influencer mentioned she was guided by a personal trainer during her previous weight loss journey, when she entered a bikini physique competition. She enjoyed the 'guidance' and 'accountability' she received then, however, she did not like the strict diet and workouts: "The whole time I felt like I was in this food jail. My brain got cloudy, I couldn't think straight, I was moody and mean, and all I cared about was how I looked." She wanted to quit the diet, she was done with all the protein she had to consume: "I was eating around 1,000 calories a day of egg whites, protein powder, chicken breast, broccoli." (Blogilates, 2019). The diet process had negatively affected her body as she attained metabolic damage and felt like her body did no longer "function normally".

The new ninety-day journey she structured herself. In the end, she reached her goal: "So, I ended up losing 17.4 pounds and 3.6% body fat over the course of 90 days. And I gained so much confidence and so much more happiness in exchange." (Blogilates, 2019).

Analysis of the comments fosters a mainly supportive environment, cultivating a sense of community and a sense of shared purpose. Through similarities in acting, cultural communication fosters a sense of belonging. Individuals feel at ease in spaces designed for exercise and cooking as part of a larger lifestyle context, incorporating these spaces as important shared spaces in the community. Commenters' emotional expressions range from excitement to vulnerability, creating a positive and empowering environment. The emotional engagement within realms of health, diet, and fitness, contributes to the shared cultural experience wherein healthy and sustainable self-improvement is the centre of the discourses. However, some comments were ill-favoured and degrading.

4.2.3 Vegan discourses

A transition towards diets characterized by a higher proportion of plant-based protein and reduced consumption of animal-derived foods holds significant potential for substantial GHG emission reductions. Discussions on plant based diets were rare outside of vegan communities. Vegans are the primary subgroup within the online fitness community emphasizing the importance of plant-based diets. Vegan fitness influencers, like their non-vegan counterparts, are influential figures in the health and wellness world, openly sharing their journeys to gain muscle, lose weight, and improve their overall health. Both groups provide insights into their dietary choices, emphasising nutrient-rich sources for their respective fitness goals, through detailed content. Updates on progress, workout routines, and personal reflections foster relatable and supportive communities, blurring the distinction between vegan and non-vegan lifestyles. Beyond physical changes, both sides' influencers emphasise the positive impact on mental well-being, energy levels, and overall vitality. As a result, they collectively inspire a vegan approach to health, trying to demonstrate that vegan dietary choices can result in similar wellness outcomes as diets containing animal products.

Analysis of the cultural communication and interaction within the content and the comments revealed similarities within examples of being, acting, relating, feeling and sense of living within the community. Vegan influencers openly share personal aspects of their lives, emphasising vegan-friendly diets and fitness pursuits. They highlight plant-based meals, clean eating, and physical improvement strategies within the context of a vegan diet: "I've been vegan since 2016. Pushing 50. I can do 130 pushups, military-style non-stop. Sometimes I want to yell, "Unlimited Power!!" as I'm knocking them out. lol. Vegan power baby!"(YouTube, n.d.). Commenters who are passionate about vegan fashion and the importance of doing the right thing participate actively, sharing plant-based recipes and expressing admiration for vegan influencers, fostering a supportive community. A profound connection is felt as crucial shared spaces within the community in exercise and vegan cooking spaces. Users express their emotions ranging from joy at vegan fitness accomplishments to dietary challenges, enriching the shared cultural experience centred on physical improvement through the framework of a vegan lifestyle. Comments highlight similarities in vegan lifestyle changes, plant-based diets, recipes, and workout routines, fostering connections and a sense of shared purpose. Emotional engagement contributes to the shared cultural experience, emphasising the possibility of getting similar physical results as non-vegan people, while simultaneously placing healthy and ethically conscious food patterns at the centre of the discourses: "I eat 3 meals a day. They usually consist of pasta/rice with vegetables and legumes/nuts/seeds. Breakfast is a fruit and oat smoothie. These meals, along with a few snacks like peanut butter or hummus with toast, provide roughly 80-100g of protein daily. Make sure the vegetables you choose include lots of greens like kale, spinach, broccoli, etc."(Reddit, n.d.)

In a video about protein two vegan influencers debunk 'myths' surrounding plant-based protein (Nimai Delgado, 2023). The video is captured at Gold's Gym on Venice Beach in Los Angeles: "the Mecca of bodybuilding". During their workout, the influencers discuss their own experiences with plant-based proteins. One influencer hosts a podcast about physical health and nutrition as a qualified physiotherapist and nutritionist. The myths debunked during the video question the quality of plant-based protein. During the video gym members are asked which protein source would be superior, most answer animal protein: "Animal protein. Without question, I would say." (Nimai Delgado, 2023).

The influencer discusses research findings on the quality of plant-based protein:

"The two big differences that people kind of focus on are amino acid distribution and the bioavailability. Animal proteins tend to be a little richer in branched-chain amino acids, which are particularly important for building muscle, and there's some small differences in bioavailability, which really just means digestibility, how much of that protein can your body actually utilize." (Nimai Delgado, 2023).

One influencer shared comments he received online in which beliefs are stated that consuming animal protein leads to more strength and muscle gain: "There you go. So one of the biggest comments that I get online is that I would actually be much bigger and stronger if I ate meat." The other influencer responds with research findings and scientific jargon:

"And what we see in these studies is if you're consuming an optimal amount of protein, so 1.6 grams per kilogram up to 2 grams per kilogram of body weight, we see no significant differences in the rate of muscle protein synthesis in the building of strength or hypertrophy, the building of muscle." (Nimai Delgado, 2023).

At the end of the video, they state the effects of plant-based diets on health. Plant-based protein is seen by both influencers as superior for long-term health, and decreasing chronic diseases. Concerns for the environment and animal well-being are briefly mentioned: "It's also better for the environment and it's the more compassionate choice". (Nimai Delgado, 2023).

4.2.4 Debate and Resistance

Environmental considerations of protein consumption within online fitness communities were not obtained during the first phase of data collection and analysis. Subsequently, discourses about environmental considerations was not obtained outside of protein recommendations within vegan or "scientific" fitness and diet discourses. This highlighted a gap within the discourses considering the environmental effects of food and protein consumption.

Discourses about plant-based diets and proteins, within online fitness and exercise communities appeared within three topics: ethical lifestyle considerations, health and the absorption and quality of plant-based protein versus animal protein sources. Two themes surfaced during the analysis of these two topics: debate and resistance. The theme debate within online discussions surrounding plant-based diets and proteins explores ethical lifestyle considerations, health implications, and the absorption and quality of plant-based protein versus animal protein, while the theme of resistance represents resistance and emotions regarding the change in consumption patterns.

Debate concerning vegan diets

Conflicting views prevail within the online discourses regarding the ethical and health-enhancing aspects of vegan diets, and the possibility of achieving optimum physical goals

through the diet. In discussions about vegan diets led by non-vegan influencers, the emphasis is primarily on ethical issues related to animal harm within the agricultural industry. While gathering data, references to plant-based proteins were predominantly linked to these ethical issues. A notable example is a discussion involving the previously mentioned influence/scientist who explores the pros and cons of veganism. In nine out of the ten points, the main issue concerned causing harm to animals.

Within data collection, several videos emerged in which the efficacy of plant-based proteins was addressed. In these videos, nutritional study findings comparing plant-based protein sources and animal protein were analysed. Multiple researchers and influencers stated differences within the number of amino acids provided and difficulties with the absorption of plant-based protein. The main message at the centre of the discussion was that plant-based protein sources function effectively for muscle gain and weight loss but do not function optimally compared to animal-based protein sources, while extra supplementation is recommended. When addressing this information, comments are frequently made emphasising comprehension of ethical concerns held by vegans, while neglecting to acknowledge the positive environmental benefits that plant-based protein can contribute.

“But for those folks out there who choose, for whatever reason, many of them because they have ethical feelings towards the treatment of animals or towards consuming animal products, no judgment here.” (Biolayne, 2022).

The perception that plant-based proteins are much less effective also becomes apparent when analysing online discussions and comments. The belief that animal protein is far more effective than plant-based proteins is frequently mentioned in a large number of comments and references to scientific literature are often cited to support this viewpoint.

An example that effectively illustrated conflicting views around the topic of plant-based diets is the debate surrounding the documentary *The Game Changers*, released in 2018. The documentary explored the effects of following a plant-based diet by athletes on their health and athletic performance. The documentary established a narrative in which is stated that a vegan diet is superior for health and performance to diets which consume meat, for most of the run time of the documentary. Suggestions were made in cooperation with health experts and scientists that vegan diets increase athletic performance, decrease chronic diseases, and increase overall health. The documentary briefly recognises social and cultural views and messaging which link masculinity to meat consumption in an interview with well-known bodybuilder Arnold Schwarzenegger. Lastly, in the final section of the documentary, a short notice is given to the ethical and environmental benefits of plant-based diets.

The publication of the documentary resulted in a large amount of backlash within online diet and fitness communities. The movie was accused of cherry-picking data and incorrect representation of the study when stating that vegan diets were healthier than diets containing meat. Commencing reactional discourses in which statements made in the documentary were analysed and debated according to critics. Subsequently, a debate was held on the Joe Rogan experience between a critic of the documentary and the documentary maker, in which the central topic of the debate was a comparison of protein amounts between animal protein sources and plant-based protein, while again neglecting to acknowledge the positive environmental benefits of plant-based protein.

Resistance versus social and environmental concerns

Examining comments from audiences, in the aforementioned debates about plant-based protein and Reddit discussion threads regarding the environmental impact of high-protein diets popular within online fitness communities, revealed polarisation between two reactions: the first group advocating for veganism and the second group expressing resistance against dietary change.

Within these two groups, three main topics were discussed: Health, social and environmental ethical concerns, and the right to determine what foods one should consume. The group advocating for veganism, remarks on their experiences regarding health, the benefits, and hardships of the diet. "He addresses the concern that athletes often have about protein: "Luckily we know that you can get your protein source from many different ways, you can get it through vegetables if you are a vegetarian."(Reddit)

Vegan commenters express pride in being able to identify as vegans, underscoring the importance of veganism and its benefits to animals and the environment. Emphasising the significance of resistance to behaviour change and education on the subjects about ethics and environmental concern:

"Exactly. People just don't seem to care. Or they care, but not enough to change their own habits." (Reddit, n.d.).

I think if people were more educated about the real and imminent threats of climate change, they might take it more seriously." (Reddit, n.d.).

"I think if people were more educated about the real and imminent threats of climate change, they might take it more seriously." (Reddit, n.d.).

Analysis of these comments establishes similarities in the discursive hubs of acting, being, feeling, relating and sense of living within communication, similar to the cultural communication and interaction within the aforementioned community of the vegan influencer.

In contrast, a multitude of remarks were made in which negative reactions to vegan diets were expressed. Health claims of vegan diets are discussed and debunked, and statements are made declaring animal protein sources as superior to plant-based sources: "Red meat is what we evolved on. Makes sense. We require it for optimal health, whether we like it or not."(YouTube, n.d.).

Environmental concerns were refuted. Multiple commenters refuse to acknowledge the environmental impact of animal product consumption. Others lessen the environmental concerns:

"Besides, gains > environment. How are we going to enjoy the beauty that this planet has to offer if we're not swole enough to bench press everything in sight for reps when we're sitting in a park, having a picnic?" (Reddit, n.d.).

"Compared to what cars and factories do to the air and water, my extra steak is a drop in the bucket." (Reddit, n.d.).

Ethical considerations are regularly ridiculed or misrepresented. Multiple statements misrepresent vegan concerns considering animal welfare:

"Veganism doesn't exist. Far more animals and insects are slaughtered to produce vegetables than to produce meat Veganism is a lie. I've been saying this for a long time lots of years. People are just starting to say what I've been saying" (YouTube, n.d.).

“100% of all vegans who buy the majority of their food in a public supermarket are responsible for more killing of animals and destroying the environment than those people who grow their own omnivore food of their own choices on their own property. Tell everyone you know not to mow their lawn because the tires and blades are killing millions of living creatures, and don't put bed sheets in the clothes dryer because they are killing millions of microscopic dust mites, don't walk on the sidewalk since you are crushing various tiny insects.”(YouTube, n.d.).

Finally, multiple commenters express their rights to choose what to consummate, while expressing fear of people, institutions or vegans who in their opinion try to take these rights away: “Watched this video in the bubble bathtub with Al Gore, and he wants to know about protein from eating bugs, because him and his buddies plan to make us poor folk have to eat bugs to survive.”(YouTube, n.d.).

Analysis of the cultural communication and interaction within the comments revealed a frequent occurrence of polarising words and phrases resisting constructive discourses about the environmental impact of meat consumption, establishing feeling as the main discursive hub within the communication.

4.5 Summarising results

During data analysis, three main themes emerged: the pursuit of physical goals, self-improvement aspirations, and the identification of essential resources for the achievement of set goals. Gender differences were noted, showing varied perspectives on these themes.

Interest in body recomposition was consistent across genders, with males expressing a higher frequency in muscle gain goals. Weight loss was a recurrent theme prominent within all gender categories, especially in discourses meant for a female audience. Notable distinctions appeared within themes. Self-care, self-discipline, and mental health were emphasized in weight loss discussions for females, while physical health played a crucial role in discussions about body composition and muscle gain. Fitness and exercise were highlighted in muscle gain and body recomposition discussion, with less emphasis on discussions for females and weight loss. The significance of prioritising health is prevalent in all discussions, with a particular emphasis on weight loss discussions with female audiences. The prominent inclusion of study references, aimed at bolstering the credibility and strength of shared messages, emphasising the community's commitment to efficiency and goal achievement, is a notable commonality across all identified discourses. Furthermore, the importance of protein is emphasised in discussions centred on muscle gain.

The examined online discourses support the assertions that clean and healthy living is a dominant trend influencing consumer choices. Protein has become an integral part of the community's culture, influencing discourses and nutritional practices that serve as the foundation for a wide range of fitness activities. Differences in dietary patterns also became evident. In recipes and photos shared online: vegetables, fruits and plant-based proteins emerged more frequently in discussions meant for a female audience. While recipes and photos catered to a male audience emphasised meat, eggs, dairy, and protein more commonly.

Further investigations in discourses within male and female and vegan communities confirmed differences within the communities, showing differences in attitudes towards physical goals, nutrition, health, and lifestyle. Within the content and interactions of male communities, engagement within the realms of fitness and diet enriches the shared

cultural experience wherein physical improvement of the body and gaining muscle mass, through hard work and eating an excess of food, are at the centre of the discourses. On the contrary, engagement within realms of health, diet, and fitness, contributes to the shared cultural experience wherein healthy and sustainable self-improvement are at the centre of the discourses within the content and interactions of female communities.

Just like their non-vegan counterparts, vegan fitness communities are influential in the health and wellness world, openly sharing their journeys to gain muscle, lose weight, and improve their overall health. Through detailed content, both groups provide insight into their dietary choices, emphasising nutrient-rich sources for their respective fitness goals. The community emphasises the positive impact on mental well-being, energy levels, and overall vitality, in addition to physical changes. As a result, they aim to inspire a vegan approach to health by demonstrating that vegan dietary choices can result in similar wellness outcomes.

Finally, discourses about environmental considerations were not obtained outside of protein recommendations within vegan or “scientific” fitness and diet discourses. This highlights the possibility of a gap within the discourses considering the environmental effects of food and protein consumption.

Discourses about plant-based diets and proteins, within online fitness and exercise communities appeared within three topics: ethical lifestyle considerations, health and the absorption and quality of plant-based protein versus animal protein sources. Two themes surfaced analysis of these two topics: debate and resistance. The theme debate within online discussions surrounding plant-based diets and proteins explores ethical lifestyle considerations, health implications, and the absorption and quality of plant-based protein versus animal protein, while the theme of resistance represents resistance and emotions regarding the change in consumption patterns. Interaction and communication wherein the themes of debate, friction, or both are prevalent, appear to derail constructive discourses about environmental concerns.

5. Discussion

This study has uncovered prevalent discourses within online fitness communities regarding achieving an athletic body, protein intake, environmental considerations, and the connections between these discourses. The sub questions and main question of thesis will be answered in this chapter. The elements influencing the discourses about protein consumption within online fitness communities will be described in chapter 5.1 through the interpretation of the results. The significance of protein in the discourses is revealed in chapter 5.2. Subsequently, in chapter 5.3 the contribution of environmental protein consumption considerations to the protein consumption discourses within online fitness communities will be uncovered. Thereafter, an attempt will be made, using existing literature, to establish how discourses about achieving an athletic body can be aligned with a sustainable protein intake.

5.1 Pursuit of obtaining athletic body

In all discussions about the athletic body collected within this study, the main cultural premisses are the achievement of physical fitness goals, the pursuit of personal growth, and maintaining consistency in utilising the right resources to achieve these objectives. The importance of these cultural premises is continually emphasised with the language of the discourses.

According to this study, achieving physical fitness goals may entail increasing muscle mass, decreasing body weight, or a combination of the two. This is consistent with other studies on online fitness communities, which show that online fitness discourses frequently portray a slim, muscular, and athletic ideal (Jong & Drummond, 2020; Tiggemann & Zaccardo, 2015). The goal in the observed discourses varies per individual member, influencing choices and communication. During the discourses analysis difference were uncovered between genders, discussions about gaining muscle mass seem to resonate more with a male audience, whereas weight loss discussions seem to appeal more to female audiences. It is important to note that both genders share an interest in all three physical fitness goals, although in different quantities.

Most members of the online fitness community reported positive outcomes through interaction with online fitness communities leading to increased physical activity, including motivation and social support, consistent with the study by Ragat et al. (2018). However, some members experienced negative impacts, feeling inadequate or facing psychological distress. Some participants felt inadequate through failure to achieve their goals, wanting to be 'better' or 'stronger'. While the online fitness community's social connection was seen as a stimulus for behaviour change, concerns were raised by members about unattainable ideals and unrealistic practices (Ragat et al., 2018).

Along with the pursuit of physical goals, there is an emphasis on the cultural premise of self-improvement within the discourse observed by this study. Discussions centred on females and their weight loss goals appeared to place a higher value on intrinsic mental improvements, such as self-care and mental health. Discourses centred on increasing muscle mass or body recomposition, meanwhile emphasised physical health. This is supported by Ragat et al. (2018), members were asked about their experiences with online fitness communities, and members felt inadequate due to failure to achieve their goals and wanting to be "better" or "stronger." The social connection of the online fitness community was seen as a stimulus for behaviour change (Ragat et al., 2018).

Analysis of the discourse showed a link among members of the online fitness community in which achieving physical goals and striving for improved mental and physical health are regarded as important aspects of personal development. This finding is in agreement with previous research into the fitness community by Ragat et al. (2018), which suggested that members seem to confuse physical appearance and health (Ragat et al., 2018). Members justified pursuing an athletic body by claiming that it contributes to overall health and well-being (Ragat et al., 2018). The findings suggested that members internalise specific appearances, viewing them as a representation of health (Jong & Drummond, 2020; Ragat et al., 2018).

The results of the study suggest that both achieving physical goals and striving for personal development necessitates effective use of available resources. Maintaining a healthy lifestyle, with nutrition and exercise, is being regarded as critical for achieving these objectives. Maintaining this healthy lifestyle requires perseverance and motivation in reaching fitness goals.

Further research of this study into discourses intended for male and female audiences revealed differences in attitudes toward physical goals, nutrition, health, and lifestyle. Within the content and interactions of male communities, involvement in the realms of fitness and diet enriches the shared cultural experience in which physical improvement of the body and muscle mass are at the centre of the discourses, achieved through hard work and eating an excess of food and a large amount of protein. Engagement in health, diet, and fitness, on the other hand, contributes to a shared cultural experience in which healthy and sustainable self-improvement is at the centre of the discourses within the content and interactions of female communities. These findings are consistent with previous research into the online fitness community (Jong & Drummond, 2020; Ragat et al., 2018; Tiggemann & Zaccardo, 2015).

5.2 Significance of protein

The results indicate that protein has become an integral part of the community's culture, influencing discourses about nutritional practices and preferences which serve as the foundation for a wide range of fitness activities. Protein is seen as a healthy essential resource for gaining muscle and preventing muscle loss.

The examined online discourses, supported the assertions that clean and healthy living is a prominent cultural premise, influencing consumer choices. Online discussions confirm the importance of making informed decisions, choosing healthier and more sustainable options, and avoiding processed food. This is consistent with Ragat et al.(2018) .'s study of online fitness culture. The study recognised the impact of fitness discourses on online fitness community members' health beliefs and behaviours. The online community allowed people to share their health and fitness journeys, fostering a shared commitment to better health (Ragat et al., 2018). The prominent inclusion of study references, aimed at bolstering the credibility and strength of shared messages, emphasises the community's commitment to efficiency and goal achievement. What is perceived as clean and healthy is subservient to both cultural premises and community members personhood. Individual preferences and experiences influence what is perceived as healthy and meaningful.

The results of the study show that protein has gained social popularity as a vital and most important macronutrient within the community (Arenas-Jal et al., 2019). Central to the discourses are the cultural premises regarding the achievement of physical fitness goals, the pursuit of personal growth, and maintaining consistency in utilising the right resources to achieve these objectives. Protein has become the integral nutrient within the community's culture, influencing discourses and nutritional practices that serve as the

foundation for a wide range of fitness activities. Protein is seen as the essential resource for gaining muscle and preventing muscle loss, which is consistent with previous research (Arenas-Jal et al., 2019; Lea & Worsley, 2003).

Most observed discussions about protein sources tend to focus on animal-based options. Animal protein sources are frequently mentioned first, followed by plant-based protein sources. Plant-based meat substitutes are mentioned in the discussion by female audiences. However, these alternatives are primarily discussed in terms of vegetarian or vegan diets, with no consideration given to their environmental impact.

Contribution of environmental protein consideration to the discourses

Studies suggest that altering dietary patterns can effectively diminish the impact of agriculture on global warming, land, and water use. A transition towards diets characterized by a higher proportion of plant-based protein and reduced consumption of animal-derived foods holds significant potential for substantial GHG emission reductions (Smith et al., 2014; IPCC, 2019). In the observed discourses about plant-based diets within the online fitness community, two groups emerge: those who aspire to or follow plant-based diets, primarily represented by vegans, and those who do not, polarising the discourse.

Vegans are the primary subgroup within the online fitness community emphasising the importance of plant-based diets. Vegans provide insights into their dietary choices, emphasising nutrient-rich sources for their respective fitness goals. Updates on progress, workout routines, and personal reflections foster relatable and supportive communities, blurring the distinction between vegan and non-vegan lifestyles. Vegans emphasise the positive impact on mental well-being, energy levels, and overall vitality. As a result, they collectively inspire a vegan approach to health, trying to demonstrate that vegan dietary choices can result in both physical and personal growth outcomes. Their choice to become vegan is based on both a personal choice to stick to a plant-based diet and part of a cultural premise within the group emphasising not harming both animals and the environment.

Discourses about plant-based proteins share similarities with the clean and healthy living discourses. Members of the vegan fitness community highlight the possible health advantages, serving as a driving force for making dietary adjustments according to Boada et al. (2016) and Geiker et al. (2021). The result of the show a clear cultural premise, within the vegan fitness community, asserting the health benefits of plant-based protein emerges, while trying to demonstrate that vegan dietary choices can result in obtaining similar physical goals as dietary choices in which animal sources are consumed.

The observed vegan discourses within this study share similar cultural premises with observed discourses within female- audiences. Both discourses express the importance of health, while analysis of the shared food sources and visual data underscored plant-based diets as a meaningful element within both audiences. Scientific literature seems to confirm beliefs about the positive health effects of plant-based diets and weight control enabling positive attitudes towards plant-based diets (de Bakker & Dagevos, 2012; Lea & Worsley, 2003).

Nevertheless the results suggest, that vegan discourses share fewer similarities in cultural premises with discourses within male audiences, and discourses in which gaining muscle is meaningful. The relationship between gaining muscle mass and consuming protein seems synergistic. The discourses emphasises the physical improvement of the body and gaining muscle mass. This is obtained through hard work and eating an excess of food

and quality protein. Analysis of the food sources and visual data within this discourses emphasises an important position for animal protein sources. Animal protein sources are considered of a better quality. Scientific literature seems to confirm beliefs about meat within discussions in which gaining muscle is meaningful, confirming views stating eating meat is necessary for health, meat is essential for strong muscle and red meat provides rich sources of high-quality protein (De Boer et al., 2017; Piazza et al., 2015; Rothgerber, 2013; Wyness, 2016).

Within the observed discourse by this study, there is often scepticism about the health implications of plant-based diets among those who do not aspire to them. There is doubt that eating animal products is healthier than eating plant-based foods because they contain essential nutrients and are less affected by pesticide use (Backer & Hudders, 2014; Kemper & White, 2021; Lea & Worsley, 2003). Furthermore, there is ongoing debate about the quality of plant-based proteins, with concerns about their absorption by humans and their sufficiency in providing essential amino acids for muscle growth. The scepticism about the health implications and quality of plant-based protein ensures it is not perceived as a viable protein alternative. Finally, there is significant resistance to ethical and environmental concerns about eating animal food (Festinger, 1957; Loughnan, 2010). Individuals in the online fitness community frequently deny or discredit vegan arguments, claiming that eating animal products does not harm animals or the environment (Bouwman et al., 2022; Bryant et al., 2022; Hartmann & Siegrist, 2020; Kwasny et al., 2022; Rothgerber, 2013). Responses to these topics are frequently intense and emotional, establishing barriers for behaviour change, and diminishing contribution of environmental concerns within the discourses.

5.3 Aligning the pursuit of the athletic body with sustainable protein intake

Analysis of the discourse suggest that the discourses about pursuit of an athletic body do not align with environmental considerations. Discussions of the environmental and societal consequences of proposed dietary options were limited, revealing a significant gap in the discourses. Multiple barriers were observed disabling dietary shifts.

There's variety in the amount of protein one should consume, some sources just prescribe the importance of consuming enough protein, while others prescribe a minimum amount which should be consumed. Influencers, fitness enthusiasts, and nutrition experts frequently share their perspectives, offering advice on optimal protein consumption for various purposes. A common recommendation for protein intake is one gram per pound of body weight to maximize muscle loss prevention and muscle gain. Studies into protein intake by athletes corroborates these findings, stating athlete's intake as high if not excessive (Atherton et al, 2010; Areta et al., 2013; Moore et al., 2015; Res et al., 2012; Thomas et al., 2016). Such high protein recommendations do exceed a sustainable protein intake.

Most discussions about protein sources tend to emphasise animal-based options. Animal protein sources are frequently mentioned first, while plant-based sources are mentioned less frequently. This seems to confirm that eating animal sources is preferred in the culture of the community and within individual behaviour. Scientific literature seems to confirm this preference in culture and behaviour, citing: taste, enjoyment, attachment to meat, the excitement of eating meat and fear of trying new foods as enablers of meat consumption (Collier et al., 2021; Graça et al., 2015; Kwasny et al., 2022; Lea & Worsley, 2003; Piazza et al., 2015; Schenk et al., 2018; Vanhonacker, van Loo, Gellynck, & Verbeke, 2013). While lack of knowledge about vegetarian diets, uncertainty about how to replace meat in meals, and a lack of experience in preparing meat-free dishes are

perceived as barriers to the consumption of meat-free diets (Cheah et al., 2020; Collier et al., 2021; Corrin & Papadopoulou, 2017; Elzerman et al., 2013; Hagmann, Siegrist, & Hartmann, 2019; Kemper, 2020; Lea et al., 2006; Salonen & Helne, 2012).

Scientific studies have stated that animal protein consumption is one of the driving forces of global warming and negatively impacts the environment (Smith et al., 2014; IPCC, 2019) (Aiking & de Boer, 2019). Diets low in animal proteins are considered necessary for achieving the climate goals set in the Paris Climate Agreement (IPCC, 2019).

Discussion of a reduction of animal protein consumption, observed in this study, encounters debate and friction within the discourses prevalent in online fitness communities. Discourses about human diets contributing to anthropogenic climate change is not prevalent outside of vegan communities. This suggests a gap within the discourses concerning environmental considerations, and the possibility of a lack of knowledge within the community about the impact of meat consumption (de Boer et al., 2017; Pohjolainen et al., 2016; Collier et al., 2021).

Protein has become an integral nutrient within the community's culture, influencing discourses and nutritional practices, while plant-based alternatives are the topic of debate (Barnard, Nicholson, & Howard, 1995). The significance of protein quality and study findings could distract from a constructive discussion about the impacts of protein consumption on the environment.

Finally, there is significant resistance to ethical and environmental concerns about eating animal food, observed within this study. Individuals within the online fitness community frequently deny or discredit vegan arguments. Resistance prevails in discussions about climate change, comments about not caring about climate change and perceiving a lack of responsibility and effectiveness of meat avoidance are often stated. These comments are in accordance with scientific literature, perceiving these statements as perceived barriers to behaviour change (Bohm et al., 2015; de Boer et al., 2013, 2017; Hielkema & Lund, 2021; Mullee et al., 2017).

There is also resistance encountered in conversations concerning harm to animals, observed within the discourse. Comments emphasise beliefs about animals not being able to feel pain in similar ways as humans or misrepresent the negative impacts of meat production on animals (Festinger, 1957; Kwasny et al., 2022; Loughnan et al., 2010; Rothgerber, 2013).

The observed responses to ethical and environmental concerns, within this study, were frequently intense and emotional. Scientific literature emphasises the role of meat within identity and culture. People identify as meat eaters, it is part of their upbringing, part of their culture, and is thus normalised (Carfora et al., 2017; Cheah et al., 2020; De Boer et al., 2017; Graça et al., 2015; Klöckner, 2013). Therefore, the call to change individual behaviour and collective culture creates friction within the discussion, polarising discourses concerning environmentally sustainable protein intake.

5.4 Strengths & Limitations

The qualitative design of this study provided a detailed exploration of the fitness community's discourses. The study explored the intersection between the relationships between sustainable dietary protein choices and the influence of social media on perceptions of the athletic body, which had not yet been thoroughly explored. This study provided insights that can help policymakers design interventions that enable more environmentally conscious dietary practices while considering the societal influence of online media on body image ideals.

Strengths of the study were the immersive stance used by the researcher, and the background of the researcher. It enabled this study in providing strong data sources and a correct interpretation of data and research findings, strengthening validity. The pre-existing bias of the research could also be seen as a limited factor to the credibility of the study. However used this bias to strengthen the interpretation of the findings, guiding the researcher in data collection and analysis.

A limitation of the study is that the data collection and analysis was performed by one researcher, which could potentially limit trustworthiness. Another limitation of this study was the possibility of the influence of data by the social media platforms. The implementation of rich descriptions of the data, as well as the process of immersion, the implementation of both an immersion journal and a data collection journal, ensured the trustworthiness of the study.

6. Conclusion

This study aimed to systematically explore online discourses about the obtainment of an athletic physique, the consumption of protein, and the adoption of environmentally sustainable protein alternatives. The overarching goal was to ascertain the degree of alignment with sustainability criteria within these discourses, uncovering prevailing cultural motifs and shared thematic constructs, while concurrently gaining insights into the extent to which these elements align with or deviate from broader sustainability considerations. To accomplish this aim, the following main study question will be answered:

How do the discourses on protein consumption within online fitness communities align with considerations for the environment?

The discourses of protein consumption in online fitness communities tends to prioritise animal-based protein sources, emphasising their perceived superiority in quality for muscle development. While some discourse acknowledge the environmental impact of meat consumption, there is significant resistance within the community to address ethical and environmental concerns. The fitness community's preference for animal proteins is deeply ingrained in its cultural identity, making constructive discussions about the broader environmental implications of protein consumption difficult. Despite occasional mentions of plant-based alternatives, the prevailing discourse reflects a reluctance to shift away from traditional animal protein sources, emphasising the difficulties in fostering meaningful change within these communities.

Within discourses about obtaining an athletic body, the central cultural premises regarding the achievement of physical fitness goals, the pursuit of personal growth, and maintaining consistency in utilising the right resources to achieve these objectives. Protein has become the integral nutrient within the community's culture, influencing discourses and nutritional practices that serve as the foundation for a wide range of fitness activities. Protein is seen as the essential resource for gaining muscle and preventing muscle loss.

Discourses about plant-based proteins share similarities with the clean and healthy living discourses. Vegan discourses share similar cultural premises with observed discourses within female audiences. Both discourses express the importance of health and analysis of the shared food sources and visual data underscored plant-based diets as a meaningful element within both audiences (de Bakker & Dagevos, 2012; Lea & Worsley, 2003). Members of both fitness communities highlight the possible health advantages, which could be an enabling force for making dietary adjustments according to Boada et al.(2016) and Geiker et al. (2021).

Nevertheless, vegan discourses shares fewer similarities in cultural premises with discourses within male-gendered audiences, and discourses in which gaining muscle is meaningful. Analysis of the food sources and visual data within this discourse emphasises an important position for animal protein sources. Animal protein sources are considered of better quality (De Boer et al., 2017; Piazza et al., 2015; Rothgerber, 2013; Wyness, 2016).

Most discussions about protein sources tend to emphasise animal-based options. Animal protein sources are frequently mentioned first, while plant-based sources are mentioned less frequently. This seems to confirm that eating animal sources is preferred in the culture and individual behaviour (Collier et al., 2021; Graça et al., 2015; Kwasny et al., 2022; Lea & Worsley, 2003; Piazza et al., 2015; Schenk et al., 2018; Vanhonacker, van Loo, Gellynck, & Verbeke, 2013).

Adoption of plant-based diets seems difficult. Besides a perceived preference for meat, meat consumption plays an integral role in identity and culture within the community (Carfora et al., 2017; Cheah et al., 2020; De Boer et al., 2017; Graça et al., 2015; Klöckner, 2013).

Discussion of a reduction of animal protein consumption encounters debate and friction within the discourses prevalent in online fitness communities. Within the online community there is debate about the quality of protein (Barnard, Nicholson, & Howard, 1995), as well as significant resistance to ethical and environmental concerns about eating animal food (Bohm et al., 2015; De Boer et al., 2013, 2017; Hielkema & Lund, 2021; Kwasny et al., 2022; Loughnan et al., 2010; Mullee et al., 2017; Rothgerber, 2013).

Constructive discourses about human diets contributing to anthropogenic climate change was not observed outside of vegan communities. The debate about protein quality and resistance to cultural and behavioural change distracts from a constructive discussion about the impacts of protein consumption on the environment, within the community.

7. Implication

This study has uncovered prevalent discourses within online fitness communities regarding achieving an athletic body, protein intake, environmental considerations, and the connections between these discourses. Specifically, the acknowledgement of protein as an integral part of online culture, the lack of discussion about the environmental impact of high protein consumption and the friction surrounding cultural and behavioural changes within the community, highlight the importance of considering the fitness community in the design of interventions.

New study should focus on how members of the fitness community perceive changes in behaviour regarding protein consumption and climate. This can aid in designing new interventions promoting sustainable protein consumption.

Scientific nutritional information is often cited within the discourses to debate the quality of plant-based protein alternatives. Therefore, it is recommended to include an emphasis on the environmental impact of nutrition and protein, and the utilization of plant-based protein for efficiency in exercise, body composition and health in future research. Finally, new research about plant-based proteins should include the quality of plant-based protein as it is seen as a decisive factor within the discourse.

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Apendix A: Data Collection Journal

This research collected data from the search engine Google and the following social media sites: YouTube, Instagram, TikTok, and Reddit.

On 8-11 five social media accounts were made.

Two Google accounts were created: one for the Google search engine and one for YouTube. To disable previous algorithmic tracking, the Radboud University VPN and a newly configured internet browser were used.

The researcher used Alex as the account's name because the researcher's real name is rarely used; this way, the accounts could be traced back to earlier social media use. The word 'researcher' appeared in all user names.

This research used the five operations of investigation for data collection (Kozinets, 2019):

- Simplify: translate the key elements of the research question into search terms.
- Search with the keywords for terms, hashtags, trends etc.
- Scout: process and filter the choice set which is used to select data sites.
- Select: decide and evaluate which information to use.
- Save: collect the data that is selected.

This study used the double funnel method as recommended by Kozinets (2019). The Double-funnel method uses two phases for data collection. The first phase encompassed a general search into the study topics, while the second phase narrowed the data collection to specific topics perceived as significant by the researcher.

During the first search phase, the researcher felt it was critical to use goal-oriented keywords. As a result, three keywords related to achieving a more athletic body were used, which are commonly used in online communities: weight loss, muscle building, and body recomposition (a combination of both losing weight and gaining muscle mass). Following that, these terms were used in conjunction with the keywords diet or protein, allowing the researchers to simulate potential outcomes when a person searches for ways to achieve their fitness goals. It was critical to this process that proteins played a role in the discourses of the search results. Data was gathered through written articles, videos, and photographs. The Google search engine information was limited to the top ten results for each topic. Views and relevancy were taken into account when applying filtering to TikTok and YouTube. Data was gathered from Reddit's popular fitness-related subreddits. These pages included what are known as wikis, where moderators explained how people can use nutrition to help them achieve their fitness goals. Using the three primary search phrases, ten search results per topic were obtained from Google, YouTube, and TikTok, totalling 90 data sources. Furthermore, two additional data sources were discovered on Reddit for the topics of muscle gain and weight loss, but none for the issue of body recomposition.

The first round focussed just on protein and the key terms which are arrived from the fitness goals: weight loss, body recomposition, muscle gain. The researcher collects the first 10 results from each fitness goal, exclude duplicate hits, include mentions of protein. The first fase of data collection was done between november 10th and 19th.

A second phase of data collection was carried out on November 27th and December 27th. During the second phase, data was primarily collected on the platforms YouTube and Reddit. YouTube provided rich data, allowing for more in-depth analysis and insights. First, a more in-depth investigation was conducted to look into athletes or influencers who

have a large female following as well as a large male audience. Following that, an investigation was conducted to locate discourses on environmental concerns. On YouTube, search terms such as "vegan fitness" and "plant-based proteins" were used. The investigation on Reddit delved into community discussions about environmental concerns. Specifically, searches were conducted on Reddit's r/fitness and r/veganfitness communities to identify threads discussing the effects of consuming animal products on health.

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Appendix B: Immersion Journal

In netnography, the researcher immerses in the vast destabilized social media landscape. The interconnectedness of social media dissolves stable research sites as data sites encompasses vast layers of interconnectedness, therefore the use of an immersion journal is necessary (Kozinets, 2019). According to Kozinets (2019), the immersion journal acts as a reflective, catalytic, and analytic guide that helps the researcher with the process of research and decision-making. Using the immersion journal, this research practices four methodical skills for immersing:

- Reconnoitring: mapping out the territory of the data.
- Recording: chronicling of the data collection progress.
- Researching: reflecting on conceptual frames and theories on the data collection.
- Reflecting: an introspective reconsideration of the data collection.

16-11: Initial Data Collection

Equipped with an extensive background in strength training, muscle building, and fitness, the researcher embarks on the qualitative research journey. By leveraging the past experiences navigating websites like Google, Reddit, and YouTube, the researcher

constructs key terms that reflect popular fitness goals: getting toned/shredded, gaining strength, gaining muscle, and attaining a six-pack.

The first focus on protein is an introductory study that harmonises well with prior fitness and protein education. Searching for significant connections with the pre-established key terms is the goal of the methodical search, which combines curiosity and thoughtful investigation.

26-11: Data Collection 1 Insights

The first wave of data collection produces interesting discoveries. Information about weight loss takes centre stage; it is mainly targeted at women and features colourful graphics and "girly" themes that highlight shakes, fruits, and vegetables. The narrative behind body recomposition, which is targeted primarily at women, integrates the concepts of weight loss, protein consumption, and muscle building. In the meantime, the content on muscle building showcases strong men, highlighting the significance of protein and exercise for building muscle.

The appearance of HelloFresh commercials, which suggest a symbiotic relationship between nutrition, exercise, and the demands of busy lifestyles, with a focus on women, adds an intriguing dimension. The study highlights the widespread use of goal-oriented content, the variety of audiences it reaches, and the significant impact fitness influencers have.

27-11: Data Collection 2 Insights

The researcher carefully separates influencer discourses based on gender and carefully examines the online personas of well-known researchers. The research becomes more complex due to a shift in emphasis towards environmental impacts, particularly the conspicuous lack of discussions on protein's environmental issues in fitness content.

Investigating plant-based protein sources and vegan fitness communities offers subtle perspectives on animal welfare issues and occasionally arises conversations about environmental concerns. There's a heated discussion about animal protein's supposed superiority, along with divisive and political remarks that seem to be part of a larger campaign against meat eating.

Male-centered discourse emphasises eating meals high in protein and carbohydrates in an effort to gain muscle. On the other hand, discourse that is centred on women emphasises holistic health, self-care, and

27-12: New Data Collection

The next round of data collection blends in seamlessly with earlier discoveries to produce a more comprehensive mosaic of knowledge. Data with a focus on women prioritises personal growth and contentment, highlighting the significance of responsibility and long-term habits in attaining physical and mental health. However, data focusing on men goes into greater detail about the vital role that protein plays. Discussions about muscle gain and performance-enhancing drugs are also covered, which highlights a dedication to the never-ending quest of optimising muscle growth.