

BACHELOR THESIS

Come and CrossFit with me! An experimental study on the effects of athlete endorsements and conceptual priming on exercise motivation.

Jessica Mescheritzki 2081830

Communication Science Faculty of Behavioural, Management and Social sciences (BMS) University of Twente

Supervisor Dr. J. J. van Hoof

25th of June, 2021

UNIVERSITY OF TWENTE.

Abstract

Aim: This study explored the extent to which starring a professional athlete and conceptual priming influence people's motivation to exercise and do CrossFit and the role of the individual level of physical activity in these relationships. The research is built on the understanding that celebrity endorsements and priming can positively impact social behavior. **Methods:** A 2 (type of athlete: professional vs. amateur) x 2 (primes: present vs. absent) between-subjects experiment measuring six different motivation attributes was conducted. Direct effects of the independent variables, an interaction effect of them, and a moderation effect of the level of physical activity are studied. A focus group session was performed to decide which videos to use in the experiment. In the main study, participants (N = 171) were randomly assigned to one of the four conditions. After exposure to the video, subjects were asked to fill a survey measuring their motivation to exercise and do CrossFit.

Results: A multivariate analysis of variance revealed unexpected results. The professional athlete was effective at stimulating motivation. In the amateur conditions, only the presence of the conceptual primes could increase motivation. However, no direct effect of the primes was found in the analysis. Surprisingly, the physical activity level was the best determinant of motivation in this experiment. Instead of a moderation effect, six significant direct effects were found from physical activity on the dependent variables.

Conclusion: The results suggest that starring professional athletes in online documentaries is effective in raising motivation. However, CrossFit should reconsider its use of amateur athletes. Instead of encouraging people to join the gyms, these videos could deter them. To motivate current and future CrossFitters, the brand could make use of conceptual primes. **Keywords:** exercise motivation, celebrity endorsement, conceptual priming, sports marketing, obesity prevention

Table of contents

| List of Abbreviations | 5 |
|--|----|
| 1. Introduction | 6 |
| 1.1 CrossFit | 6 |
| 1.2 Research aim | 7 |
| 2. Theoretical framework | 9 |
| 2.1 Understanding behavior | 9 |
| 2.2 Athlete endorsements | 11 |
| 2.3 Conceptual priming | 14 |
| 2.4 Starring athletes and priming motivation | 17 |
| 2.5 Level of physical activity | 18 |
| 2.6 Conceptional model | 20 |
| 3. Method | 21 |
| 3.1 Pretest | 21 |
| 3.1 Materials | 24 |
| 3.3 Participants | 30 |
| 3.4 Procedure | 33 |
| 3.5 Analyses | 33 |
| 4. Results | 36 |
| 4.1 Multivariate analysis of variance | 36 |
| 4.2 Attitude and Enjoyment | 40 |
| 4.3 Social support and identification | 41 |
| 4.4 Knowledge | 42 |
| 4.5 Health | 43 |
| 4.6 Mastery | 44 |
| 4.7 Self-efficacy | 45 |
| 4.8 Hypotheses | 47 |
| 5. Discussion | 50 |
| 5.1 Interpretations | 50 |
| 5.2 Implications | 54 |
| 5.3 Limitations | 56 |
| 5.4 Conclusions | 59 |

| 6. References | 61 |
|---------------------------|----|
| 7. Appendix A | 74 |
| Pretest | 74 |
| Notes | 74 |
| 8. Appendix B | 78 |
| Questionnaire main study | 78 |
| 9. Appendix C | 84 |
| Rotated component matrix | 84 |
| 10. Appendix D | 86 |
| Information sheet pretest | 86 |
| Informed consent form | 87 |

List of Abbreviations

| ANOVA | Univariate analysis of variance |
|--------|-----------------------------------|
| MANOVA | Multivariate analysis of variance |
| PBC | Perceived behavioral control |
| TPB | Theory of planned behavior |
| TRA | Theory of reasoned action |

1. Introduction

2 800 000 – this is the number of people dying from a preventable disease every year. Nearly one-fourth of the global population is overweight (WHO, 2019). Shockingly, this number is only growing. Since 1975 obesity has tripled, and to date, one in five teenagers and twice as many adults are classified as overweight (Food and Agriculture Organization of the United Nations, 2019). Seeing these statistics, one would assume that the general population is unaware of this crisis. After all, the Coronavirus has taken almost as many lives in the past year, and it is on the news daily (*Coronavirus Death Toll and Trends*, n.d.). However, in reality, individuals are aware and educated on the health issues and risks of obesity. In a global survey, participants called it the second biggest health problem in their respective countries (Ipsos, 2018). This awareness raises the following two questions: What can people do to improve their health? Moreover, how can outsiders assist in stopping the obesity epidemic?

1.1 CrossFit

Building on the understanding that exercise and nutrition are equally important aspects of healthy living, CrossFit was developed. Greg Glassman, the founder, calls it 'the key to health and fitness.' He developed the movement as an intervention to the global obesity problem. Today, it is one of the world's fastest-growing lifestyles and fitness movements (Claudino et al., 2018). Their holistic approach to health and unique community aspect sets them apart from other programs.

Nutrition is the basis for all health-related activities. Therefore, the fuel should come from various carbohydrates, proteins, fats, and micronutrients (Potgieter, 2013). However, there is no prescribed diet in the sport, and therefore, this aspect is not a subject of interest in this study. Instead, social support derived from the community aspect of the lifestyle and the exercise regime are intertwined and are the focus of this research. The former is apparent in

all aspects of CrossFit. For example, workouts usually take place in class settings. There, a certified coach leads a group of athletes with different levels of experience. As a result, strong feelings of inclusion and a sense of belonging develop, which can be very motivational (Tezci et al., 2015; Weiner, 1985, as cited in Tezci et al., 2015). Motivation is undoubtedly needed for CrossFit workouts. They consist of a variety of functional movements that are executed at high intensity. However, all movements are simply progressions of daily tasks like getting up from a couch (squat) or lifting a child off the floor (deadlift; *Defining CrossFit, Part 1: Functional Movements,* n.d.). Consequently, everyone should be able to perform these movements and benefit from the lifestyle.

1.2 Research aim

CrossFit's founder was successful in creating a movement that aims to improve public health. Studies have proven the drastic positive impacts CrossFit can have on health (for reference: Barfield & Anderson, 2014). Nonetheless, the movement has not reached many levels of society yet. To increase its popularity, CrossFit makes use of social media. They have multiple platforms showcasing personal transformations and stories, which can be great motivators. The reason is that these videos can evoke positive attitudes like joy, excitement, identification, and social support.

Notably, the fact that viewers are usually unaware of the effects proves that nonconscious processes are targeted. However, past research into exercise motivation focused on rationality mostly (Rebar et al., 2016). One example is the theory of planned behavior, which successfully explains people's motivation towards health behaviors (e.g., Godin & Kok, 1996). Nevertheless, other scholars argue that continued sports practice is influenced by more variables than described in the theory of planned behavior (Sánchez-Torres et al., 2020). Since very few studies examine CrossFit videos more closely anyways, it is not surprising that nonconscious processing has not yet been investigated further in that context. This study aims to test the impact of existing athlete documentaries on exercise motivation to address this research gap. Further, priming will be utilized to enhance that effect. The motivational primes used in the experiments can be classified as conceptual primes. They will consist of several verbal phrases related to the visual language portrayed at that moment in the video. Lastly, the influence of the level of physical activity of the individuals on the previously mentioned relationship will be evaluated. By means of a 2 (type of athlete: professional vs. amateur) x 2 (primes: present vs. absent) between-subjects experiment, the following question will be answered: *"To what extent does starring a professional athlete and using conceptual primes influence people's motivation to exercise and do CrossFit, and what is the role of the individual level of physical activity in these possible relationships?"*

2. Theoretical framework

In the following paragraphs, an overview of the current research on health behavior is given. In doing so, a distance is taken from traditional approaches that focus on conscious behavior. Thus, space is made for theories of nonconscious behavior. These include celebrity endorsements (i.e., athletes) and conceptual priming.

2.1 Understanding behavior

Firstly, *health behavior* needs to be defined. Norman and Conner (2005) reviewed various definitions. They concluded that a "useful broad definition would include any activity undertaken for the purpose of preventing or detecting disease or for improving health and wellbeing" (p.3). Following a thorough review of Warburton (2006) on the evidential health benefits of physical activity, there is a strong correlation between physical activity and health status. Consequently, exercise can be seen as an integral factor of health behavior.

Several models are used to explain and predict behavior. One of the most famous examples is the theory of planned behavior (TPB; Ajzen 1985, 1991). It was developed by Icek Ajzen as an extension of the earlier theory of reasoned action (TRA; Ajzen & Fishbein, 1980) and explains a wide range of behaviors. This model (as opposed to the TRA) recognizes that not all behaviors are under one's volitional control and introduces the construct of perceived behavioral control (PBC). In short, the TPB argues that human behavior is guided by three factors: behavioral beliefs, normative beliefs, and control beliefs. The model proposes that all other impacting variables are mediated through the established ones (Trafimow, 2015), which raises the question of its effectiveness.

Many scholars have studied the efficacy of the TPB in numerous areas of behavior. Analyses of Godin and Kok (1996) and Hagger et al. (2002) are especially influential in this context. The former reviewed Ajzen's TPB and its applications to health behaviors and found that the theory explains intention very well. Thereby, attitude towards the behavior and PBC were identified as equally important variables. Hagger et al. explored the relationships of the elements of the TPB in the context of physical activity by conducting a meta-analysis across 72 studies. The team observed the theory to be successful in explaining exercise intention and behavior. These results are consistent with those of McEachan et al. (2011). In a meta-analysis, McEachan et al. found that physical activity and diet behaviors were better predicted by the model than other health behaviors, such as safer sex, detection, risk, and abstinence behaviors. Nonetheless, Hagger et al. and McEachan et al. note that the theory does not incorporate all influences for intention and behavior, implying the need for further investigation and extension of the model.

As noted earlier, the number of influencing variables is very limited in the TPB. However, other scholars applied the theory in the context of physical activity and found additional vital determinants of intention and, consequently, behavior. For example, Boudreau and Godin (2007) aimed to verify Ajzen's model to predict the intention of participating in physical activity. Thereby, their focus was on obese individuals. Results showed that PBC and attitude towards the behavior have significant effects, which is in line with the earlier study of Godin and Kok (1996). Notably, Boudreau and Godin also point out that past behavior is a relevant predictor of intention, which is congruent with the conclusion of Hagger et al. (2002).

Although the TPB is an elegant theory and has many supporters, it has received lots of criticism. Sniehotta et al. (2014) highlight that the theory has been a significant steppingstone towards the modern understanding of decision making. Nonetheless, they also reflect on whether four elements are sufficient in predicting and explaining all voluntary behavior. According to McEachan et al. (2011), the TPB explains only 19.3 percent of the variance in behavior and 44.3 percent of the variance in intention. Sniehotta et al. continue to reference Sheeran and colleagues' (2013) work on the role of nonconscious processes in health behavior. First, the scholars briefly introduce the Reflective-Impulsive Model of Strack and Deutsch (2004, as cited in Sheeran et al.) that differentiates between two modes of information-processing and narrow down on research on implicit cognition, implicit affect, and implicit motivation. By reviewing the body of literature, Sheeran et al. show that the unconscious significantly influences people's health behavior. Therefore, the researchers expand on traditional models of human motivation and point to an alternative route to goal pursuit that does not require human agency.

2.2 Athlete endorsements

The protagonists of the CrossFit documentaries are athletes. The company portrays the journeys of professional athletes (e.g., Brooke Wells, Sara Sigmundsdóttir, or André Houdet) and regular CrossFit members on social media. In the following, the videos of the CrossFit members will be referred to as amateur athletes. Thereby, the videos vary in length and style but show the same storyline: an athlete overcomes a particular obstacle, works on themselves, and thrives in the sport of CrossFit. Further, the movies emphasize the community aspect of the lifestyle, which is a critical element of why the videos are motivational.

Social support

Social support is an integral part of CrossFit, which becomes apparent in the training methodology and social media. In this, both actual and perceived social support are effective motivators (Vieno et al., 2007). The findings of Pickett et al. (2016) build on this understanding of the influence of a sense of community. Interestingly, they also expand on Warner and Dixon (2011), who interviewed former college athletes on their experience and found essential elements that foster a sense of community. However, Pickett et al. take a

converse perspective and demonstrate that the former has its own positive effects. The scholars performed a cross-context analysis evaluating the perceived value of three sports, including CrossFit. Their results confirmed a strong sense of community among CrossFit athletes. Sokolova and Perez (2021) confirm these results in their study on fitness video consumption and intention to exercise. They showed that watching fitness celebrities work out provides the necessary social support to continue PHYSICAL ACTIVITY They further distance themselves from claiming causality in their results but state that there was evidence "that fitness video consumption could improve viewers' attitudes toward fitness and thus, indirectly, their intentions to exercise" (p.8).

Demonstration effects

Multiple scholars support these demonstration effects. For example, Potwarka et al. (2020) studied these effects in the context of watching a live track cycling. They conclude that watching an elite sporting event can help significantly increase youths' intention to participate in a new sport. A similar effect was observed in the qualitative study of Simpson et al. (2017). They performed interviews with CrossFit athletes. One participant stated that the workouts looked very intimidating, yet, through observing others, they became confident in their own abilities. Thus, Simpson et al. argue that people experience increased self-efficacy through observing CrossFitters succeed in the workouts. Hereby, self-efficacy refers to a person's belief in their capacity to perform certain behaviors.

Based on the previously discussed theory, the question arises whether the type of athlete makes a difference in motivation. Several concepts play a role in addressing this question. Firstly, *professional and amateur athletes* need to be defined. Although there are various ways to interpret the two terms, this study will use the definition of the BBC. They propose that the differentiating factor between the two is that professional athletes participate in their respective sport paid and amateurs do not (*Social and Cultural Factors Affecting Participation*, n.d.).

Athletes as celebrities

With this definition in place, the professional athletes' role should be evaluated further. Most professional athletes can be considered (digital) celebrities and are often chosen by firms as endorsers (Carlson & Dovanan, 2008). Studies have shown that they are successful advertising figures. Till and Bussler (2000) tested the match-up hypothesis and evaluated the role of fit (i.e., belongingness) on brand attitude, purchase intent, and brand beliefs. They found a positive relationship between celebrity endorsement and favorability toward the brand. This indicates that professional athletes as protagonists would enhance motivation better than amateur athletes, which is supported by the trickle-down effect. This phenomenon describes a process in which athletes or sports events inspire people to participate themselves (Weed, 2009, as cited in Wicker & Sotiriadou, 2013). The argument is further enhanced by the fact that professional athletes convey more confidence (Samadzadeh et al., 2011) and credibility (Ramchandani et al., 2014) because training is their main focus in life. This line of reasoning leads to the following hypothesis:

H₁: *Professional athletes increase motivation to do CrossFit better (as opposed to amateur athletes).*

However, this does not take identification and relatability into account. Funk and James (2001) pointed out that the trickle-down effect may not apply when individuals perceive a competence gap. It would instead result in feelings of intimidation and decrease motivation. The findings of Ramchandani et al. (2014) also showed a positive influence of inclusion on inspiration which further indicates that the audience will be more motivated to do physical activity when seeing athletes like themselves. This relatability is crucial when it comes to trustworthiness. Raggatt et al. (2018) studied fitspiration with an emphasis on its role in health and wellbeing. The results show that virtual content created by regular people (as opposed to celebrities) is more relatable and trustworthy. Furthermore, some participants in their study were consciously choosing role models according to their level of identifiability and realism. All these findings lead to the assumption that the audience looks for two main qualities in their role models: relevance and accessibility. By portraying athletes who appear to be peers and thrive in the sport, this can be achieved. Consequently, the second hypothesis is the following:

H₂: *Amateur athletes increase motivation to exercise better (as opposed to professional athletes).*

2.3 Conceptual priming

Behavior can be influenced by priming (St Quinton, 2017). Studies argue that "mental representations of goals can be activated without the individual knowing about or intending it – either through subliminal presentation of goal-relevant stimuli or through subtle and unobtrusive supraliminal presentation" (Sheeran et al., 2013, p.465). This indicates that priming can be used to increase motivation.

Defining priming

Before explaining this aspect of priming, it is necessary to define the term. Although the technique is studied and used in many disciplines, there is no general definition. Bermeitinger (2015) reviewed several definitions and found that "in all cases of *priming*, there is 'something' that has an influence on (the processing of) the 'following'" (p.17). Priming is also defined in a result-oriented way (e.g., Anderson, 2001, as cited in Bermeitinger). Thereby, the essence of priming is that there is a stimulus (i.e., prime) that influences the target, which can be either internal (e.g., attitude, thought) or external (e.g., event, behavior). Schütt and Hsu (2012) point out that exposure to an influence affects the reaction to a later influence. Therefore, the sequence of events emphasized by the scholars will be utilized in the experiment.

In advertising, priming is used to evoke certain attitudes towards products or brands. Desired messages are often placed in news, commercials, or entertainment programs. Conceptual priming refers to stimuli whose meanings are similar. When brands make use of conceptual priming, the memory-based choice probability increases (Nedungadi, 1990). This means that previously primed people are more likely to consider this brand a valid option when making a future decision. The effectiveness of conceptual priming is determined by matching the stimulus and the choice task (Lee, 2002).

Motivation through priming

Although primes can be perceived consciously and unconsciously, individuals are usually unaware of the effect itself. Iso-Ahola and Miller (2016) investigated the priming effects on exercise behavior. They performed two experiments testing stimulated conscious and nonconscious mental processes based on the current understanding that contextual priming can initiate complex behaviors. Their study's limitations argue that contextual nonconscious priming appears to be more effective for decreasing complex behavior (i.e., exercise). However, conscious priming of exercise goals was found to increase that behavior.

In the past decades, scholars have accumulated an abundance of insight into the topic of priming. However, there is only little research investigating priming effects on sport motivation in a sport like CrossFit. Yet, evidence suggests that priming can enhance enjoyment and effort. For example, Banting et al. (2011) studied the effect of motivational primes during a cycling task. They confirmed their expectations and found that the stimulus resulted in increased happiness and effort levels and lower levels of perceived exertion. These findings are supported by Fisher et al. (2015), who looked into participants of high-

intensity interval training and examined the effect of priming on motivation, attitude, and intentions. This training style is very similar to CrossFit and, therefore, relevant to discuss. The subjects were asked to perform two training sessions on different days. Before the second workout, they were exposed to an autonomous or neutral motivational priming task. The results of the autonomously primed subjects showed increased values for pleasure, perceived competence, and positive attitudes towards the training. These research results give grounds to assume a positive relationship between priming and motivation to exercise. Therefore, the third hypothesis is the following:

H₃: *Priming exercise behavior increases motivation to work out better (as opposed to not priming exercise behavior).*

There is no significant difference between the motivation to exercise and to do CrossFit. However, it is noteworthy that some people are intimidated by the sport. An article in Boxlife magazine describes that the media and reputation of the sport are a threat to newcomers (Roselle, 2016). The author illustrates how people usually watch highlights from the CrossFit games and compare themselves to extreme athletes. Watching the best athletes of the sport compete is very entertaining but can have the opposite effect on beginners. They might be self-conscious about their bodies or abilities and thus discouraged to enter a CrossFit gym. For this reason, perceived competence (i.e., self-efficacy) is an essential factor for motivation in CrossFit. St Quinton (2017) argues that efficacy beliefs can be primed, which results in effective physical activity promotion. It is, therefore, the goal in this study to prime self-efficacy and thus increases motivation.

Fisher et al. (2016) analyzed motivational factors among CrossFit athletes, group fitness classes, and people who train with personal trainers. CrossFit athletes reported higher levels of intrinsic motivation (i.e., satisfaction, challenge). These are the same factors as explained by Fisher et al. (2015). Therefore, it can be assumed that the primes will motivate people to exercise and do CrossFit. Based on this, the following hypotheses can be formulated:

H₄: *Priming exercise behavior increases motivation to do CrossFit better (as opposed to not priming exercise behavior).*

2.4 Starring athletes and priming motivation

This study wants to test how well conceptual priming works in CrossFit athlete documentaries. A motivational effect is expected because self-efficacy can be stimulated through athlete endorsements and priming efforts. Research suggests that the latter is the best-known predictor of health behavior (e.g., Conn, 1998; Gillis, 1994). In addition, selfefficacy beliefs are connected to higher goal setting, more substantial commitment, and more effort and perseverance. Dicker et al. (2021) analyzed factors of obese people's motivation to lose weight. They gathered data of more than ten thousand individuals across 11 countries and found that both self-efficacy and goal setting are important attributes. Notably, studies have shown that self-efficacy is independent of actual ability (Bandura, 1990). Simpson et al. (2017) showed that the CrossFit videos can stimulate self-efficacy and motivate the viewer. The experimental study of Chaudhary and Dhillon (2021) observed the effect of Instagram on adherence to a fitness plan and self-efficacy to exercise. Although they found no significant difference between the experimental and the control group regarding adherence to the exercise regime, they saw a positive effect of consumption of social media content on selfefficacy.

Interestingly, self-efficacy is closely related to PBC. Ajzen et al. (1989) introduced PBC as an influential factor of behavioral intention and behavior. Both constructs refer to an individual's perceived ability or control of a behavior. Wallston (2001) explains the difference between the concepts. The PBC is based on the ease of the behavior, whereas selfefficacy relates to the subject's confidence in accomplishing the behavior even in unusual circumstances. Wallston discusses multiple scholars who studied psychosocial theories of health-behavior and referred to a significant determinant of intending to or engaging in physical activity as self-efficacy (i.e., Prentice-Dunn and Rogers, 1986; Rosenstock, 1990; 1986; Schwarzer, 1999). He further summarizes that no matter the term assigned to the concept – the perceived control over a behavior is highly related to the performance of the behavior.

Additional primes can undoubtedly enhance this effect. As scholars (e.g., Banting et al., 2011; Fisher et al., 2015) argued, they can induce positive attitudes, enjoyment, understanding of the sport, and self-efficacy. Therefore, the interaction of these two effects should result in higher motivation to exercise. This understanding provides a solid foundation for the following hypothesis:

H₅: *The effect of athlete on self-efficacy and thus motivation will be increased by the presence of primes.*

2.5 Level of physical activity

The TPB explains 40-50 percent of the variance in intention (McEachen et al., 2011; Sutton, 1998). When Hagger et al. (2002) studied the TPB in the context of PA, they found a significant influence of past behavior on the prediction of physical activity behavior. Namely, past behavior raised the variance by 19 percent. The results of Rodrigues et al. (2020) support this conclusion. They investigated the effect of past behavior and motivational factors of future exercise adherence. The quantitative study of over 400 subjects showed that – compared to other determinants – past behavior had the highest impact on future exercise adherence. This indicates that physically active individuals are also motivated to exercise.

Findings of Markland et al. (2015) add to this understanding. They examined the effects of exercise imagery on attitudes towards exercise. Their results suggest that active people have greater positive attitudes towards physical activity. This raises the question of

whether people with no prior exercise behavior (i.e., low levels of PA) can be influenced by athlete documentaries. Sokolova and Perez (2021) studied related videos and found a positive effect of fitness videos on active people but could not prove this effect in an inactive population. Thus, they discovered that the attitude towards fitness needs to be already present to enhance it. Moreover, their results suggest that watching fitness videos while living a sedentary life can negatively affect outcomes. That is because these subjects might experience vicarious exercising and become less motivated to exercise. Thus, the following hypothesis can be formulated:

H₆: *The effect of athlete on motivation will be increased by high levels of physical activity (as opposed to low levels of physical activity).*

Based on the understanding that priming can increase motivation because it stimulates motivational factors like self-efficacy, enjoyment, and positive attitude (Banting et al., 2011; Fisher et al., 2015), it can be assumed that the effect will be greater when the baseline attitude to exercise is already higher. The latter is when people are already working out regularly (Markland et al., 2015). This assumption is related to the study of Bluemke et al. (2010). They tested priming effects on students with varying levels of physical activity. The results showed that active pupils have positive associations with exercising, whereas sedentary individuals hold fewer positive or negative associations. Therefore, it can be prefaced those high levels of physical activity positively influence the relationship between priming and motivation, and low levels have a negative relationship. Consequently, the seventh hypotheses are the following:

H₇: *The effect of primes on motivation will be increased by high levels of physical activity (as opposed to low levels of physical activity).*

2.6 Conceptional model

The sum of the discussed theories and concepts leads to the present research model (Figure 1). By priming individuals with constructs of self-efficacy, identification, social support, and enjoyment, it is expected to raise the motivation evoked by CrossFit documentaries. The independent variables are *athlete* (professional/amateur) and *prime* (present/absent). They are expected to influence participant's motivation to exercise and do CrossFit. The dependent variable is divided into two sections to emphasize the different aspects of motivation targeted. Both groups are measured by individual items that, in sum, assess the motivation. The *level of physical activity* is the moderator variable in the model. No direct effect on the dependent variables is expected.

Figure 1





3. Method

For this study, a 2 (type of athlete: professional vs. amateur) x 2 (primes: present vs. absent) between-subjects experiment was conducted. To this end, four conditions were created. The first condition included a professional athlete and no primes, the second a professional athlete (i.e., André Houdet) with primes. The third and fourth conditions included the amateur athlete (i.e., George Lopez) without primes and with primes, respectively. Participants were asked to fill a survey to measure the effect of the stimuli on motivation. The questions and experiment setup remained the same throughout the four conditions to ensure a high level of reliability.

3.1 Pretest

A pretest was conducted before exploring the research question and testing the hypotheses. The aim was to choose two suitable videos from all the options available on the CrossFit YouTube channel. To this end, a focus group with four participants was conducted. The session gave valuable insight into the reasons why the videos are motivating and what aspects of motivation should be measured in the actual study. Additionally, the discussion in the focus group led to elements of motivating physical activity that need to be explored in further studies.

Procedures pretest

In the first step, the respondents were introduced to the study. Then, they were informed about the aim of the pretest and what their attention should be on. After that, they were asked to sign an informed consent form that included the procedure of the pretest and information about the handling of the collected data. The consent form can be found in Appendix D. Then, the respondents filled a short survey with their demographics (Table A1). An overview of that information is presented in table 1. It is noteworthy that the group was very heterogeneous; all participants were around the same age (M = 22.8, SD = 1.5), were German, and ranked their physical activity on the same level (M = 3.0, SD = 0.0). These similar results occurred because participants needed to be from the same social circle to perform the pretest in person during the Coronavirus restrictions.

Table 1

Demographic Information of the Participants of the Pretest

| Demographics | Values |
|----------------------------|----------------|
| Age | |
| Mean \pm SD | 22.8 ± 1.5 |
| Min-Max | 22-25 |
| Median | 22 |
| Gender | |
| Female | 3 |
| Male | 1 |
| Nationality | |
| German | 4 |
| Level of physical activity | |
| $Mean \pm SD$ | 3.0 ± 0.0 |

Note. SD, Standard Deviation; N = 4

In the second part of the pretest, the respondents were presented with the videos. At first, they saw two videos portraying professional CrossFit athletes: Brooke Wells and André Houdet. Before watching the videos, they were instructed to look out for motivational cues, and after watching, the participants were told to speak freely and express all their thoughts. After discussing the first set of videos, the second set was presented to the participants following the same procedure. The third video starred single mom and student Nora Banda and the fourth George Lopez, who had lost over 70 pounds (31.8 kilograms) doing CrossFit. After an active discussion of the videos of the second category, participants were asked to select one video of each category. The focus group was documented with written notes (Appendix A). No intervention was necessary during the discussion. The participants were very respectful and active. They asked each other questions and came to conclusions after a while.

Results pretest

The discussion during the focus group was very lively. All participants had concrete opinions about all videos and did not hesitate to voice those. Everyone agreed that relatability and identifiability were essential attributes of the videos – no matter the level of proficiency of the athlete.

The first video showed Brooke Wells' performance at the CrossFit games. She talked about losing competitions but fighting to get better. This is a noteworthy point because the participants agreed that her video was suitable for viewers who have already started doing CrossFit and need the motivation to continue. However, it was not appropriate encouragement for beginners. Participants stated that Wells seemed unattainable and unapproachable, whereas the video of André Houdet showed humanity and consistency throughout demanding times. Moreover, only the second video gave reasons to why one should do CrossFit. On these grounds, it was decided to choose André Houdet as the professional athlete in the study. He seemed approachable, and participants could identify themselves with him.

The decision of the second video was more complicated than the first one. The videos were somewhat similar: both amateurs talked about finding CrossFit in a difficult time of their life and gaining strength from it; both seemed very down to earth and approachable. Nora Banda appeared very pleasant and fun. She was convincing and radiated positive energy. George Lopez was very inspiring and implied the following thought: "Impressive to see how much a 420 lbs (190kg) man can do, why shouldn't I be able to achieve that?" (Participant 4, male, 22 years old). Although Lopez was still overweight, it was clear how

much better he felt and that CrossFit improved his health. He even stated that he was unsure whether he would be alive to date if it were not for CrossFit. Based on this last point, the decision was made to select Lopez's video as the one of the amateur athlete in the study. His video emphasized health more than Banda's. However, both videos were very motivating to the participants, which indicates a positive relationship in the actual study.

3.1 Materials

Stimuli

The study tested the effects of four videos. For two conditions, the videos remained almost unedited. They were adjusted a little to minimize differences. The original videos had different endings. The one of the amateur athlete included a call to action to sign up for the CrossFit Open competition, and the professional athlete's video ended with the phrase "this is why." This last sequence from the video of the professional athlete was edited in the video of the amateur athlete. Figure 2 shows the latter. Furthermore, a banner stating the athlete's age and whether they are a professional or amateur was added in all four conditions (Figures 3 and 4). This was done to ensure the viewer understands the level of athlete they are watching.

Figure 2

Final Sequence of the Videos

| 1 | | THIS IS |
|-------------|-------------|-------------|
| THIS IS 🛛 🍸 | THIS IS HY | |
| THIS IS WHY | THIS IS WHY | THIS IS WHY |
| | | |
| | | |

Figure 3

Screenshot Showing the Professional Athlete and Banner



Figure 4

Screenshot Showing the Amateur Athlete and Banner



The primes were created with Adobe Illustrator, and videos were edited using Adobe Premiere Rush. Both videos were starring a male athlete chosen by the pretest and were between two and three minutes long. A total of seven primes were added to the videos. They were placed around similar time points in the videos. Due to the different lengths of the original videos, primes could not be placed at the same point. However, the order of the added visuals remained the same. Figures 5 and 6 show screenshots of the manipulations, and figure 7 shows a timeline of the primes.

Figure 5

Screenshots Showing The Manipulation in The Video of The Professional Athlete



Figure 6

Screenshots Showing The Manipulation in the Video of The Amateur Athlete



Figure 7

Timeline of Primes in the Edited Videos

| Prime | Welcome to CrossFit | Age and athletic level | Overcome mental barriers. CrossFit® | Improve your health. CrossFit® | Join the community. CrossFit® | Take your training to the next level. CrossFit® | You can do it too! Experience a healthy, functional and independent life! CrossFit® | Video length |
|---------------------------------------|------------------------|---------------------------|---|--------------------------------------|-------------------------------------|---|---|--------------|
| Time stamp professional athlete | 0-0:02 | 00:25-00:28 | 00:42-00:45 | 1:28-1:30 | 1:40-1:42 | 1:55-2:01 | 2:49-2:53 | 2:48 |
| Time stamp amateur athlete | 0-0:02 | 00:25-00:27 | 00:35-00:37 | 00:46-00:48 | 1:20-1:23 | 1:35-1:41 | 1:49-1:54 | 1:48 |

Measures

Motivation. The dependent variable was measured on two levels (i.e., general motivation to exercise and CrossFit-specific). Constructs from different established scales were used to measure the individual elements of the levels. Foundational elements of motivation to exercise were taken from the Physical Activity and Leisure Motivation Scale (PALMS) by Zach et al. (2012). That scale was chosen as a foundation because it is based both on theory and on empirical evidence. Further, it applies to recreational and professional physical activity. Moreover, it is more comprehensive than other measures (i.e., nine factors compared to five factors of Motives for Physical Activity Measure – revised; Ryan et al., 1997, as cited in Zach et al.). In addition, Zach et al. reported Cronbach's alpha coefficients between .63 and .96, which indicate high reliability of the scale.

To measure CrossFit-specific motivation and include the effect of the videos, some constructs were added (table 2), and others were excluded. Scales for *attitude, identification, knowledge* and *social support* were taken from the marketing scales handbook by Bruner and colleagues (1992). All items were measured on five-point scales. Most ranged from strongly disagree to strongly agree, and some from inferior to superior or very poor to excellent.

Table 2

| Construct | Source | Cronbach's alpha* |
|-----------------------------|--|--------------------------------------|
| Self-efficacy | SCI Exercise Self-Efficacy Scale (ESES) | .93 (Kroll et al., 2007) |
| Attitude ^a | Attitude towards voting | .93 and .94 (Pinkleton et al., 2002) |
| Identification ^a | Social identification | .84 (Reed, 2004) |
| Knowledge ^a | Knowledge (Subjective) | .92 and .96 (Gürhan-Canli, 2003) |
| Social support ^a | Social identification | .96 (Escalas & Bettman, 2005) |

Sources of survey constructs

* Cronbach's alpha higher than .65 indicates high reliability.

^a The scales were listed in the marketing scales handbook by Bruner and colleagues (1992): self-efficacy (p.231), identification (p.898), knowledge (p.577), social support (p.899).

Level of physical activity. Which activities count as exercise is often very subjective, and so are measures like "lightly active." To achieve some generalizability, *level of physical activity* was measured with items from the International Physical Activity Questionnaire. Craig et al. (2003) reported Spearman correlation coefficients around .8. The questions measured how much time the subject was moving or sitting. Therefore, the answers were given on a slider bar divided into 1-hour intervals and on a nine-point scale.

Demographic information. To collect descriptive data, the participants were asked to report their age, gender identity, educational level, level of language proficiency in English, and rate their usage of social media. The latter two were measured on a five-point Likert scale. This information was also valuable to account for differences in the population and control for other influences.

Reliability analysis. The previously determined constructs were formed into scales, and their reliability was analyzed. The results are presented in table 5. A subscale was considered reliable when its Cronbach's alpha coefficient was higher than .65. This cut-off point is common in social science. For example, Taber (2018) calls a Cronbach's alpha coefficient of .64 to .85 adequate. The analysis did not provide a reason to exclude items to raise the Cronbach's alpha coefficient. Consequently, variables were computed using the mean values of the items.

In the same manner, the variable *level of physical activity* was developed. The questions "Walk for 10 minutes in leisure time?", "Days of intense PHYSICAL ACTIVITY in leisure time" and "Days of moderate PHYSICAL ACTIVITY in leisure time" were measured on identical nine-point scales. Reliability analysis showed a Cronbach's alpha coefficient of .67. Therefore, it was reasonable to compute a variable with these items. This variable was later transformed into a dummy variable around the mean (M = 4.3, SD = 1.7).

Table 3

| Subscale | Number of items | Number of deleted items | Cronbach's alpha* |
|-----------------------------------|-----------------|-------------------------|-------------------|
| Attitude and Enjoyment | 7 | 1 | .92 |
| Social support and Identification | 5 | 1 | .89 |
| Knowledge | 3 | 0 | .93 |
| Health | 4 | 0 | .83 |
| Mastery | 4 | 1 | .77 |
| Self-efficacy | 3 | 0 | .73 |

Number of Items and Reliability of Subscales

* Cronbach's alpha above .65 indicates high reliability.

3.3 Participants

Ethical approval was obtained from the Ethics Committee of the Faculty of Behavioural, Management, and Social sciences of the University of Twente before the data collection began. Participants were recruited through convenience and snowball sampling by distributing URL links to the survey around the university campus. Furthermore, the URL link was sent to personal contacts of the researcher with the request to forward to their networks. All adults were invited to participate. The only criterion that needed to be met was an elementary understanding of the English language. This was necessary because all CrossFit videos were in English. However, the sampling methods chosen belong to nonprobability sampling. Although it was aimed to invite people of different ages, gender identities, nationalities, and physical activity levels, the results had to be interpreted with caution. Bias cannot be excluded.

171 respondents were collected. None were excluded because all met the inclusion criteria. However, additional 77 responses were not included in the analysis because these participants failed to complete the survey. Subjects were between the ages of 16 and 61 (M =

24.8, SD = 6.7). Two-thirds of the subjects were female (66.7%), almost one-third identified as male (32.2%), and around 1 percent did not state their age. Interestingly, most participants were university graduates. Table 4 shows more information about the participants. The sample is not representative of the general population because the subjects are comparatively young and educated. However, they belong to the demographic that consumes most of the social media content.

The sample was randomly distributed across all four conditions. The distribution was independent of age (F(28, 138) = 0.87, p = .65), gender identity ($\chi^2(6, N = 171) = 3.29, p = .77$), educational level ($\chi^2(12, N = 170) = 10.43, p = .58$), English language proficiency ($\chi^2(9, N = 171) = 6.2, p = .72$), and social media usage ($\chi^2(12, N = 171) = 17.53, p = .13$).

Table 4

| Characteristics | Professional athlete without prime | | Professi wit | Professional athlete with prime | | Amateur athlete without prime | | Amateur athlete with prime | | Full sample | |
|---|---------------------------------------|------|-----------------|------------------------------------|----|----------------------------------|----|-------------------------------|-----|-------------|--|
| _ | n | % | n | % | n | % | n | % | n | % | |
| Gender | | | | | | | | | | | |
| Female | 28 | 16.4 | 35 | 20.5 | 25 | 14.6 | 26 | 15.2 | 114 | 66.7 | |
| Male | 15 | 8.8 | 13 | 7.6 | 12 | 7.0 | 15 | 8.8 | 55 | 32.2 | |
| Educational level | | | | | | | | | | | |
| High School | 11 | 6.4 | 19 | 11.1 | 14 | 8.2 | 16 | 9.4 | 60 | 35.1 | |
| Bachelor's degree | 23 | 13.5 | 21 | 12.3 | 14 | 8.2 | 14 | 8.2 | 72 | 42.1 | |
| Master's degree | 5 | 2.9 | 6 | 3.5 | 6 | 3.5 | 8 | 4.7 | 25 | 14.6 | |
| Advanced graduate work / Ph.D. | 3 | 1.8 | 2 | 1.2 | 1 | .6 | 2 | 1.2 | 8 | 4.7 | |
| English language proficiency | | | | | | | | | | | |
| Very poor | 1 | .6 | 0 | 0 | 1 | .6 | 0 | 0 | 2 | 1.2 | |
| Average | 5 | 2.9 | 10 | 5.9 | 5 | 2.9 | 10 | 5.9 | 30 | 17.6 | |
| Above average | 22 | 12.9 | 23 | 13.5 | 16 | 9.4 | 17 | 9.9 | 78 | 45.6 | |
| Excellent | 16 | 9.4 | 15 | 8.8 | 16 | 9.4 | 14 | 8.2 | 61 | 35.7 | |
| Level of physical activity | | | | | | | | | | | |
| Not to lightly active ^a | 21 | 12.3 | 27 | 15.8 | 20 | 11.7 | 21 | 12.3 | 89 | 52.1 | |
| Moderately to heavily active ^b | 23 | 13.5 | 21 | 12.3 | 18 | 10.5 | 20 | 11.7 | 82 | 48 | |

Demographic Information of the Sample per Condition

Note. N=171. Participants were on average 24.8 years old (SD = 6.7) and moderately active on social media (M = 3.4, SD = 0.9). ^a Reflects the number and percentage of respondents with levels of physical activity equal to or below the mean of 4.28. ^b Reflects the number and percentage of respondents with levels of physical activity below the mean of 4.28.

3.4 Procedure

A survey on Qualtrics was created to collect the data. It was accessible on all computers and mobile devices. The survey started with an opening statement explaining the aim of the study and asking for consent. After consent was given, subjects were randomly assigned to one of the four conditions. Because a between-subjects approach was adopted, everyone only experienced one of the four conditions and was unaware of the other three options. A randomizer for the questions was built into the survey. The aim was to minimize any communication and, hence, a distraction from filling the survey in the same physical space. Only the questions regarding the demographic information and level of physical activity remained at the same point (i.e., the end) of the survey.

The survey had 39 questions, of which 30 measured the constructs of motivation, three measured physical activity levels, and five demographic information. To finish the survey, there was also an open-ended question for additional remarks. Table B1 shows the constructs and corresponding items.

3.5 Analyses

The data was analyzed using SPSS. Before this could start, the data set was cleaned. This means that missing values were recoded, and irrelevant variables (e.g., IP addresses or GPS coordinates) were deleted. Further, variables were transformed, so they are useful for data analysis. For example, the variable *level of physical activity* was computed from the days subjects spent exercising. After this, the sample was inspected. To this end, descriptive statistics were calculated, and a randomization check using crosstabs and a univariate analysis of variance (ANOVA) for *age* was performed. In the next step, factor and reliability analyses were performed. The goal was to confirm previously created constructs and evaluate the reliability of the scales used to measure the corresponding items. Cronbach's alpha was used to determine the reliability of the scales. The identified constructs were used as dependent variables in the following analyses.

The independent variables in the model were assigned dichotomous values. Namely, *athlete* had values of one and two for professional and amateur respectively, *primes* was assigned zero for no prime, and one for a prime present, *level of physical activity* was coded zero for no to little physical activity and one for moderate and high physical activity. As the model in figure 1 shows, *prime* and *athlete* were expected to affect the dependent variables directly. An interaction effect of the two variables was also expected. *Level of physical activity* is the moderator affecting the individual relationships of *prime* and *athlete* on the dependent variables. All dependent variables were measured on five-point scales and were assigned values ranging from one to five.

Factor analysis. The dependent variables were measured with many questions (i.e., items) that belong to several constructs. A principal component analysis was conducted to explore the factor loadings of the items. Bartlett's test of sphericity, which tests the overall significance of all the correlations within the correlation matrix, was significant ($\chi^2(325, N = 171) = 2822.35, p < .001$), indicating that it was appropriate to use the factor analytic model on this set of data. In addition, the Kaiser-Meyer-Olkin measure of sampling adequacy indicated that the strength of the relationships among variables was high (KMO = .87); therefore, the analysis could proceed.

Six factors with eigenvalues greater than one were extruded. They explain 71.71 percent of the variance. A Varimax rotation was performed because no correlations between factors were expected. The resulting rotated component matrix is displayed in table C1. The table shows all items with factor loadings above .40. Most of the displayed factor loadings are exceedingly high. Three items were removed from the analysis resulting in 4.7 percent more variance explained by the same six constructs. With the removal of a fourth item (SE3 I

can perform movements typical to CrossFit), the explained variance would have risen by another 0.97 percent. However, it was decided to leave this factor in the analysis because the removal would result in a construct measured by only two items. Interestingly, items from the initial constructs attitude and enjoyment appeared to measure the same construct. The same is true for items of social support and identification. Consequently, they were combined for the reliability analyses.

Main analysis. A multivariate analysis of variance (MANOVA) was performed to determine the significant effects of the independent variables on the dependent variables and test hypotheses outlined in the theoretical framework. Further, six ANOVAs were performed – once for each dependent variable. These analyses showed more detailed information of the effects determined in the previous MANOVA. All analyses examined main effects and also moderation and interaction effects. The significance of the effects was assessed using the F-values. To visualize relevant findings, graphs were created.

4. Results

The model describes numerous relationships. On the one hand, there are the direct influences of the independent variables on the six dependent ones. On the other hand, the interaction and the moderation effects. To calculate these possible effects, a multivariate analysis of variance (MANOVA) was performed. This gave an overview. Table 5 shows all scores of the independent variables on the dependent variables. It becomes apparent that the individual values of the dependent variables are very close to one another. Only the significantly affected conditions show distinct differences. To obtain more detailed information on the relationships, six ANOVAs were performed. Each effect's significance was based on the F-value and p-value.

Table 5

| Dependent | Athlete | | | | Primes | | | | Level of physical activity | | | |
|---|--------------|-------|---------|-------|--------|------|---------|------|----------------------------|-------|-------|--------|
| variable | Professional | | Amateur | | Absent | | Present | | Low | | High | |
| | М | SD | М | SD | М | SD | М | SD | М | SD | М | SD |
| Attitude and Enjoyment | 3.85 | 0.76 | 3.84 | 0.84 | 3.82 | 0.82 | 3.88 | 0.78 | 3.58* | 0.84* | 4.14* | 0.62* |
| Social support and Identification | 2.23 | 0.76 | 2.33 | 0.78 | 2.28 | 0.74 | 2.28 | 0.8 | 2.14* | 0.72* | 2.42* | 0.79* |
| Knowledge | 2.22 | 0.9 | 2.42 | 0.95 | 2.31 | 0.98 | 2.32 | 0.88 | 2.03* | 0.8* | 2.62* | 0.96* |
| Health | 4.37 | 0.51 | 4.45 | 0.0.5 | 4.37 | 0.52 | 4.44 | 0.49 | 4.39* | 0.5* | 4.53* | 0.48* |
| Mastery | 4.31 | 0.48 | 4.22 | 0.57 | 4.26 | 0.58 | 4.28 | 0.47 | 4.18* | 0.49* | 4.37* | 0.54* |
| Self-efficacy | 3.67 | 0.69* | 3.94* | 0.59* | 3.82 | 0.61 | 3.77 | 0.78 | 3.7* | 0.68* | 3.9** | 0.71** |

Means and Standard Deviations

Note. N = 171.

* Significant value (p < .05)

** Marginally significant value ($p \ge .05 \& p < .1$)

4.1 Multivariate analysis of variance

The MANOVA revealed significant main effects of the independent variable *athlete* on *self-efficacy*, an interaction effect of *athlete and prime* on *self-efficacy* and *attitude and*
enjoyment, and several main effects of *level of physical activity* that were not expected in the conceptual model (figure 1). Tables 6 and 7 present these results. The data shows no significant main effects of *prime* on any of the dependent variables and no moderation effect of *level of physical activity*. Wilk's lambda tested the significance of the difference between the means. There was a statistically significant difference in motivation based on the type of athlete starred in the documentaries, F(6, 158) = 2.34, p = .030; Wilk's $\Lambda = 0.92$, partial $\eta^2 = .08$. However, the effect of priming on the dependent variables was not statistically significant, F(6, 158) = 0.43, p = .858; Wilk's $\Lambda = 0.98$, partial $\eta^2 = .02$. The difference in motivation based on the level of physical activity was statistically significant, F(6, 158) = 6.18, p = < .001; Wilk's $\Lambda = 0.81$, partial $\eta^2 = .19$. There was also no statistically significant difference in motivation based on the interaction effect of the type of athlete and the presence of primes, F(6, 158) = 1.51, p = .178; Wilk's $\Lambda = 0.95$, partial $\eta^2 = .05$. In the following, the effects on the individual dependent variables will be discussed.

| Independent Variable | Dependent Variable | Type III Sum of Squares | df | Mean Square | F | р |
|----------------------------|-----------------------------------|-------------------------------|----|----------------|-------|--------|
| Athlete | Attitude and Enjoyment | 0.03 | 1 | 0.03 | 0.05 | .831 |
| | Social support and Identification | 0.27 | 1 | 0.27 | 0.46 | .498 |
| | Knowledge | 1.44 | 1 | 1.44 | 1.86 | .174 |
| | Health | 0.22 | 1 | 0.22 | 0.91 | .341 |
| | Mastery | 0.29 | 1 | 0.29 | 1.08 | .301 |
| | Self-efficacy | 2.93 | 1 | 2.93 | 6.40 | .012* |
| Primes | Attitude and Enjoyment | 0.39 | 1 | 0.39 | 0.71 | .399 |
| | Social support and Identification | 0.03 | 1 | 0.03 | 0.05 | .822 |
| | Knowledge | 0.04 | 1 | 0.04 | 0.06 | .813 |
| | Health | 0.263 | 1 | 0.263 | 1.08 | .300 |
| | Mastery | 0.04 | 1 | 0.04 | 0.14 | .711 |
| | Self-efficacy | 0.04 | 1 | 0.04 | 0.08 | .784 |
| Level of Physical activity | Attitude and Enjoyment | 13.26 | 1 | 13.26 | 24.18 | <.001* |
| | Social support and Identification | 3.03 | 1 | 3.03 | 5.18 | .024* |
| | Knowledge | 13.88 | 1 | 13.88 | 17.9 | <.001* |
| | Health | 2.56 | 1 | 2.56 | 10.52 | .001* |
| | Mastery | 1.56 | 1 | 1.56 | 5.72 | .018* |
| | Self-efficacy | 1.44 | 1 | 1.44 | 3.14 | .078** |

Main Effects of the Independent Variables on Dependent variables

* p < .05 is considered significant. ** $p \ge .05 \& p < .1$ is considered marginally significant.

| Independent Variable | Dependent Variable | Type III Sum of Squares | df | Mean Square | F | р |
|---|-----------------------------------|-------------------------------|----|----------------|------|-------|
| Athlete * Prime | Attitude and Enjoyment | 3.16 | 1 | 3.16 | 5.76 | .018* |
| | Social support and Identification | 0.38 | 1 | 0.38 | 0.65 | .422 |
| | Knowledge | 0.03 | 1 | 0.03 | 0.04 | .842 |
| | Health | 0.34 | 1 | 0.34 | 1.39 | .240 |
| | Mastery | 0.24 | 1 | 0.24 | 0.78 | .377 |
| | Self-efficacy | 2.05 | 1 | 2.05 | 4.47 | .036* |
| Athlete * Level of Physical activity | Attitude and Enjoyment | 0.25 | 1 | 0.25 | 0.46 | .500 |
| | Social support and Identification | 0.04 | 1 | 0.04 | 0.06 | .805 |
| | Knowledge | 0.89 | 1 | 0.09 | 1.15 | .286 |
| | Health | 0.00 | 1 | 0.00 | 0.00 | .979 |
| | Mastery | 0.04 | 1 | 0.04 | 0.16 | .693 |
| | Self-efficacy | 0.25 | 1 | 0.25 | 0.54 | .465 |
| Primes * Level of Physical activity | Attitude and Enjoyment | 0.05 | 1 | 0.05 | 0.1 | .754 |
| | Social support and Identification | 0.4 | 1 | 0.4 | 0.69 | .409 |
| | Knowledge | 0.04 | 1 | 0.04 | 0.05 | .832 |
| | Health | 0.06 | 1 | 0.06 | 0.23 | .630 |
| | Mastery | 0.04 | 1 | 0.04 | 0.16 | .979 |
| | Self-efficacy | 0.99 | 1 | 0.99 | 2.16 | .144 |

Interaction Effects of the Independent Variables on Dependent variables

* p < .05 is considered significant.

4.2 Attitude and Enjoyment

The ANOVA revealed that *Attitude and Enjoyment* (newly created construct) was affected by the interaction of *athlete and primes* (Table 8; t(163) = 1.06, p = .29). As figure 8 demonstrates, *attitude and enjoyment* is reported higher by participants who saw the video of the professional athlete without any primes (M = 3.97, SD = 0.78) than when these were present (M = 3.75, SD = 0.74). The opposite is true for the amateur condition. The data shows higher values for attitude and enjoyments for the primed video of the amateur athlete (M = 4.03, SD = 0.8) than not primed (M = 3.65, SD = 0.84).

Table 8

| Source | Type III Sum of Squares | df | Mean Square | F | р |
|--|----------------------------|-----|-------------|--------|--------|
| Corrected Model | 17.9 | 7 | 2.56 | 4.66 | <.001* |
| Intercept | 2519.29 | 1 | 2519.29 | 4594.6 | <.001* |
| Athlete | 0.03 | 1 | 0.03 | 0.05 | .831 |
| Primes | 0.39 | 1 | 0.39 | 0.71 | .399 |
| Level of Physical activity | 13.26 | 1 | 13.26 | 24.18 | <.001* |
| Athlete * Primes | 3.16 | 1 | 3.16 | 5.76 | .018* |
| Athlete * Level of Physical activity | 0.25 | 1 | 0.25 | 0.46 | .500 |
| Primes * Level of Physical activity | 0.05 | 1 | 0.05 | 0.1 | .754 |
| Error | 89.38 | 163 | 0.55 | | |
| Total | 2641.43 | 171 | | | |
| Corrected total | 107.28 | 170 | | | |
| <i>Note.</i> $R^2 = .17$ (Adjusted * $n < .05$ is considered s | $d R^2 = .13)$ | | | | |

Effects of the Independent Variables on Attitude and Enjoyment

Figure 8



Interaction Effect of Athlete and Primes on Attitude and Enjoyment

Table 8 also shows that *level of physical activity* has a significant effect on *attitude* and enjoyment (t(163) = -2.48, p = .01). Although this main effect was not part of the conceptual model in figure 1, it is still significant. *Attitude and enjoyment* were reported higher by more active individuals (M = 4.14, SD = 0.62) than less active subjects (M = 3.58, SD = 0.84). It is noteworthy that no significant moderation effect of *level of physical activity* on either of the independent variables was found in the analysis.

4.3 Social support and identification

Neither main effects nor interaction effects of the variables athlete or primes were found in the analysis (Table 9). However, *level of physical activity* seems to impact this dependent variable significantly (t(163) = -1.26, p = .21). More active participants score higher on social support and identification (M = 2.42, SD = 0.79) than less active people (M = 2.14, SD = 0.72).

| Source | Type III Sum of Squares | df | Mean Square | F | р |
|---|----------------------------|-----|-------------|---------|--------|
| Corrected Model | 4.57 | 7 | 0.65 | 1.12 | .355 |
| Intercept | 884.5 | 1 | 884.5 | 1511.75 | <.001* |
| Athlete | 0.27 | 1 | 0.27 | 0.46 | .498 |
| Primes | 0.03 | 1 | 0.03 | 0.05 | .822 |
| Level of Physical activity | 3.03 | 1 | 3.03 | 5.18 | .024* |
| Athlete * Primes | 0.38 | 1 | 0.38 | 0.65 | .422 |
| Athlete * Level of Physical activity | 0.04 | 1 | 0.04 | 0.06 | .805 |
| Primes * Level of Physical activity | 0.05 | 1 | 0.05 | 0.09 | .771 |
| Error | 95.37 | 163 | 0.59 | | |
| Total | 986.68 | 171 | | | |
| Corrected total | 99.94 | 170 | | | |

Effects of the Independent Variables on Social Support and Identification

Note. $R^2 = .05$ (Adjusted $R^2 = .01$)

* p < .05 is considered significant.

4.4 Knowledge

The ANOVA on *knowledge* revealed no significant effects of the variables *athlete* or *primes*. Also, no statistically significant moderation effect was found. However, table 10 shows a direct effect of *level of physical activity* on *knowledge* (t(163) = -0.85, p = .4). This effect was not expected, but its' significance indicates practical implications. Moderately and highly physically active people report better knowledge of the sport CrossFit (M = 2.62, SD = 0.96) than less active participants (M = 2.03, SD = 0.8).

| Source | Type III Sum of Squares | df | Mean Square | F | р |
|---|----------------------------|-----|-------------|---------|---------|
| Corrected Model | 19.5 | 7 | 2.79 | 3.59 | .001* |
| Intercept | 923.86 | 1 | 923.86 | 1191.04 | <.001* |
| Athlete | 1.44 | 1 | 1.44 | 1.86 | .174 |
| Primes | 0.04 | 1 | 0.04 | 0.06 | .813 |
| Level of Physical activity | 13.88 | 1 | 13.88 | 17.9 | < .001* |
| Athlete * Primes | 0.03 | 1 | 0.03 | 0.04 | .842 |
| Athlete * Level of Physical activity | 0.89 | 1 | 0.89 | 1.15 | .286 |
| Primes * Level of Physical activity | 0.04 | 1 | 0.04 | 0.05 | .832 |
| Error | 126.44 | 163 | .78 | | |
| Total | 1061.44 | 171 | | | |
| Corrected total | 145.94 | 170 | | | |

Effects of the Independent Variables on Knowledge

Note. $R^2 = .13$ (Adjusted $R^2 = .1$)

* p < .05 is considered significant.

4.5 Health

The ANOVA did not show any significant effect of the independent variables *athlete* and *primes* on *health* (table 11). Also, no moderation effect of *level of physical activity* was found. However, there is an impact of *level of physical activity* on the dependent variable directly (t(163) = -1.04, p = .3). More physically active individuals reported higher levels for the *health* variable (M = 4.53, SD = 0.48) than less active subjects (M = 4.29, SD = 0.5).

| Source | Type III Sum of Squares | df | Mean Square | F | р |
|---|----------------------------|-----|-------------|----------|---------|
| Corrected Model | 3.58 | 7 | 0.51 | 2.1 | .047* |
| Intercept | 3287.59 | 1 | 3287.59 | 13500.68 | <.001* |
| Athlete | 0.22 | 1 | 0.22 | 0.91 | .341 |
| Primes | 0.26 | 1 | 0.26 | 1.08 | .300 |
| Level of Physical activity | 2.56 | 1 | 2.56 | 10.52 | < .001* |
| Athlete * Primes | 0.34 | 1 | 0.34 | 1.39 | .240 |
| Athlete * Level of Physical activity | 0.00 | 1 | 0.00 | 0.00 | .957 |
| Primes * Level of Physical activity | 0.06 | 1 | 0.06 | 0.23 | .630 |
| Error | 39.69 | 163 | 0.24 | | |
| Total | 3361.31 | 171 | | | |
| Corrected total | 43.27 | 170 | | | |

Effects of the Independent Variables on Health

Note. $R^2 = .08$ (Adjusted $R^2 = .04$)

* p < .05 is considered significant.

4.6 Mastery

The ANOVA with *athlete* and *primes* as independent, *level of physical activity* as moderator and *mastery* as dependent variable revealed no significant effects as expected by theory (table 12). However, there was a significant difference in the reported levels of mastery stimulated by varying levels of physical activity. More active individuals indicate higher levels of mastery (M = 4.37, SD = 0.54) than less active people (M = 4.18, SD = 0.49).

| Source | Type III Sum of Squares | df | Mean Square | F | р |
|---|----------------------------|-----|-------------|----------|--------|
| Corrected Model | 2.17 | 7 | 0.31 | 1.13 | .344 |
| Intercept | 3077.49 | 1 | 3077.49 | 11282.73 | <.001* |
| Athlete | 0.29 | 1 | 0.29 | 1.08 | .301 |
| Primes | 0.04 | 1 | 0.04 | 0.14 | .711 |
| Level of Physical activity | 1.56 | 1 | 1.56 | 5.72 | .018* |
| Athlete * Primes | 0.21 | 1 | 0.21 | 0.78 | .377 |
| Athlete * Level of Physical activity | 0.04 | 1 | 0.04 | 0.16 | .693 |
| Primes * Level of Physical activity | 0.00 | 1 | 0.00 | 0.00 | .979 |
| Error | 44.46 | 163 | 0.27 | | |
| Total | 3163.00 | 171 | | | |
| Corrected total | 46.63 | 170 | | | |

Effects of the Independent Variables on Mastery

Note. $R^2 = .05$ (Adjusted $R^2 = .01$)

* p < .05 is considered significant.

4.7 Self-efficacy

The final dependent of the conceptual model is self-efficacy. Interestingly, more statistically significant effects were reported here than in any other ANOVA. Table 13 shows that *athlete* has a significant main effect on *self-efficacy* (t(163) = -1.69, p = .09). Self-efficacy was reported higher in the professional athlete condition (M = 3.94, SD = 0.59) than in the amateur condition (M = 3.67, SD = 0.69). The data also shows an interaction effect of *athlete* and *priming*. As visualized in figure 9, *priming* has a positive effect on levels of *self-efficacy* but only for the *amateur athlete* condition (t(163) = 1.13, p = .26). Lastly, *level of physical activity*, the moderator in the initial model, has no moderation effect but a significant direct effect on the dependent variable (t(163) = -0.45, p = .65). Self-efficacy was reported

higher by more active individuals (M = 3.9, SD = 0.71) than by less active participants (M =

3.7, SD = 0.68).

Table 13

| Source | Type III Sum of Squares | df | Mean Square | F | р |
|---|----------------------------|-----|-------------|---------|--------|
| Corrected Model | 8.31 | 7 | 1.19 | 2.59 | .015* |
| Intercept | 2448.91 | 1 | 2448.91 | 5343.82 | <.001* |
| Athlete | 2.93 | 1 | 2.93 | 6.4 | .012* |
| Primes | 0.04 | 1 | 0.04 | 0.08 | .784 |
| Level of Physical activity | 1.44 | 1 | 1.44 | 3.14 | .078** |
| Athlete * Primes | 2.05 | 1 | 2.05 | 4.47 | .036* |
| Athlete * Level of Physical activity | 0.25 | 1 | 0.25 | 0.54 | .465 |
| Primes * Level of Physical activity | 0.99 | 1 | 0.99 | 2.16 | .144 |
| Error | 74.7 | 163 | 0.46 | | |
| Total | 2544.9 | 171 | | | |
| Corrected total | 83 | 170 | | | |

Effects of the Independent Variables on Self-efficacy

Note. $R^2 = .1$ (Adjusted $R^2 = .06$) * p < .05 is considered significant.

** $p \ge .05 \& p < .1$ is considered marginally significant.

Figure 9

Interaction Effect of Primes and Athlete on Self-efficacy



4.8 Hypotheses

The analysis showed that not all hypotheses could be confirmed (table 14). Firstly, hypothesis one can be confirmed because the assumed positive effect of professional athletes on CrossFit motivation (i.e., self-efficacy) was present in the data (t(163) = 1.69, p = .09). Consequently, hypothesis two needs to be rejected. There it was expected that the amateur athlete would stimulate motivation. The third and fourth hypotheses, claiming effects of the conceptual primes, cannot be confirmed because no significant main effects were found. However, the prime does have a significant effect once it interacts with the athlete (t(163) = 1.13, p = .26). Self-efficacy is reported higher when primes are presented in the amateur category. When primes are absent, the values measured for self-efficacy are almost equal. Therefore, the fifth hypothesis can be supported. The last two hypotheses (H₆ and H₇) – aiming at the moderation effects of "*level of physical activity*" – cannot be confirmed.

Unexpectedly, there is evidence suggesting great impacts from that variable on all dependent variables. It becomes apparent in the data that all dependent variables are significantly higher in the more active condition.

Ultimately, the results suggest the conceptual model in figure 10. The dependent variables are clustered according to their meaning, i.e., related to CrossFit or exercise in general, and no direct effect of priming can be illustrated. Furthermore, only the level of physical activity turned out to be a significant predictor of motivation.

Table 14

Results of Hypothesis Testing

| Hypothesis | Result |
|--|-----------|
| H ₁ : <i>Professional athletes</i> increase motivation to do CrossFit better (as opposed to amateur athletes). | Confirmed |
| H ₂ : <i>Amateur athletes</i> increase motivation to work out better (as opposed to professional athletes). | Rejected |
| H ₃ : <i>Priming</i> exercise behavior increases motivation to work out better (as opposed to not priming exercise behavior). | Rejected |
| H ₄ : <i>Priming</i> exercise behavior increases motivation to do <i>CrossFit better</i> (as opposed to not priming exercise behavior). | Rejected |
| H ₅ : The effect of <i>athlete</i> on self-efficacy and thus motivation will be increased by the presence of <i>primes</i> . | Confirmed |
| H ₆ : The effect of <i>athlete</i> on <i>motivation</i> will be increased by high <i>levels of physical activity</i> (as opposed to low levels of physical activity). | Rejected |
| H ₇ : The effect of <i>primes</i> on motivation will be increased by high <i>levels of physical activity</i> (as opposed to low levels of physical activity). | Rejected |

Figure 10

Conceptual Model Derived from Data Analysis Results



5. Discussion

This study explored the extent to which starring a professional athlete and priming influences people's motivation to exercise and do CrossFit and the role of the individual level of physical activity in these relationships. It was expected that athlete documentaries would increase participants' motivation to exercise and do CrossFit. In addition, their individual levels of physical activity would further influence this effect. Further, the relationship would be strengthened by the presence of conceptual primes.

The analysis revealed a significant interaction effect of the type of athlete and primes. Above this, the data also showed unexpected relationships between the participants' physical activity and their scores on the dependent variables. Interestingly, level of physical activity proved to be a good predictor of moderation. In the following, the findings will be further interpreted and related to existing research.

5.1 Interpretations

In this study, motivation was expressed with six attributes: attitude and enjoyment, social support and identification, health, mastery, knowledge, and self-efficacy. The findings show that the unedited video of the professional athlete is a good stimulator of self-efficacy beliefs and attitude, and enjoyment. Because no moderation effect of level of physical activity was found in these relationships, it is suggested that the effect is valid for the broad population. The presence of primes makes these relationships redundant.

Self-efficacy

The data shows a positive relationship of the manipulated video of the amateur athlete on self-efficacy. Because there is no direct effect of the primes on any of the dependent variables, it can be concluded that these are useful in enhancing motivation but only in the amateur condition. Ultimately, both conditions were successful in enhancing motivation. This result is in line with the trickle-down effect. It describes how people get inspired to participate in a sport just from watching (Weed, 2009, as cited in Wicker & Sotiriadou, 2013). Funk and James (2001) point out that a competence gap might hinder the trickle-down effect. The current findings suggest that the participants did not perceive this gap because they felt connected to André Houdet (professional) and George Lopez (amateur). This connection (i.e., relatability) is crucial to exercise motivation (Raggat et al., 2008). In this study, the attitude was stimulated through the personal story of Houdet and the primes in the video of Lopez. The difference between the two groups might stem from Lopez's personal story being somewhat unique. Not many people and certainly only an infinitesimal percentage of participants in this study have experienced massive weight loss.

Impact of past behavior on the present

Although there was no specific hypothesis expecting a direct influence of the individual levels of physical activity on motivation, the theory does suggest that more active people have greater positive attitudes towards exercise (for reference: Markland et al., 2015). The results confirmed this. More active participants indicated higher levels of all measured attributes of motivation. Interestingly, the knowledge variable was also higher, indicating that more active participants are also more knowledgeable about CrossFit. Hence, the findings show that more active participants are more likely to work out and do CrossFit than those who are generally more sedentary.

Daniel Kahneman, psychologist and Nobel-prize winner, presented a theory of the two selves: the experiencing self and the remembering self (2011). Together with his colleague, Donald Redelmeier, he experimented on the real-time and retrospective (i.e., remembering) evaluations of pain during a medical procedure. The answers were given every 60 seconds on scales ranging from zero (no pain) to 10 (extreme pain). Patient A's treatment took eight minutes, and he reported pain of seven and eight. The treatment of patient B was much longer. His procedure took 24 minutes. At first, the reported pain was rising from one to eight within the first ten minutes. However, after that, the experienced pain was evaluated lower. Naturally, one would expect that the overall experience of patient B would be worse than the one of the first patient. However, patient A retrospectively reported more severe pain than patient B (Redelmeier & Kahneman, 1996). The scientists argue that the memories of the procedure reflect on the intensity of the pain during the worst moment and the final moment. This indicates that the actual experience might differ from the memory of it (Zajchowski, 2016). Thus, the remembering self appears to overshadow the voiceless experiencing self.

Further, the memory of a past event can strongly influence the expectations and, therefore, experience of a future event. Kahneman (2010) explains that people think of their future as anticipated memories. Consequently, attitudes towards events are guided by memories of similar events in the past. These findings relate to the present study as follows. The attitude generally active people have towards exercise might have influenced their scores on the motivation measured in the experiment. They had positive experiences with workouts and thought of those while filling the survey. These results are in line with the assumption that past behavior would be a good predictor of future behavior. Boudreau and Godin (2007) studied obese people's intention to be physically active. They argue that past behavior would be a relevant addition to the theory of planned behavior (TPB) in this context. Leske et al. (2017) studied the TPB in a similar setting and found the same significant impact of past behavior.

Feelings of social support and identification

Interestingly, feelings of social support and identification were also impacted by the level of physical activity. This indicates that generally active students would feel more comfortable in the fitness space and could build faster connections with fellow athletes. The underlying effect can be attributed to social identity theory. The theory suggests that individuals classify themselves as belonging to various groups (Tajfel, 1978). Membership to a group determines feelings of in-grouping vs. out-grouping. Trepte and Loy (2017) describe that positive self-identity, derived from constant comparisons and evaluations of the groups, is rewarded with improved self-esteem. Furthermore, Turner (1985, as cited in Chatzisarantis et al., 2009) describes that individuals tend to adopt attitudes, intentions, and behaviors demonstrated by other members of their in-groups.

Chatzisarantis et al. (2009) combined constructs from self-determination theory, social-identity theory, and the theory of planned behavior (TPB) to study their effects on attitudes, intentions, and health behavior. 231 students filled self-reported questionnaires, and the results suggest that young people's physical activity attitudes and behaviors were positively impacted when they identify strongly with the group. Their results provide evidence that identification is a strong determinant. Therefore, they argue that social identity should be included in the TPB. Interestingly, in the present study, motivational attributes were also stimulated when people were not or lightly physically active. This is described by the fact that the videos were motivational no matter the individuals' physical activity. This can be described by the theory as mentioned earlier by Kahneman. The people probably had positive experiences with physical activity in the past (e.g., in their childhood), which influenced their attitudes in the present. This indicates that although they are not active now, they might be willing to be given the right circumstances.

Addressing the research questions

In line with the results and their interpretations, the research question can be answered. The findings give evidence to suggest that starring a professional athlete raises motivation to work out and do CrossFit. On the other hand, priming is only successful when the video's protagonist is an amateur athlete. Therefore, it can be concluded that both videos can be successful, and CrossFit takes a good approach to expose the audience to both types of athletes. Nonetheless, to improve people's motivation to work out, CrossFit could look into including priming into their advertisement.

5.2 Implications

Theoretical implications

The present research tested established techniques of behavioral change and marketing communication. A model utilizing athlete endorsements and conceptual priming was used to increase motivation to exercise and do CrossFit. The determining factors of motivation were attitude, enjoyment, social support, identification, knowledge, health, mastery, and self-efficacy. Scholars reviewed in the theoretical framework suggested that people are motivated by watching celebrities work out (e.g., Sokolova & Perez, 2021). This expectation was partially fulfilled in the present study. Moreover, the results expand on that theory and suggest the effects also occur in a virtual setting, though the participants only saw videos of the athletes. Therefore, it would be insightful to perform a similar study with a live audience and a virtual audience. Also, the survey should be longer and centered around just a few dependent variables. This would give more detailed results.

The results also showed that priming is successful in increasing self-efficacy beliefs, attitude, and enjoyment. Interestingly, this was only the case for the group that saw the video of the amateur athlete. No theory can explain this phenomenon yet. Therefore, this can be the goal of a future study because scholars suggest that self-efficacy is especially necessary for long-term physical activity maintenance (Nigg et al., 2008). It would be useful to divide the audience into a control group and two experimental groups. Therefore, data could be collected on the motivation people have that did not see any athlete workout. The same could be achieved by a within-subjects design instead of a between-subjects design. There, the

baseline motivation of the people could be measured before exposing them to an amateur and professional athlete. In that case, it would be sensible to use the same person as the protagonist. The athlete could pretend to be an amateur and talk about their experience at the beginning of their career. This would result in more generalizability of the data.

St Quinton (2017) explained how self-efficacy could be primed. The present study supports that theory. However, that dependent variable was only measured with a few items. Consequently, it would make sense to repeat the study but focus on self-efficacy only. The same is true for Banting et al. (2015) and Fisher et al. (2015), who studied priming effects on enjoyment. The present data supports their theory, but more elaborate studies would be beneficial. An experiment in a more extended setting where researchers could test how motivation is put into practice would make sense. For example, the subjects of the experiment could be athletes. It would be fascinating to see how relatable figures impact their motivation. Moreover, it would also be interesting to perform the current study with a smaller sample but qualitatively. The initial pretest gave many insights into the motivational factors of the videos. What drives people to work out? What motivated them about CrossFit? What do they find concerning about the sport? Unfortunately, these are questions that cannot be answered on a scale.

Practical implications

The study focused on behavioral change but employed techniques of marketing communications. Therefore, practical implications are mainly related to that field. The videos used in the study were promotional videos of the CrossFit YouTube channel. Although they were used as examples, specific recommendations can be made based on the present data. The pretest was very insightful because it gave direct results. The participants spoke about the repetitiveness of the stories and how they do not want to hear about the suffering anymore. One participant made it very clear that they expected a call for donations after watching the first half of the professional athlete's video. Arguably, this is not the goal of the documentaries. Therefore, CrossFit should inspect whether their videos communicate the desired message. This is also true for other brands, like Nike and Adidas. All of them publish athlete videos with touching stories.

Arguably, conceptual priming turned out to be successful at provoking some aspects of motivation. Therefore, it would be useful to include those primes into the videos when published to motivate people to work out and do CrossFit. They give them feelings of social support and make the athletes more relatable. Who does not want to join a gym where they feel welcome right away?

5.3 Limitations

Every research has certain limitations, and no study can examine every aspect of a topic. A bachelor thesis during a global pandemic is undoubtedly no exception. In the following, these limitations will be explained, and their consequences discussed.

COVID-19

The Coronavirus is the most prominent topic of conversation to date. The crisis was also relevant to this study because it could only be performed online. It was unavoidable to employ snowball sampling to recruit participants because no in-person contact was possible. The only offline research performed in this study was during the pretest. However, the focus group was heterogeneous due to the contact restrictions. A homogeneous group might have led to different decisions regarding the choice of videos. Furthermore, results might not be generalizable because the main study participants were restricted in their daily lives and could not perform their usual amount of physical activity. Therefore, their scores on *level of physical activity* might have been lower than before the pandemic. Despite these limiting conditions, the sample was very homogeneous and gave valuable data.

CrossFit

There is only little communication research into CrossFit. The athlete documentaries were also not examined in many studies. Therefore, the theory presented in the theoretical framework could not be centered around CrossFit solely. Indeed, the movement was mainly used as an example. Nonetheless, it would be interesting to see whether there are attributes of motivation that were not discussed here because they were not examined in previous studies yet. Moreover, CrossFit is somewhat controversial. Many complicated movements are executed at high speed, and some technique gets lost. Especially bodybuilding athletes judge the sport prematurely because they only know the extreme cases. Therefore, prejudice cannot be excluded in this study. This limitation also illustrates the need for studies like the present one to fill the research gap. Further, more exposure to CrossFit will lead to more knowledge on the topic and less prejudice.

Experiment

The sample is more educated and younger than the general population. This is not uncommon in bachelor theses because of the sampling method. Students usually ask their peers to fill out their surveys. This is why the sampling method is not random, and the sample might not represent the general population. However, the collected data would be handy for estimating the exercise motivation in university students.

The study was performed on computers and smartphones. Some respondents reported issues with the survey tool. The videos did not load in a few cases, and people just moved on to the questions. In other cases, they could not go back to the previous page to revisit a question. Other than technical errors, people might have also experienced language barriers. The videos and survey were in English. However, the first language of most respondents was not English. The original videos are not identical. They star two different athletes with different stories performing different workouts. To ensure more generalizability of the data, it would be useful to perform that experiment where the videos are identical besides the level of proficiency of the protagonist. Furthermore, the videos were edited by a laywoman. The primes are not perfect and somewhat exaggerated for real life. Consequently, some participants might be impacted by the quality of the primes.

Data and statistics

The survey was comparatively short. This was done to keep the barrier for participation low. Nonetheless, this resulted in rather superficial results. Research suggests that age is a crucial factor in studies like this. For example, older people need to be reassured of their abilities to perform some movements. The present study did not examine this. Furthermore, people might have been triggered by the personal stories of the athletes. Both videos address sensitive topics and, there is no insight whether the participants had similar experiences and how they handled them.

Lastly, the analysis showed only two significant values for Wilk's lambda, and these were also relatively high. This measure indicates whether there were significant differences in the means of the conditions. Therefore, the function does separate the cases among groups well and other testes were redundant. Nonetheless, F-tests and t-tests were performed to analyze the relationships. The analysis revealed significant F-values but not t-values. When the assumptions of nonparametric tests were performed, it revealed that homoscedasticity was violated. This means that the size of the error term differs across values of the independent variables. This problem was not solved in the data analysis.

5.4 Conclusions

This research aimed to test established techniques of behavioral change in the context of sustainable exercise motivation. The goal was to evaluate the effectiveness of athlete documentaries published on CrossFit's social media channels and inspect whether conceptual priming can be beneficial in this case to motivate exercise behavior. Based on an experiment examining the effects of celebrity endorsements and conceptual priming, it can be concluded that professional athletes are successful at increasing workout motivation. However, priming was only found to be effective when the starring athlete is an amateur. The level of physical activity does not influence these relationships. Nevertheless, the results indicate that the latter was the most important determinant of motivation.

The study was a between-subjects experiment. A focus group chose two videos from a selection of athlete documentaries. These videos were edited to present conceptual primes. Subjects were asked to watch one video and fill a survey measuring various attributes of motivation. While the length and completeness of the survey limit the generalizability of the results, they also add to the understanding of the effects of prior behavior on intention. The research illustrates that more active people are also more motivated by CrossFit marketing videos and are more likely to engage in different types of physical activity.

Based on these conclusions, marketers should continue creating athlete documentaries starring professionals. However, they should consider adding conceptual primes to their videos of amateur athletes. The public seems to feel more connected to these protagonists when they are told so straightforwardly. Further, this would also enhance their self-efficacy beliefs. Moreover, these insights are valuable for addressing the current global obesity crisis. Not surprisingly, exercise videos will not solve all the weight problems we face today, and social media is known to portray unrealistic body expectations. However, because the videos

can be effective, we should use the new resources to help a few of the 1.9 billion overweight people find their way back to health.

6. References

- Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. Prentice Hall.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In *Action control* (pp. 11-39). Springer, Berlin, Heidelberg. <u>https://doi.org/10.1007/978-3-642-69746-3_2</u>
- Ajzen, I. (1989). Attitudes, personality, and behavior (mapping social psychology series). Dorsey Press. Chicago
- Ajzen, I. (1991). The theory of planned behavior. Organizational behavior and human decision processes, 50(2), 179-211. <u>https://doi.org/10.1016/0749-5978(91)90020-</u> <u>T</u>
- Bandura, A. (1990). Perceived self-efficacy in the exercise of personal agency. Journal of Applied Sport Psychology, 2(2), 128–163. <u>https://doi.org/10.1080/10413209008406426</u>
- Banting, L. K., Dimmock, J. A., & Grove, J. R. (2011). The impact of automatically activated motivation on Exercise-Related outcomes. *Journal of Sport and Exercise Psychology*, 33(4), 569–585. <u>https://doi.org/10.1123/jsep.33.4.569</u>
- Barfield, J. P., & Anderson, A. (2014). Effect of Crossfit on health related physical fitness: A pilot study. *Journal of Sport and Human Performance*, 2(1), 23–28. <u>https://doi.org/10.12922/jshp.0033.2014</u>
- Bermeitinger, C. (2015). Priming. Advances in Psychology, Mental Health, and Behavioral Studies, 16–60. <u>https://doi.org/10.4018/978-1-4666-6599-6.ch002</u>

- Bluemke, M., Brand, R., Schweizer, G., & Kahlert, D. (2010). Exercise might be good for me, but i don't feel good about it: Do automatic associations predict exercise behavior? *Journal of Sport and Exercise Psychology*, *32*(2), 137–153.
 <u>https://doi.org/10.1123/jsep.32.2.137</u>
- Boudreau, F., & Godin, G. (2007). Using the Theory of Planned Behaviour to predict exercise intention in obese adults. *The Canadian journal of nursing research* = *Revue canadienne de recherche en sciences infirmieres, 39*(2), 112–125.
- Bruner, G. C., Hensel, P. J., & American Marketing Association. (1992). *Marketing scales handbook*. American Marketing Association.
- Carlson, B. D., & Donavan, D. T. (2008). Concerning the effect of athlete endorsements on brand and team related intentions. *Sport Marketing Quarterly, 17*, 154–162. <u>https://www.researchgate.net/profile/Todd-</u> <u>Donavan/publication/288957113_Concerning_the_effect_of_athlete_endorsement</u> <u>s_on_brand_and_team-</u> <u>related_intentions/links/5e1e036a92851c3cbe6528d3/Concerning-the-effect-of-</u> athlete-endorsements-on-brand-and-team-related-intentions.pdf
- Chatzisarantis, N. L. D., Hagger, M. S., Wang, C. K. J., & Thøgersen-Ntoumani, C. (2009).
 The effects of social identity and perceived autonomy support on health behaviour within the theory of planned behaviour. *Current Psychology*, 28(1), 55–68.
 https://doi.org/10.1007/s12144-009-9043-4
- Chaudhary, K., & Dhillon, M. (2021). "# FITNESS": Impact of instagram on exercise adherence and self-efficacy. *International Journal of Sport and Exercise Psychology*, 1–19. <u>https://doi.org/10.1080/1612197x.2020.1869804</u>

- Claudino, J. G., Gabbett, T. J., Bourgeois, F., de Sá Souza, H., Miranda, R. C., Mezêncio, B.,
 ... & Serrão, J. C. (2018). CrossFit overview: systematic review and metaanalysis. *Sports medicine-open*, 4(1), 1-14. https://doi.org/10.1186/s40798-018-0124-5
- Conn, V. S. (1998). Older women: Social cognitive theory correlates of health behavior. *Women & Health, 26*(3), 71–85. <u>https://doi.org/10.1300/j013v26n03_05</u>
- *Coronavirus death toll and trends*. (n.d.). Worldometer. Retrieved June 20, 2021, from https://www.worldometers.info/coronavirus/coronavirus-death-toll/
- Craig, C. L., Marshall, A. L., Sjöström, M., Bauman, A. E., Booth, M. L., Ainsworth, B. E., Pratt, M., Ekelund, U., Yngve, A., Salis, J. F., & Oja, P. (2003). International physical activity questionnaire: 12-Country reliability and validity. *Medicine & Science in Sports & Exercise*, 35(8), 1381–1395. <u>https://doi.org/10.1249/01.mss.0000078924.61453.fb</u>
- Defining CrossFit, Part 1: Functional Movements. (n.d.). CrossFit. Retrieved April 23, 2021, from <u>https://www.crossfit.com/essentials/defining-crossfit-part-1-functional-</u> <u>movements</u>
- Dicker, D., Alfadda, A. A., Coutinho, W., Cuevas, A., Halford, J. C., Hughes, C. A., Iwabu,
 M., Kang, J. H., Nawar, R., Reynoso, R., Rhee, N., Rigas, G., Salvador, J.,
 Sbraccia, P., Vázquez-Velázquez, V., & Caterson, I. D. (2021). Patient motivation
 to lose weight: Importance of healthcare professional support, goals and selfefficacy. *European Journal of Internal Medicine*. Published.
 https://doi.org/10.1016/j.ejim.2021.01.019

- Escalas, J. E., & Bettman, J. R. (2005). Self-construal, reference groups, and brand meaning. *Journal of consumer research*, 32(3), 378-389. <u>https://doi.org/10.1086/497549</u>
- Fisher, G., Brown, A. W., Bohan Brown, M. M., Alcorn, A., Noles, C., Winwood, L., Resuehr, H., George, B., Jeansonne, M. M., & Allison, D. B. (2015). High intensity interval- vs moderate intensity- training for improving cardiometabolic health in overweight or obese males: A randomized controlled trial. PLOS ONE, 10(10), e0138853. https://doi.org/10.1371/journal.pone.0138853
- Fisher, J., Sales, A., Carlson, L., & Steele, J. (2017). A comparison of the motivational factors between CrossFit participants and other resistance exercise modalities: a pilot study. *The Journal of sports medicine and physical fitness*, 57(9), 1227– 1234. <u>https://doi.org/10.23736/S0022-4707.16.06434-3</u>
- Food and Agriculture Organization of the United Nations. (2019). *The state of food security and nutrition in the world*. <u>http://www.fao.org/3/ca5162en/ca5162en.pdf</u>
- Funk, D. C., & James, J. (2001). The psychological continuum model: A conceptual framework for understanding an individual's psychological connection to sport. *Sport Management Review*, 4(2), 119–150. <u>https://doi.org/10.1016/s1441-</u> 3523(01)70072-1
- Gillis, A. J. (1994). Determinants of health-promoting lifestyles in adolescent females. Canadian Journal of Nursing Research Archive, 13-28. <u>https://cjnr.archive.mcgill.ca/article/view/1225</u>
- Godin, G., & Kok, G. (1996). The theory of planned behavior: a review of its applications to health-related behaviors. *American journal of health promotion*, 11(2), 87-98. <u>https://doi.org/10.4278/0890-1171-11.2.87</u>

Gürhan-Canli, Z. (2003). The effect of expected variability of product quality and attribute uniqueness on family brand evaluations. *Journal of Consumer Research*, 30(1), 105-114. <u>https://doi.org/10.1086/374695</u>

Hagger, M. S., Chatzisarantis, N. L., & Biddle, S. J. (2002). A Meta-Analytic review of the theories of reasoned action and planned behavior in physical activity: Predictive validity and the contribution of additional variables. *Journal of Sport and Exercise Psychology*, 24(1), 3–32. <u>https://doi.org/10.1123/jsep.24.1.3</u>

Ipsos. (2018). *Global Views On Healthcare – 2018*. Bloomberg. <u>https://www.ipsos.com/sites/default/files/ct/news/documents/2018-</u> <u>07/global_views_on_healthcare_2018_-_graphic_report_0.pdf</u>

- Iso-Ahola, S. E., & Miller, M. W. (2016). Contextual priming of a complex behavior: Exercise. *Psychology of Consciousness: Theory, Research, and Practice, 3*(3), 258–269. <u>https://doi.org/10.1037/cns0000078</u>
- Kahneman, D. (2010, March 1). *The riddle of experience vs. memory* [Video]. TED Talks. https://www.ted.com/talks/daniel_kahneman_the_riddle_of_experience_vs_memo ry/transcript?language=en

Kahneman, D. (2011). Thinking, fast and slow. New York, NY: Farrar, Strauss, Giroux.

Kroll, T., Kehn, M., Ho, P. S., & Groah, S. (2007). The SCI exercise self-efficacy scale (ESES): Development and psychometric properties. *International Journal of Behavioral Nutrition and Physical Activity*, 4(1), 34. <u>https://doi.org/10.1186/1479-5868-4-34</u>

Lee, S. Y. (2017). Service quality of sports centers and customer loyalty. Asia Pacific Journal of Marketing and Logistics, 29(4), 870–879. <u>https://doi.org/10.1108/apjml-10-2016-0191</u>

- Leske, S., Strodl, E., & Hou, X. Y. (2017). Predictors of dieting and non-dieting approaches among adults living in Australia. *BMC Public Health*, 17(1). <u>https://doi.org/10.1186/s12889-017-4131-0</u>
- Markland, D., Hall, C. R., Duncan, L. R., & Simatovic, J. (2015). The effects of an imagery intervention on implicit and explicit exercise attitudes. *Psychology of Sport and Exercise*, 17, 24–31. <u>https://doi.org/10.1016/j.psychsport.2014.11.007</u>
- McEachan, R. R. C., Conner, M., Taylor, N. J., & Lawton, R. J. (2011). Prospective prediction of health-related behaviours with the theory of planned behaviour: A meta-analysis. *Health psychology review*, 5(2), 97-144. <u>https://doi.org/10.1080/17437199.2010.521684</u>
- Nedungadi, P. (1990). Recall and consumer consideration sets: Influencing choice without altering brand evaluations. *Journal of Consumer Research*, *17*(3), 263. https://doi.org/10.1086/208556
- Nigg, C. R., Borrelli, B., Maddock, J., & Dishman, R. K. (2008). A theory of physical activity maintenance. *Applied Psychology*, 57(4), 544–560. https://doi.org/10.1111/j.1464-0597.2008.00343.x
- Norman, P. A. U. L., & Conner, P. (2005). Predicting health behaviour: a social cognition approach. M. Conner, & P. Norman.(2nd Ed.), Predicting health behaviour, 1-27. <u>https://edc.iums.ac.ir/files/hshe-</u> <u>soh/files/predicting Health beh avior(1).pdf#page=18</u>

Pickett, A. C., Goldsmith, A., Damon, Z., & Walker, M. (2016). The influence of sense of community on the perceived value of physical activity: A Cross-Context analysis. *Leisure Sciences*, 38(3), 199–214. https://doi.org/10.1080/01490400.2015.1090360

- Pinkleton, B. E., Um, N. H., & Austin, E. W. (2002). An exploration of the effects of negative political advertising on political decision making. *Journal of Advertising*, 31(1), 13-25. <u>https://doi.org/10.1080/00913367.2002.10673657</u>
- Potgieter, S. (2013). Sport nutrition: A review of the latest guidelines for exercise and sport nutrition from the American College of Sport Nutrition, the International Olympic Committee and the International Society for Sports Nutrition. *South African journal of clinical nutrition, 26*(1), 6-16.
 https://doi.org/10.1080/16070658.2013.11734434
- Potwarka, L. R., Drewery, D., Snelgrove, R., Havitz, M. E., & Mair, H. (2017). Modeling a demonstration effect: The case of spectators' experiences at 2015 pan am games' track cycling competitions. *Leisure Sciences*, 40(6), 578–600.
 https://doi.org/10.1080/01490400.2017.1325796
- Prentice-Dunn, S., & Rogers, R. W. (1986). Protection motivation theory and preventive health: Beyond the health belief model. *Health Education Research*, 1(3), 153– 161. <u>https://doi.org/10.1093/her/1.3.153</u>
- Raggatt, M., Wright, C. J. C., Carrotte, E., Jenkinson, R., Mulgrew, K., Prichard, I., & Lim,M. S. C. (2018). "I aspire to look and feel healthy like the posts convey":Engagement with fitness inspiration on social media and perceptions of its

influence on health and wellbeing. *BMC Public Health*, 18(1), 1–11. https://doi.org/10.1186/s12889-018-5930-7

- Ramchandani, G., Kokolakakis, T., & Coleman, R. (2014). Factors influencing the inspirational effect of major sports events on audience sport participation behaviour. *World Leisure Journal*, *56*(3), 220–235. https://doi.org/10.1080/16078055.2014.938296
- Rebar, A. L., Dimmock, J. A., Jackson, B., Rhodes, R. E., Kates, A., Starling, J., & Vandelanotte, C. (2016). A systematic review of the effects of non-conscious regulatory processes in physical activity. *Health Psychology Review*, 10(4), 395–407. <u>https://doi.org/10.1080/17437199.2016.1183505</u>
- Redelmeier, D. A., & Kahneman, D. (1996b). Patients' memories of painful medical treatments: Real-time and retrospective evaluations of two minimally invasive procedures. *Pain*, 66(1), 3–8. https://doi.org/10.1016/0304-3959(96)02994-6
- Reed, A. (2004). Activating the self-importance of consumer selves: Exploring identity salience effects on judgments. *Journal of consumer research*, 31(2), 286-295. <u>https://doi.org/10.1086/422108</u>
- Rodrigues, F., Teixeira, D., Neiva, H., Cid, L., & Monteiro, D. (2020). Understanding exercise adherence: The predictability of past experience and motivational determinants. *Brain Sciences*, 10(2), 98. <u>https://doi.org/10.3390/brainsci10020098</u>
- Roselle, M. (2016, October 27). *CrossFit: Overcoming the intimidation*. BoxLife Magazine. https://boxlifemagazine.com/crossfit-overcoming-the-intimidation/

Rosenstock, I. M. (1990). The health belief model: Explaining health behavior through expectancies. In K. Glanz & F. M. Lewis (Eds.), *Health Behavior and Health Education: Theory, Research, and Practice.* (pp. 39–62). Jossey-Bass, San Francisco.

- Ryan, R., Frederick, C., Lepes, D., Rubio, N., and Sheldon, K. (1997). Intrinsic motivation and exercise adeherence. *International Journal of Sport Psychology*, 28, 335-254. https://www.academia.edu/download/41196589/54f144570cf2b36214ab9381.pdf2 0160115-19908-6n6kf3.pdf
- Samadzadeh, M., Abbasi, M., & Shahbazzadegan, B. (2011). Comparison of sensation seeking and self-esteem with mental health in professional and amateur athletes, and non- athletes. *Procedia - Social and Behavioral Sciences*, 15, 1942–1950. <u>https://doi.org/10.1016/j.sbspro.2011.04.032</u>
- Sánchez-Torres, J. A., Arroyo-Cañada, F. J., Argila-Irurita, A., & Rivera Gonzalez, J. A. (2020). Attitude towards sport practice: What makes an individual continued practice of sport? *Trends in Psychology*. <u>https://doi.org/10.1007/s43076-020-00049-9</u>

Schütt, Z., & Hsu, N. (2012). Psychology of Priming. Macmillan Publishers.

- Schwarzer, R. (1998). Optimism, goals, and threats: How to conceptualize self-regulatory processes in the adoption and maintenance of health behaviors. *Psychology & Health, 13*(4), 759–766. https://doi.org/10.1080/08870449808407430
- Sheeran, P., Gollwitzer, P. M., & Bargh, J. A. (2013). Nonconscious processes and health. *Health Psychology*, *32*(5), 460. <u>https://doi.org/10.1037/a0029203</u>

Simpson, D., Prewitt-White, T. R., Feito, Y., Giusti, J., & Shuda, R. (2017). Challenge, commitment, community, and empowerment: Factors that promote the adoption of CrossFit as a training program. *The Sport Journal, 22*, 1–14. <u>http://thesportjournal.org/article/challenge-commitment-community-andempowerment-factors-that-promote-the-adoption-of-crossfit-as-a-trainingprogram/</u>

- Sniehotta, F. F., Presseau, J., & Araújo-Soares, V. (2014). Time to retire the theory of planned behaviour. *Health psychology review*, 8(1), 1-7. <u>https://doi.org/10.1080/17437199.2013.869710</u>
- Social and cultural factors affecting participation. (n.d.). BBC Bitesize. Retrieved April 26, 2021, from <u>https://www.bbc.co.uk/bitesize/guides/zt34jxs/revision/4</u>
- Sokolova, K., & Perez, C. (2021). You follow fitness influencers on YouTube. But do you actually exercise? How parasocial relationships, and watching fitness influencers, relate to intentions to exercise. *Journal of Retailing and Consumer Services, 58*, 102276. <u>https://doi.org/10.1016/j.jretconser.2020.102276</u>
- St Quinton, T. (2017). Promoting physical activity through priming the content of motivation. *Frontiers in Psychology, 8*, 1–5. <u>https://doi.org/10.3389/fpsyg.2017.01509</u>

Strack, F., & Deutsch, R. (2004). Reflective and Impulsive Determinants of Social Behavior. *Personality and Social Psychology Review*, 8(3), 220–247. <u>https://doi.org/10.1207/s15327957pspr0803_1</u>

Sutton, S. (1998). Predicting and explaining intentions and behavior: How well are we doing? Journal of Applied Social Psychology, 28(15), 1317–1338. https://doi.org/10.1111/j.1559-1816.1998.tb01679.x

- Taber, K. S. (2017). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*, 48(6), 1273–1296. <u>https://doi.org/10.1007/s11165-016-9602-2</u>
- Tajfel, H. E. (1978). *Differentiation between social groups: Studies in the social psychology* of intergroup relations. Academic Press.
- Tezci, E., Sezer, F., Gurgan, U., & Aktan, S. (2015). A study on social support and motivation. *The Anthropologist*, 22(2), 284–292. <u>https://doi.org/10.1080/09720073.2015.11891879</u>

Till, B. D., & Busler, M. (2000). The Match-Up hypothesis: Physical attractiveness, expertise, and the role of fit on brand attitude, purchase intent and brand beliefs. *Journal of Advertising*, 29(3), 1–13. <u>https://doi.org/10.1080/00913367.2000.10673613</u>

- Trafimow, D. (2015). The sufficiency assumption of the reasoned approach to action. *Cogent Psychology*, 2(1), 1014239. <u>https://doi.org/10.1080/23311908.2015.1014239</u>
- Trepte, S., & Loy, L. S. (2017). Social identity theory and Self-Categorization theory. The International Encyclopedia of Media Effects, 1–13. <u>https://doi.org/10.1002/9781118783764.wbieme0088</u>
- Turner, J. C. (1985). Social categorization and the self concept: A social cognitive theory of group behavior. In In E. J. Lawler (Ed.), *Advances in group processes: theory and research* (vol 2 (pp. 77–122). Greenwich: JAI.
- Vieno, A., Santinello, M., Pastore, M., & Perkins, D. D. (2007). Social support, sense of community in school, and self-efficacy as resources during early adolescence: an

integrative model. *American Journal of Community Psychology*, *39*(1–2), 177–190. <u>https://doi.org/10.1007/s10464-007-9095-2</u>

Wallston, K. (2001b). Control beliefs: Health perspectives. In N. J. Smelser & P. B. Baltes (Eds.), *International encyclopedia of the social & behavioral sciences* (pp. 2724–2726). Pergamon. <u>https://doi.org/10.1016/B0-08-043076-7/03799-2</u>

Warburton, D. E. (2006). Health benefits of physical activity: The evidence. *Canadian Medical Association Journal*, 174(6), 801–809.
 https://doi.org/10.1503/cmaj.051351

Warner, S., & Dixon, M. A. (2011). Understanding sense of community from the athlete's perspective. *Journal of Sport Management*, 25(3), 257-271. <u>https://doi.org/10.1123/jsm.25.3.257</u>

Weed, M. (2009). The potential of the demonstration effect to grow and sustain participation in sport. Canterbury Christ Church University: Centre for Sport, Physical Education & Activity Research (SPEAR).

WHO. (2020, November 26). Physical activity. World Health Organization. https://www.who.int/news-room/fact-sheets/detail/physical-activity

Wicker, P., & Sotiriadou, P. (2013). The trickle-down effect: What population groups benefit from hosting major sport events? *International Journal of Event Management Research*, 8(2), 25–41.
<u>https://www.researchgate.net/publication/271130968_The_trickle-down_effect_What_population_groups_benefit_from_hosting_major_sport_event §</u>
Zach, S., Bar-Eli, M., Morris, T., & Moore, M. (2012). Measuring motivation for physical activity: an exploratory study of PALMS-the physical activity and leisure motivation scale. *Athletic Insight, 4*(2), 141-152.
<u>https://www.researchgate.net/publication/272831747_Measuring_motivation_for_physical_activity_An_exploratory_study_of_PALMS_-</u>
<u>the_physical_activity_and_leisure_motivation_scale</u>

Zajchowski, C. A. B., Schwab, K. A., & Dustin, D. L. (2016). The experiencing self and the remembering self: Implications for leisure science. *Leisure Sciences*, 39(6), 561– 568. <u>https://doi.org/10.1080/01490400.2016.1209140</u>

7. Appendix A

Pretest

Table A1

Demographics Questionnaire

What is your age?

What is your gender identity?

What is your nationality?

How physically active are you?

Notes

General

- All participants agreed on the terms
- All participants signed the informed consent forms
- Possible questions:
 - What did you think of the videos?
 - What did you like / dislike?
 - What are your thoughts on the protagonist?
 - Were they motivating to you?
 - Which one is more motivating?

Professional athletes

- BW is better because it is focused on the sport and not on the person or trauma (AH)
- (AH) Trauma is too distracting
- (AH) is too similar to videos promoting donations

- As a woman is BW more relatable \rightarrow limitation/moderator gender
- P1 thinks the opposite → in sport promotion they only show the sport itself;
 the emotional aspect and motivation to do the sport is missing (BW)
- In AH you can see consistency throughout difficult times
- AH was an athlete before the accident, why is it important then?
- Many brands use emotions and that is why it is boring by now. (BW)
- Sport ads make sense when you see the reason to workout. In BW no reason.
- Nice that you like CF but why should I like it then? (BW)
- I want to understand the why (con BW, pro AH)
- I could not identify with the first video (BW)
- The second one was down to earth (AH)
- The first video is not fitting at all because it is too professional (means too extreme; too high level)
- The second one shows beginnings and regularity (AH)
- The second one shows normality of the person (means relatability; AH)
- Discipline and information are better for advertisement (pro BW)
- When the goal is to get people to start the sport, you should not show the highest levels
- The sport looks too hard, one does not want to even try (BW)
- BW gave motivation to continue but not to start!
- AH motivating because you have only one life and you should follow your passions and dreams
- BW is unattainable and not approachable
- AH: You do not see him as an athlete that stayed consistent

- AH: The second one could be sitting next to me and invite me to workout \rightarrow approachable
- AH: the second shows humanity
- Con AH: I would like to see something new
- Pro AH: I want to see fun and willpower; I want to see the endorphins
- A combination of the two would best but decision for AH

Amateur athletes

- I could not make a decision, both are so down to earth
- It feels like they could be standing next to me and that is very comforting
- Amateur is so much better than professional
- Both videos are very appealing
- They show beautiful paths; when you stay consistent you can come really far in life
- The first one NB is really pleasant and cute, really cool
- NB is down to earth, would convince everyone
- NB is better because you can see the progress visually; this is how you would want to look like (not like GL)
- GL looks sickly
- NB has visible muscle; you can see how much she has achieved already
- Progress is motivating (NB)
- Gender plays a role \rightarrow Gender of protagonist congruent with gender of viewer
- NB radiates positivity
- GL lost a massive amount of weight, one can achieve a lot
- (GL) Time flies by
- (GL) Very inspiring

- (GL) Impressive to see how much a 200kg (420 lbs) man can do, why shouldn't I be able to do so?
- (GL) "I am not that overweight and he continues to show up. Why can't I do it?"
- (GL) They think the male version is better
- GL you can tell how much better he feels
- Both a very motivating; show different perspectives
- (NB) In the first one you can see how much she likes the sport
- GL stays consistent, its motivating
- (GL) How can it be that someone stays consistent who is in a difficult situation
- (NB) First person is busier
- Identification is important
- Participant 4 sees the fun in GL
- Although GL is still overweight, his health improved
- GL does not know it he would still be alive if he hadn't changed his lifestyle
- Vote: 50/50 but decision for GL because it shows the health aspect better

8. Appendix B

Questionnaire main study

Table B1

Items and Corresponding Variable Names Used in the Questionnaire

| Variable | Item | Answer scale | Item name in clean dataset |
|---------------|---|--|----------------------------|
| Self-efficacy | I am confident that I can overcome barriers and challenges with regard to physical activity and exercise if I try hard enough. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Self_efficacy_1 |
| Self-efficacy | I am confident that I can accomplish my physical activity and exercise goals that I set | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Self_efficacy_2 |
| Self-efficacy | I am confident that I can perform movements typical to CrossFit. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Self_efficacy_3 |
| Self-efficacy | I am confident that I can motivate myself to start being physically active or exercising again after I've stopped for a while. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Self_efficacy_4 |
| Physical | I want to maintain a healthy body. | 1 = Strongly disagree | Physical_condition_1 |

| condition/Health | | 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | |
|------------------------------|---|--|---------------------|
| Physical condition/Health | I want to be physically fit. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Physical_condition2 |
| Physical condition/Health | I want to maintain physical health. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Physical_condition3 |
| Physical condition/Health | I want to improve cardiovascular fitness. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Physical_condition4 |
| Mastery | I want to get better at an activity. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Mastery_1 |
| Mastery | I want to improve existing skills. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Mastery_2 |
| Mastery | I want to do my personal best. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree | Mastery_3 |

| | | 5 = Strongly agree | |
|-----------|---|--|--------------|
| Mastery | I want to obtain new skills. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Mastery_4 |
| Attitude | Working out regularly is a high priority to me. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Attitude_1 |
| Attitude | Working out is important to me. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Attitude_2 |
| Attitude | I would feel guilty if I didn't workout out. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Attitude_3 |
| Attitude | I like to workout. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Attitude_4 |
| Enjoyment | Exercising is interesting. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Excitement_1 |
| Enjoyment | Exercising makes me happy. | 1 = Strongly disagree | Excitement_2 |

| | | 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | |
|-----------------------|--|---|------------------|
| Enjoyment | Exercising is fun. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Excitement_3 |
| Enjoyment | I enjoy exercising. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Excitement_4 |
| Identification | To what extent does the athlete describe you? | 1 = Does not describe me 2 = Describes me slightly well 3 = Describes me moderately well 4 = Describes me very well 5 = Describes me extremely well | Identification_1 |
| Identification | To what extent do you identify with the athlete? | 1 = Not at all 2 = Slightly 3 = Moderately 4 = Very 5 = Extremely | Identification_2 |
| Identification | Do you admire the athlete? | 1 = Definitely not 2 = Probably not 3 = Might or might not 4 = Probably yes 5 = Definitely yes | Identification_3 |
| Information/Knowledge | I know a lot about CrossFit | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree | Knowledge_2 |

| | | 5 = Strongly agree | |
|----------------------------|--|--|------------------|
| Information/Knowledge | My knowledge of CrossFit is | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Knowledge_1 |
| Information/Knowledge | My knowledge of CrossFit is | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Knowledge_3 |
| Social support | I consider myself to be this type of person portrayed in the video. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Social_support_1 |
| Social support | I belong to the group portrayed in the video. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Social_support_2 |
| Social support | I fit in with the group of people portrayed in the video. | 1 = Strongly disagree 2 = Disagree 3 = Neither agree nor disagree 4 = Agree 5 = Strongly agree | Social_support_3 |
| Level of physical activity | During the last 7 days, on how many days did you walk for at least 10 minutes at a time in your leisure time? | 0 – 7+ days | Walking |
| Level of physical activity | How many days did you do vigorous physical activities like aerobics, running, fast bicycling, or fast swimming in your leisure time? | 0 – 7+ days | PA_Intense |

| Level of physical activity | How many days did you do moderate physical activities like bicycling at a regular pace, swimming at a regular pace, and doubles tennis in your leisure time? | 0 - 7 + days | PA_Moderate |
|---------------------------------|--|--|------------------|
| Level of physical activity | How much time do you usually spend sitting on a weekday? | 1 – 24 hours | Sitting_Weekday |
| Level of physical activity | How much time do you usually spend sitting on a weekend day? | 1 – 24 hours | Sitting_Weekend |
| Age | What is your age? | $16 - \infty$ | Age |
| Gender identity | What is your gender identity? | 1 = Male 2 = Female 3 = Non-binary / third gender 4 = Prefer not to say | Gender_identitiy |
| Educational level | What is your educational level? | 1 = High school 2 = Bachelor's degree 3 = Master's degree 4 = Advanced graduate work/PhD 5 = Prefer not to say | Education |
| English language proficiency | Please rate your English language proficiency. | 1 = Very poor 2 = Below average 3 = Average 4 = Above average 5 = Excellent | English_level |
| Social media usage | Please rate your social media usage. | 1 = Very low 2 = Below average 3 = Average 4 = Above average 5 = Very high | Social_media |

9. Appendix C

Rotated component matrix

Table C1

Rotated Component Matrix^a

| | Component ^b | | | | | |
|--|------------------------|------|------|------|---|---|
| Item — | 1 | 2 | 3 | 4 | 5 | 6 |
| E4 I enjoy exercising. | .861 | | | | | |
| E3 Exercising is fun. | .842 | | | | | |
| A4 I like to workout. | .832 | | | | | |
| E2 Exercising makes me happy. | .769 | | | | | |
| E1 Exercising is interesting. | .712 | | | | | |
| A1 Working out regularly is a high priority to me. | .672 | | | | | |
| A2 Working out is important to me. | .636 | | | | | |
| SS1 I consider myself to be the type of person portrayed in the video. | | .843 | | | | |
| SS3 I fit in with the group of people portrayed in the video. | | .829 | | | | |
| SS2 I belong to the group portrayed in the video. | | .819 | | | | |
| ID2 To what extent do you identify with the athlete? | | .811 | | | | |
| ID1 To what extent does the athlete describe you? | | .782 | | | | |
| K3 My knowledge of CrossFit is | | | .892 | | | |
| K1 My knowledge of CrossFit is | | | .888 | | | |
| K2 I know a lot about CrossFit. | | | .870 | | | |
| P3 I want to maintain physical health. | | | | .825 | | |
| P1 I want to maintain a healthy body. | | | | .802 | | |
| P2 I want to be physically fit. | | | | .761 | | |

| P4 I want to improve cardiovascular fitness / heart health. | .661 | | |
|--|------|------|------|
| M2 I want to improve existing skills. | | .822 | |
| M1 I want to get better at an activity. | | .765 | |
| M4 I want to obtain new skills. | | .686 | |
| M3 I want to do my personal best. | | .564 | |
| SE1 I can overcome barriers and challenges with regard to physical activity and exercise if I try hard enough. | | | .817 |
| SE2 I can accomplish my physical activity and exercise goals that I set. | | | 773 |
| SE3 I can perform movements typical to CrossFit. | | | .576 |
| Note. Extraction Method: Principal Component Analysis. | | | |

Rotation Method: Varimax with Kaiser Normalization.^a

a. Rotation converged in 6 iterations.b. Coefficients below .4 are suppressed.

Information: Pretest (focus group) Bachelor thesis "How to get people into the gym?"

Dear participant,

Thank you for participating in my qualitative pretest. The aim of today's focus group session is to choose two of four videos that will be used as interventions in the Bachelor thesis. The aim of the research is to find motivational factors of CrossFit documentaries and see whether priming can increase the current effect.

Context: The study was developed because I see a necessity in helping decrease obesity in the world. Over the past decades, obesity has nearly tripled. One of five teenagers (10 to 19 years old) and nearly 39 percent of adults (18 years and older) worldwide were overweight as of 2019 (Food and Agriculture Organization of the United Nations, 2019). One way to fight obesity on an individual level is to move more.

Your contribution will help in findings motivational cues in existing videos and broaden my understanding of the current situation. You will be asked to watch four short videos and give your opinion on them. Towards the end of the study you will be asked to choose two of the four videos.

Thank you in advance,

J.Mescheritzki

Jessica Mescheritzki 03.05.2021

Consent Form for Pretest Motivation to Exercise YOU WILL BE GIVEN A COPY OF THIS INFORMED CONSENT FORM

| Please tick the appropriate boxes | Yes | No |
|---|-----|----|
| Taking part in the study | | |
| I have read and understood the study information dated 03.05.2021 or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction. | | |
| I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason. | | |
| I understand that taking part in the study involves filling a short questionnaire on Google Forms and participating in a focus group session. The information from the questionnaire will be used for (descriptive) statistical purposes. The researcher will take written notes during the focus group session. | | |
| Use of the information in the study | | |
| I understand that information I provide will be used for the pretest of the Bachelor Thesis of Jessica Mescheritzki. The thesis will be publsihed on <u>https://essay.utwente.nl</u> . | | |
| I understand that personal information collected about me that can identify me, such as [e.g. my name or where I live], will not be shared beyond the study team. | | |
| I agree that my information can be quoted in research outputs. | | |

Signatures

Name of participant [printed]

Signature

Date

I have accurately read out the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands to what they are freely consenting.

Jessica Mescheritzki

Signature

Date

Study contact details for further information: Jessica Mescheritzki j.mescheritzki@student.utwente.nl

Contact Information for Questions about Your Rights as a Research Participant

If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Secretary of the Ethics Committee of the Faculty of Behavioural, Management and Social Sciences at the University of Twente by <u>ethicscommittee-bms@utwente.nl</u>

UNIVERSITY OF TWENTE.