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By: Fajer Alfadhalah

Supervisor: Bonne Zabolotney

A critical & process documentation paper Submitted in partial fulfillment of the Requirement for the degree of Master of Design

Emily Carr University of Art + Design, 2023

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Preface

I started CrossFit training in December 2018, it transformed my life completely as a woman and a human being. CrossFit helps me to grow as a person physically and mentally. It helps me to adopt a healthy lifestyle by training my physical muscles and paying attention to sleeping and nutrition. It also helps me to strengthen my mind and control the daily stresses I face in my life. Since the pandemic started, I went through a major mental breakdown due to the lockdown. This breakdown has shut down my physical body and I was in constant fear and a bit depressed. I joined different online competitions, however, I didn't get so far, even though physically I was prepared. So, I started reflecting and being conscious of my thoughts and found out that my mind was stopping me from improving because of my fear and I wasn't paying attention to the words I used to say to myself like "It's ok, take it easy today, there are plenty of times in the future," and I keep repeating that every single day till it affected my performance. I then started writing before training which helps me to be motivated and be prepared mentally for my training sessions. For example, one day I wrote down a positive statement on a piece of paper and hung it in front of me while training, which helps me to repeat that to myself when I need it. The statement was "no pain no gain". This helped me to realize that the pain is only going to last for a couple of minutes and that pain will help me build strength for the future.

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Abstract

The goal of this research is to document and explore the effect of self-talk on performance in CrossFit. The outcomes of this research will contribute to the design of an app to help athletes improve their positive self-talk. This study also will help athletes to understand how to be selfconscious, and reflective, and to use visual design to enhance self-talk techniques.

Self-talk is statements that athletes repeat to themselves during training to improve their focus and boost their energy to perform better. The goal of self-talk is to replace negative thinking with more positive messages. It could be motivational such as "Let's give It all" or "You can do it", or instructional which focuses on techniques and forms like "engage your core" or "activate your shoulder". Self-confidence is the key to developing mental toughness, and self-talk is the best strategy to help athletes believe in their ability by saying the right words to themselves. Some athletes might find it difficult to be self-conscious or replace negative thoughts with positive ones.

Physical strength alone is not enough to enhance performance in CrossFit. Optimal performance depends on mental preparation as well as physical preparation. As an athlete in CrossFit, I have never heard the community or coaches speaking about how self-talk can lead to mental toughness. Additionally, there is no research study on mental preparation in CrossFit sports. CrossFit is a combination of Olympic weightlifting, gymnastics, and cardio that is performed at high intensity. Speed and form are both equally important in this sport which leads to a lot of pressure and stress on athletes.

In my research, I am going to focus on techniques that develop and document self-talk and its direct effect on specific workouts in CrossFit. My methods will include self-reflective practice, observation, diagramming, experimentation with workout/self-talk combinations, and participant surveys and discussion. I am hoping this study helps the CrossFit community to understand how to be self-conscious, and how to improve their mental toughness through self-talk techniques to enhance their self-confidence and performance in CrossFit through design practices.

Keywords

Self-talk CrossFit Positive affirmations Negative thoughts Calm Control Consistent Focus Motivation Self-conscious Self-Critic Self-Confidence Discursive Design Communication Design Interaction Design

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Mental Toughness

Physical performance alone is not enough to win a competition or improve fitness level overall. Optimal performance is depended on mental preparation as well as physical preparation. Negative emotions will not only affect your mind, but will affect the body as well, and that will affect an athlete's performance by finding excuses to perform poorly. For instance, Simone Biles an American artistic gymnast and one of the greatest gymnasts of all time, withdrew from the Olympics finals due to stress and fear of getting injured (New York Times, 2021). She mentioned that she was mentally not ready for the competition, and needed to work on her mindfulness. Negative emotions are normal, every single person experiences them, however, the way you handle these emotions is what makes you mentally strong. These emotions consume a lot of athlete's energy if given attention and responding to it; therefore, it is important to be aware of these emotions and find ways to control them. Mental toughness is the focus and willpower to complete your journey despite difficult obstacles, which means never giving up (Bennis, 2019). In other words, it is the capability to make tough choices, the strength to act, and the ability to focus (Bennis, 2019). Mentally tough athletes turn fear into fuel and problems into power, simply turning negative emotions into positive ones. Being mentally tough means being confident and believing in yourself as an athlete and your capabilities. Being able to control your emotions and life. Being resilient by adapting to stressful situations. Mental toughness is a practice and muscles need to be trained consistently just like training your physical muscles, once you stop practicing, your muscle will slowly weaken.

Self-talk

There are a lot of different psychological techniques that help to improve mental toughness in sports. In my research, I am going to focus on the self-talk technique and its effect on performance in CrossFit. Self-talk is statements athletes repeat to themselves during training to improve their focus and boost their energy to perform better. Improving performance in CrossFit depends on a lot of different factors such as sleeping, hydration, nutrition, and many more. However, this study is only going to cover self-talk. The goal of self-talk is to replace negative thinking with more positive messages. It could be motivational such as "Let's give It all" or "You can do it", or instructional which focuses on techniques and forms like "engage your core" or "activate your shoulder". Changing negative to positive self-talk will transform your life by breaking out of the cycle of negative self-talk that is holding you back and motivating you to reach your potential. However, positive talks are not thinking happy thoughts all the time, it is changing your way of looking at your thoughts by engaging in solutions instead of the problems (Wallace and Magana, 2019).

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Sergio Olvera(2020) examined athletes' use of self-talk and levels of mental toughness following a coach-mediated mental toughness intervention. This study consisted of 16 female collegiate volleyball players from southern California. All the athletes were over 18 years old and were student-athletes in the Fall 2019 season. Through surveys, interviews, and questionnaires conducted through pre-med and post-season, Olvera discovered that athletes were already using motivational and instructional self throughout the volleyball season. The methods used in this study didn't help athletes to open up about their self-talk experiences and they might not give accurate results. Olvera mentioned that some of the athletes kept some of the information private and did not share enough. He also noted that some of the athletes didn't know how to talk to themselves or how to be self-conscious about their thoughts. Olvera's study approaches self-talk in a scientific way. The purpose of his study is to test if self-talk practices help athletes strengthen their minds. My research uses design practices - diagramming, visual and conceptual problem-solving, and reflexive practices to investigate, analyze, and provide tools that encourage athletes to coach themselves. My diagrams allow CrossFit athletes to view their practices concretely in the diagrams, and to visualize the cause and effect of self-talk.

Design practices and outcomes could help athletes to engage, feel connected, and therefore share more experiences with others. In my research, I have designed diagrams that reflect my daily experiences of my self-talk and its effect on my performance. I then introduced participants to self-talk through my diagrams designs for the first time and they resonated with some of these experiences. Also, some of the athletes didn't know what self-talk was until after introducing the diagrams. Design practices have made this research more meaningful by using design to teach and help athletes how to be self-conscious and how to use self-talk through visual designs.

The outcome of this research is a designed app that helps athletes to improve their selftalk and be consistent for better performance. In order to achieve that, I needed to understand their experiences before, during, and after training and test the app with them to make sure it is effective. Sanders and Pieter (2014) discuss codesigning and the different methodologies that designers and non-designers apply to make sense of future design through making. They discuss three approaches: probes, toolkits, and prototypes, which all similarly focus on the act of making. The act of making in the process has become very popular nowadays, where designers and non-designers work together in all the design processes to generate insights and experiences and test the design before establishing it.



- Shoulder width stance
- Hands just outside shoulders with full grip on the bar
- Bar rest on front rack with elbows in front of the bar
- Hips desend back and down
- Lumbar curve maintained
- Knees in line with toes
- Hips desend lower than knees
- Heels down until hips and legs extend
- Hips and legs extend rapidly then press
- Bar remains over the middle of the foot
- Complete at full hip, knee, and arm extension



- Hands just outside shoulder width
- Full grip on the bar
- Start hanging with the arms extended
- Initiate the swing with the shoulders
- Alternate between arched and hollow positions
- Lift feet towards the bar while pressing down with the straight arms
- As the body elevates the hip extend then pull with the arms
- Pull until the chest contacts the bar below the collarbone
- Initiate the next rep by pushing away from the bar

(Akama and Prendiville, 2014) another article discusses the importance of co-designing in service design to design an environment and system that satisfies all people. The authors argue that service design methods can't be separated from people and people's involvement is the start of the transformation of the service system. This article shows why involving people through the design process will help the future of service design.

CrossFit

"The greatest adaptation to CrossFit takes place between the ears."

- Greg Amundson.

CrossFit is a strength and conditioning workout that is made up of functional movement performed at a high-intensity level. It is a combination of Olympic weightlifting, gymnastics, and aerobics exercises, which makes it challenging for the physical body as well as the mental body. It's famous for being a competitive sport. All athletes might have different goals like improving health, lifestyle, or better performance, however, the sport is built to challenge your mind by designing the workout in a competitive way. For example, (figure A):

For Time: 9-15-21 Thrusters (651bs) Chest to bar

This workout is a pull and push workout and the major muscle work is the upper body (shoulders, lats, chest, and arms). This workout tests the physical strength as well as the time the athlete could hold up through the pain and burn of the upper body. When the body goes through this much stress, our unconscious brain starts telling us to stop because this situation is uncomfortable for us. When we are patient and calm, and push through our limits every day, we train our body and brain to get used to it and get stronger every day. In order to be calm and patient, we need to say the right words to keep us motivated and push through tough times. Your self-talk can make or break your performance. Having said that, every athlete should know their limit in training and try not to go far where they injure themselves. Keeping the balance in training is essential for a healthy future and improving our performance.



Positive and negative self talk: How may we strengthen our mind to successed in Crossfit ?



Figure B

Inquiry and goals

As an athlete in CrossFit, I have never heard the community or coaches speaking about how self-talk can lead to mental toughness. Additionally, there is no research study on mental preparation in CrossFit sports. Athletes go through a lot of difficulties through training and competitions such as stress, fear of failure, failure, risk of injuries, negative thoughts, self-doubts, etc. Therefore, practicing self-talk will help athletes to have better control of their emotions, and help them gain confidence and believe in their abilities to push through their limits. The goal of this research is to document the effect of self-talk on performance in CrossFit. It focuses on CrossFit athletes aged between 20 to 35 years old. The outcomes of this research will contribute to the design of an App to help athletes improve their positive self-talk. This study also will help athletes to understand how to be self-conscious, and reflective, and to use visual design to enhance self-talk techniques.

What are the ways that we can design our self-talk to help athletes develop positivity in tough CrossFit workouts for performance?

How I came to this subject

In studio II class, I decided to explore a new inquiry that I am passionate about which is navigating between our inner voices. How may we strengthen our minds to succeed in CrossFit? CrossFit is a huge part of my life, and I have always been curious about how to stay focused and overcome the negative thoughts I face especially during intense workouts or a big lift. So, I decided on this project to test my mind in different ways and see how my performance is going. I tried to react to it and another day to ignore it, but that failed. I felt my body was working against me. Therefore, I decided to observe those feelings without taking any action and replace them with positive thoughts such as a strong statement or reminding myself of my goals or being engaged with the music while separating myself from my thoughts while observing them. This way helps me to manage negative thoughts and feel motivated to successfully complete my workout with a great performance. I believe that everyone has a way to cope with fear, and that's why it's important that we explore ourselves to find a way that works best for us.

I created a motivational video reflecting my own journey aiming to motivate and encourage the CrossFit community at any fitness level to train their mind (figure B). CrossFit is a mind sport as much as physical sport and when you strengthen your mind, you will be surprised by how much more capability you have.

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	what are you aiming to ableve in your trainging today? (set a realist goal such as beating your previous time cap, to have a new paramal reneal filted weight ar oven just gesting a batter technique and form in 4 specific newment).	CONFIDENCE	
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NOTE	Gess your eyes for a minute and imagine you achieveing that goal	CROSSFIT MIND JOURNAL	
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I found myself engaged in this inquiry and furthering my research in designing tools that could help athletes control their thoughts. Our minds are always overwhelmed with thoughts that could affect us physically which will ruin our progress and performance in training. It is very important for athletes to know how to cope with their negative thoughts, anxiety, and fear. The three most important elements to strengthen our minds in CrossFit are focus, motivation, and confidence. Therefore, I designed a CrossFit mind journal as a pre-workout journal to help you strengthen your mind by keeping you focused, motivated, and confident (figure C). This journal is designed to clear your mind and keep you focused as well as a progression tracker to track your journey in CrossFit. Each day, before training you will start by filling your workout and start the exercise of the day. These exercises required you to write to express your feelings on paper and be more conscious of how you are feeling, acknowledge them, and release them.

After that, I experiment with the journal with my classmates to engage the community and see if this journal actually works. The experiment has been done in our classroom with seven participants in total. Each one of the participants tried a different exercise in the journal. I started the experiment by doing ten minutes of the journal exercise. After that, we started to warm up and started the workout.

The workout: Six rounds for time: 20 shoulder taps 60 mountain climbs 20 tuck jumps

After the workout, I handed in a survey to the participants to measure the results and see their experiences before, during, and after the workout. And, if the CrossFit Mind Journal has helped to keep their mindset and motivate them during the training or not.





After evaluating the surveys, I have found out that four participants out of seven found it helpful, some of the comments "Get me more into a positive headspace", "To commit to trying", and "Help to change negative to positive feelings". Two of the participants say maybe and that they found it hard to communicate how they felt. Finally, one participant says it intimidated her (figure D).

In the survey, I asked the participants "What helps you to stay motivated during the workout?" to have a better understanding of things or thoughts that keeps one person motivated. And the responses were "Training with the peers," "Thinking that I can do it," "Thinking about my fitness goals," and "Believe in myself that I can push harder." Most of the responses were so related to my journal exercises, which makes me believe that this journal might be helpful.

Through my previous projects self-reflecting, journalizing, designing a journal, and experimenting with it in the classroom, I have come to a result so far that self-confidence is the key to mental toughness. when you truly believe in yourself and your abilities, everything else will flow such as negative thoughts, inner self-critic, and fear of failure. Having selfconfidence doesn't mean you won't experience these feelings; however, the effect will be much less than someone who doesn't believe in themselves because a confident person won't pay much attention to the negative side and know how to control them.

In the final project, I observed different athletes at my gym for one week. There were two female athletes who had my attention while lifting a heavy snatch lift. Snatch is an Olympic weightlifting movement and is also a part of Cross-Training. One of the athletes keeps looking around the room while getting ready for the lift. She seems distracted and not focused even when she was lifting the weight and her body language shows a lack of focus and confidence. On the other hand, the other athlete inspired me by starting the lift completely focused like she is in her own bubble, didn't pay attention to anyone around, and successfully lifted the heavyweight. She did fail one of the lifts but her confidence and motivation drive her to successfully lift the failed weight and more. My own exploration, experimenting with my classmates, and observations of the athletes at my gym prove that confidence is the key to mental toughness. Confidence brings positivity and motivation to be the best version of yourself and that is why it is important to believe in ourselves to get the best out of the training session and enhance our performance to achieve our goals. There are a lot of different psychological techniques to improve self-confidence in sports, however, self-talk has proven that it is the most effective technique in lifting our confidence, which led me to my research "The effect of Self-talk on Performance."



My Design Practice

I am a Graphic Designer, skilled in Communication Design and Interaction Design. My practice focuses on feminism. I am interested in using design as a way to express experiences and insights to solve design challenges that center on women. As I started my journey in MDes, my focus was primarily on women empowerment, however, I started developing a new interest in mental strength and how it affects performance in CrossFit. I have always been interested in the human mind and the relationship between the mind and the physical body. This interest led me to my research "The effect of self-talk on performance in CrossFit." CrossFit has a huge impact on my life as a woman, it helps me to build my self-confidence and to believe in my mental and physical abilities. CrossFit as a sport promotes gender equality in many ways such as programming the same workout for both genders in the same age group and giving the same prizes to the first three winners.

As a designer and CrossFit athlete, I wanted to incorporate my two interests to visualize my experiences and a group of female athletes through design practices. I visually illustrated our thoughts through intense workouts, how we react to these thoughts, and how it affected our physical body and performance overall through diagram design. The purpose of the diagrams is to visually show athletes how to be self-conscious and use self-talk. Additionally, the diagrams helped me to gather data and build an app as my research outcome to help athletes practice self-talk and be consistent by tracking their performance.

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Conceptual Outputs

These research projects revealed several concepts and deep understandings of self-talk and mental toughness:

The concept of "keep going"

The phrase "keep going," is the most popular motivational self-talk adapted by the participants. This phrase motivates athletes to keep moving despite the pressure and physical stress they are going through. It has been mostly used by beginners and intermediate athletes rather than elite athletes. The meaning of "keep going" varies between athletes' levels, for beginners and advanced athletes, it means to keep moving regardless of their pace. On the other hand, elite athletes usually use it to keep up the hard work and keep pushing.

The concept of not being present, or dwelling in future

In my self-reflective and participatory research, I found myself and some other athletes worried and stressed over our coming training session, where we feel not present throughout the entire day. And, when we get to the gym, we feel exhausted and out of energy. Not being present is the feeling that you're observing yourself from outside your body, where you constantly think about the past or the future. Stress, anxiety, and regret could be the reasons that make it difficult to focus on the present moment.

The importance of consistency

Self-talk is replacing negative thoughts with positive messages aiming to help minimize negative thoughts we experience through stressful events. For example, if we are facing a negative thought "I am not good enough" more often, we replace it with "I am good enough" or "I am strong" whichever phrase you feel the most connected to. From the beginning, you might not feel strong or good enough, however by repeating these statements daily to yourself, you will believe it and it will come naturally to you. But, if you stop practicing, you will lose it just like your body muscles. It is important to be consistent to see results and help you improve your performance.

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Exploratory Design Research

I started my research by reflecting on my experiences as an athlete to build a sense of embodiment through my research and have a better understanding of how my self-talk is affecting my performance. I have used self-reflective diagrams as a way of documenting my self-talk through a period of time.

Self-reflective Diagrams

I intensively reflected on my thoughts and patterns before, during, and after training. I had a diary on me all the time, writing down my feelings and thought patterns throughout the day. Additionally, I have recorded my workouts in a video format. Then, I transformed them into diagrams. The diagrams consist of drawings and information illustrating the inner voices I am experiencing during my training, how I reacted to them, and how they affected my physical body and performance. The purpose of this method is to document my selftalk and generate new insights through my journey. (Grocott, 2012) examines the act of drawing for exploring and developing ideas that are under negotiation. The author used propositional diagrams that express a way of drawing which the author called "figuring" as a tool for thinking. The idea of "figuring" built on the creative practice comes from discussing what we know and the unknown. This method helps me to not think about the future or the outcome but instead focus on the process as an ongoing practice, which helps me to just be myself and drive through my experiences.





First diagram group

The first diagram group are showing the effect of myself-talk on my physical body and how my body reacts to these specific thoughts. These thoughts and feelings are based on the daily training sessions that I experienced. Diagrams (Figure 1E) are showing how negative thoughts stress my body, and how positive thoughts shown in diagrams (Figure 2E) calmed my body despite the training muscle tension. I have realized that unconscious negative thoughts are normal, but I control what thoughts I want to engage with or not. I first started being self-conscious of my thoughts and observing them from different perspectives without reacting to them. I then either replace it with positive messages or just simply acknowledge them without reacting, to allow them to pass through. When I react to them, I start to develop rage and anger, which affect my breathing during a highly intense workout, and I end up performing poorly. I also experienced ignoring negative thoughts and forcing positive messages instead as shown in diagram (Figure 3E). I felt so overwhelmed and didn't know what I was going through. It was so hard to control my emotions in this situation because I didn't acknowledge it earlier and it started to develop. I have realized that it is important to acknowledge my feelings right away instead of ignoring or reacting to my feelings.





Figure 2E

Figure 3E



Figure 1F



Figure 2F



Second diagram group

The second diagram group shows how my thinking consumes my energy throughout the day. When I start my day with a negative headspace, thinking about a situation that happened yesterday, complaining about every little thing that happened at work, and worrying about my coming training session, I feel exhausted and out of energy. When I get to training, I feel too drained to focus and have difficulty staying in control (Figure 1F). As I'm becoming more conscious of my thinking patterns, I have decided to change my attitude toward my thoughts. I start my day by writing a list of things I am grateful for, which helps me to start the day with a positive headspace. Then, I become present with my thoughts and control them better throughout the day, which saves me a lot of energy for my training session (Figure 2F). I have learned that thinking alone consumes our energy even if I was laying down. Controlling my emotions throughout the day has helped me to be present, controlled, and have more energy to train.

Sleeping, nutrition, and hydration are the sources that fuel our bodies with energy. When I sleep five hours a day, I feel fatigued, and tired, and have no energy to perform the simplest task. I also feel my physical muscles are sore and not fully recovered. During my training session, I feel like my brain and body are shut down, the weights feel way heavier than usual, and it is hard to focus even if I am practicing self-talk and controlling my emotions throughout the day (Figure 3F). I have realized that sleeping, eating balanced meals, and staying hydrated are the keys to performance. I couldn't even practice self-talk after sleeping poorly due to low energy.







Figure 2G

Third diagram group

The third diagram group is more detailed compared to the first one, showing the effect of my self-talk on my performance. These diagrams act as documentation of my selftalk through a six-month period and show how practicing self-talk helped improve my performance in CrossFit. Additionally, the diagrams are designed to visually help athletes understand how to be self-conscious and to encourage them to reflect on their thoughts pattern. In the diagram (Figure 1G), the assault bike is triggering a lot of negative thoughts and it was hard for me to control my anger which affected my performance in this workout. Over two months of working hard in practicing self-talk to improve my performance on the assault bike, I have found a way that works for me which is focusing on my breathing to stay calm, and when I reach the exhaustion stage, I start using the practiced motivational statements as shown in diagram (Figure 2G).





AMRAP 20:00 500m row 50 Pistol squats 10 squat snatch 75lbs





Another thing I notice is that I usually slow down during exhaustion time, which is the last minute of the workout due to the increase of negative thoughts in this period as shown in the diagram (figure 1H). This is the most important time when it comes to competition because this is the time when everyone goes fast to win the game, therefore it requires our mind to drive us in these moments. I started practicing some positive statements in two months and saw improvement in my performance as shown in the diagram (figure 2H).



Through the Fall semester, I joined an online CrossFit competition qualifier that consists of five different workouts that should be performed in a week. I have to perform their workouts with a qualified judge to judge my form and count reps and take videos that should be uploaded to their website alongside my final scores. During the qualifier, I was in month five of practicing self-talk, and it was a great opportunity to see how I perform under stress and pressure.

In a competition, usually, my body is anxious and stressed because I care about it. I usually feel so anxious that it affects my performance. This time, I felt under control and I kept repeating to myself before the workout these phrases "What is the worst thing that could happen today? Nothing! I will only gain experience" "Let's give it all and do my best" and "If I do %100 work no matter what the result, I will be happy and proud, and It's better than doing half work." These phrases have helped me to overcome my fear and stress, as well as keep me calm through a loud and busy mind. Another surprising part was that I was experiencing way fewer negative thoughts, and some of the phrases I used to repeat started to automatically appear and replaced negative thoughts I experienced through the workouts as shown in the diagram (Figure I).

For the first time, after a long time, I felt so confident in this competition (Figure J). I lost my confidence in training for over a year and that has been affecting me mentally and physically. Five months now, while lifting I keep telling myself "You are strong" and "You are special" and I never believed it before. However, after being dedicated for this long, I'm starting to believe it and it is still an ongoing practice.

On the third day of the competition, I received bad news, which made me feel angry and upset, however, I directly talked myself out of it (Figure K). I tried to think about what I could control in this situation. And what I can't control? If it's something I can't control, I let it go and if it's something I can control then I do something about it now and let it go. My situation was something I couldn't control so I started taking deep breaths, started talking myself out of it just like how I do to a friend of mine, and remind myself of my goals to stay motivated for the competition.





Participatory Design Research

Exploratory Design Research helps me to reflect on my own experiences and create a close relationship between my research and I. In Participatory Design Research, I shared my experiences with a group of participants, which allowed them to reflect and share their own experiences to create a sense of empathy as well as generate new insights and discussions. Participatory diagrams and online questionnaire methods, I used to explore participants' self-talk experiences during the workout and the ways or phrases they engage in to overcome negative thoughts.

Participatory Diagrams

After Exploratory and self-reflective diagrams, I shared my reflective diagrams with a group of athletes, which allowed them to do the same to create a sense of empathy and a safe space for sharing experiences and building discussions. (Grocott, 2012) discusses the purpose of these diagrams, which is to show the importance of sharing exploratory as a communication strategy for generating discussion.

In this method, a group of CrossFit athletes from Vancouver, Kuwait, England, and Mexico meet through Zoom to perform a workout virtually. After the short workout, the group attends a focus group to participate in filling out a diagram regarding their experiences during the workout. And, participate in a group in sharing their thoughts to generate discussion. The idea behind selecting athletes from different countries is to test the similarities and differences between athletes. Since our thoughts are shaped by life experiences, genetics, and education, I think it would be interesting to see different backgrounds and thinking patterns. However, it didn't work as planned for several reasons. Athletes usually have their own programming that they religiously follow especially, it was the season time where athletes prepare for the international competition; the CrossFit Games. Additionally, athletes were uncomfortable sharing their experiences face-to-face with other athletes and preferred to do it individually. Therefore, I decided to let each of the eight female athletes perform their own workout and write down the negative and positive thoughts they experience through their workout in a diagram design as shown (Figure L, M, N).



Figure M



Figure N



Figure 2O

I collected all the negative and positive self-talk athletes experienced during their training sessions and divided them into groups. I have named these groups according to the most adopted type of self-talk by participants. The negative groups are two in total; Excuses and self-critic talks (Figure 1O). While the positive groups are five in total; self-confidence, exhaustion, goal setting, instructional and positive self-talk (Figure 2O).

In the negative self-talk groups, I discovered that most of the athletes are making excuses that pull them back from pushing harder such as "I can't breathe, maybe I should slow down" "It's ok, I will take it easy" and "It's fine if I didn't finish it" These thoughts usually happen unconsciously, therefore it is important to be self-conscious about our thoughts. Moreover, some of the athletes were experiencing self-critical thoughts when expectations were not met such as "Why am I not good at snatches?" "Why am I so bad?" "I will fail" and "I could do better." Self-criticism takes the focus away from the game and breaks athletes' self-confidence and performance. There is one saying that I wasn't sure where to place it, which is "I am going to panic and cry."

On the other hand, athletes were adapting motivational self-talk way more than instructional talk, and most of the motivational self-talk is related to self-confidence such as "I am strong" "I can do this" and "I can do hard things." The period athletes use motivational self-talk the most is during the exhaustion period, the last minutes of the workouts when athletes feel fatigued. Some of the statements that have been used are "one more jump and you are done" "It's just a few minutes then I can rest all day" and "30 seconds to go, keep pushing." Goal setting and instructional talk were the least adopted by athletes. I noticed some athletes were looking at the positive feelings they experience instead of focusing on the negative ones, such as giving credit to the small wins in the workout "HSPU feels easy" and " Push-ups feel smooth."

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- Place the hands approximately shoulder width facing the barbell
- Jump back to a push up position
- Lower the chest and thighs to
- Push up and jump the feet back towards the hands
- The rep is complete once you jump the other side of the barbell

Experimentation

In this experiment, I want to experiment with the effect of self-talk on performance in CrossFit, and if practicing self-talk for a period of time does improve performance or not. The experiment consists of two groups of three athletes performing a short workout, which is (figure P):

1-2-3-4-5-6-7-8-9-10-9-8-7-6-5-4-3-2-1 reps for time of: Deadlifts 155/225 Lbs Bar-facing burpees Time cap: 10 minutes and the weights will be scaled according to your capability.

I will take the score/time of each athlete and they fill an online questionnaire afterward regarding their self-talk experiences. One of the groups is going to practice self-talk by handing in a self-talk guidance and practice for two weeks practice, while the other group are not going to be introduced to self-talk. After a two -week period, they will perform the same workout and take the same questionnaire afterward to test their performance compared to the first one. I got approval from my current gym to perform the experimentation, and I hung a flier to invite athletes from my gym to join, however I only got one athlete who was interested to join (Figure Q). And due to the limited time I had in hand, I had to cancel it and decided to go for the online questionnaire.



Figure Q



Online Questionnaire

The online questionnaire consists of nine open-ended questions about self-talk in CrossFit. The total participants were fifteen female athletes. The questions focused on the relationship between athletes' years of practicing CrossFit to their Self-talk technique, as well as finding out what they did to overcome negative thoughts, and what statements were frequently used. I have collected five of the questions that I want to link and find the relationship between different athletes (Figure R). I found out that the years of practicing CrossFit have no relation to self-talk technique. Almost all the athletes felt they are not good or strong enough, especially during the time when they can't push any more in highly intense workouts, however, they have different reactions to these negative thoughts and feelings. The most experienced athletes either acknowledge these thoughts but never react to them, or replace them with positive messages. However, beginner athletes try to resist and ignore these thoughts and they mentioned that it brings them down. Some of the athletes have mentioned that they experience more negative thoughts if they were tired, didn't rest, or sleep well, which shows the importance of recovering and sleeping for better health and performance. One of the most commonly used statements is "keep going" among all athlete levels, but the meaning varies. For beginners and advanced athletes, it means to keep moving regardless of their pace. Elite athletes usually use it to keep up the hard work and keep pushing. They are more focused on their goals by reminding themselves how this workout is going to add to their performance in the future.

Dawn

Female

28 Years old Graphic Designer / CrossFit Athlete

FRUSTRATIONS

- Fear of failure, which hold her from improving her Performance in CrossFit.
- Self-critic and saying harsh words while training.
- Overthinking, which makes it hard to focus during the workout.



Personas and Scenario

From my reflective practice, and participatory design research, I have created a persona name Dawn, a woman that reflects the life experiences that participants and I are going through (Figure S). The most common challenges we face are fear of failure, self-critic, and overthinking. I designed this scenario to visualize these challenges, and their effect on our entire day showing the specific thoughts that we might experience through the day. The scenario shows how Dawn worrying about her performance out of the gym affects not just her performance at the gym, but her entire day. This leaves her in the future rather than the present. And, when she arrives at the gym to train, she already feels exhausted and overwhelmed because of all these thoughts that built up and drained her through the day. Before bed, she kept regretting not pushing hard through the workout and worried about the next training day. When she wakes up, she will still be affected by her thoughts from yesterday because she hasn't got a chance to reflect and find the real reasons why she kept having these kinds of thoughts. It is important to reflect through the day which helps us clear our mind and stay focused instead of running away from our feelings. Ignoring or running from our feelings is only going to make it worse, and might attack us during a highly intense workout like feeling angry for no reason or feeling like your throat is blocked which makes it hard to breathe.

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Based on the self-reflective and participatory findings, I have realized that performance depends on three important elements: self-confidence, focus, and motivation. Selfconfidence is the key to driving us through our journey. If we lack confidence, we will fear going forward, we won't push through our limits, and we might start to be harsh with ourselves. Self-talk is the best way to build our self-esteem. The next important factor is focus; we need to be focused during our performance in order to achieve our goals. Being focused means emptying out our brain of unwanted thoughts by doing mindfulness, and staying in the present rather than stressing about the future or blaming our past. Finally, motivation is what keeps us excited through training. Setting small goals in every training session, help us to stay motivated and excited to achieve these little goals.

Practicing self-talk should be not restricted at the gym but throughout the entire day. This way we will be able to be present with our feelings and in control of our emotions. And, in order to see results, we need to be consistent in our self-talk practices. Tracking our progress mentally and physically in CrossFit training sessions helps to keep us consistent and motivated to improve.

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Figure T

MindFit App

Over the last month, I have been working on an App called "MindFit" to help athletes practice, improve and track their performance in CrossFit through self-talk practice and mindfulness practices (Figure T). The main purpose is to help athletes minimize negative thoughts they experience throughout the day, improve their positive talk, and be present with their emotions. This App also tracks their performance to keep them motivated and consistent. The App features daily practice, pre-workout, and post-workout practices.





Figure U

The first exercise is "daily practice," which consists of three different exercises that prefer to be performed in the morning or any time before training time (Figure U). The first practice is writing down things you are grateful for today, which helps athletes to stay in a positive headspace. The second practice is recording yourself as you are speaking to a friend about how you are feeling today, where this feeling is located, and what makes you feel this way. Finally, in self-talk practice, the athlete will repeat the statements they preferred to practice five times each. After training, the athlete will complete the "postworkout" section. The athlete will write down their score and results of their session and choose the goals that have been achieved. Tracking athletes> scores and setting goals will help athletes to stay motivated. However, if the athlete did not achieve the goals, they should be proud of pushing %100 through their sessions and know that not every session is going to be successful and that's ok. In the last section of the post-workout, the athlete will write down two things they are proud of in their session and one thing they want to improve for next time.









The second exercise is "Pre-workout," consisting of three different exercises that should be answered before the training session. The athlete will write down their workout, write down small goals to achieve in today's session, and select the self-talk they want to use as a reminder for the stressful or exhaustion moments.









In the Dashboard section, there are profiles of all the past records, where the athlete feels free to go back to track their performance and recordings. "self-talk library" is where athletes choose a couple of phrases they want to practice for a period of time between three to six months. There are different categories of self-talk and the athlete chooses which aspect they need to improve, and they can customize their own self-talk as well. The "Reminders" section is for setting your notifications to remind you of doing the exercises as well as specific statements to repeat throughout the day.











The final option of the app is breathing work, which athletes use whenever they feel the need to calm down. The best time to do breathing work is in the morning, before training, and before bed to help relax our body and mind.



Insights and future directions

MindFit App

MindFit App is an application that has been developed by the data collected through Exploratory and Participatory Design Research. The app is built to encourage athletes to reflect on their thoughts and feelings on a daily basis to empty out their minds and make room for positive ones. It helps athletes to stay consistent by providing simple exercises and providing reminders through notifications to remind athletes to do the work every day. Finally, it keeps athletes motivated by setting goals before every training session, tracking their previous work to see their progress, and reminding them to celebrate the small wins after each session. This App is still in progress due to the limited time I had to build it. If given the time, I would have completed it and invited a group of athletes for a prototype stage. The prototype is an important step to see how effective is the app. What are the areas that need to improve? Are the athletes happy with it? Do they need some changes? Does it work at all? These are some of the questions that I would love to investigate and make the changes to make it effective for athletes.

Self-reflective Diagrams

Self-reflective diagrams are part of Exploratory Design Research that helps me to reflect on my own experiences and express myself through visual designs. These diagrams allowed me to be conscious of my thoughts, change these patterns and track my progress through a period of time. It also has helped my participants to understand how to be self-conscious and use self-talk practices, which makes me think about designing a book full of diagrams in progress. It doesn't have to be finalized, just in progress, would people like to buy a design in progress? Would it help people to be self-conscious and practice self-talk? In Participatory Design Research, I wanted to create a space for a group of athletes to do a workout and share their experiences right away, instead of doing their own workout and reflecting through their own time. I think doing the same workout together and sharing these experiences right after the workout would bring more accurate results. Meeting in person or virtually via Zoom would help in building conversations and discussions for new insights. This is a huge part that I wished worked this way, however, I came to understand that participants didn't feel comfortable sharing their thoughts in person with other athletes. This made me question, how design could play a role to bring the community together. Which design method would allow athletes to feel comfortable sharing their experiences with each other?

Feminism and CrossFit

As I mentioned before, CrossFit has had a great impact on my life as a woman. It challenges me mentally more than physically, which helps me grow into a more confident woman. I was wondering if there was further research around understanding the different stages of the menstrual cycle in women and how it affects their performance in CrossFit. Most female athletes perform the best in the first two weeks and the poorest in the last week of the menstrual cycle. It would be interesting to interview some female athletes and see their ways of dealing with the emotional and physical challenges they face through the menstrual cycle.

CONCLUSION
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Performance depends on mental training equal to physical training, which requires exercise just like the physical muscles. Exercising our mind needs consistency, if we stop, our progress stops as well. Self-talk is one of the techniques that athletes use to improve their performance in sports. All athletes experience negative thoughts, however, each one of them will need practices that fit individually, some self-talk might work for some athletes but not others. Each athlete needs to find the phrases they connect with the most and create meaning. "Keep going" is one of the most used phrases in this research, however, the meaning of it varies depending on athletic level. Elite athletes use it to keep pushing the hard work, however, beginners use it to keep moving regardless of their pace in the workout.

There is no study on CrossFit and Mental Toughness, and the CrossFit community rarely speaks about mental training in the sport. CrossFit is a new sport that challenges the mind due to the high-skill movements that need to be performed with speed. Therefore, athletes are facing a lot of challenges such as fear of failure, worry, and stress. In my research, I have used design practices to document myself-talk and a group of female athletes in a diagram design. These diagrams show the importance of reflecting, teaching you how to be self-conscious, and learning self-talk techniques. They also helped me to conduct data that contributed to building the MindFit App as an outcome of my research.

In self-reflective practice, I have built a close relationship with my research as an athlete and designer to have a better understanding of my research before sharing it with the CrossFit community. Design practices help me to be aware of my feelings, thoughts, and their effect on my body. This made me discover that I struggled with low self-esteem, and worrying about my training consistently, which left me drooling to the future rather than the present. Additionally, It drained my energy not just in my training session, but throughout the day. Design practices led me to understand my negative thought patterns, be patient not to resist these thoughts, and cope with uncomfortable situations. Practicing gratitude in the morning, repeating phrases throughout the day, and being present with my feelings have a huge impact on my performance. The results of my progress were shown in a CrossFit competition I attended after five months of practicing self-talk. I started my research battling depression for a very long time. As I was going through my research, I started to understand the pattern of my thoughts and tried to observe them from different perspectives, which helps me to have better control of my emotions. In the beginning, it was very hard for me to stop resisting the negative thoughts, and replace them. The consistency of practicing self-talk, sharing my experiences with other athletes, and hearing theirs through design practices, helps me to feel seen. This transformation has led me to build resilience.



Figure W





Figure V

My self-reflective diagrams have been introduced to a group of eight female athletes to share my experiences with them and make sure they understand what self-talk is. They shared their own diagrams expressing their self-talk experience through their training session. After analyzing all athletes' self-talk, I found out that all levels of athletes experience negative thoughts, however, each level reacts differently. Most elite athletes use phrases that relate to self-confidence to replace negative thoughts such as "I can do it," and "I am strong enough to do" (figure V), or they simply acknowledge their thoughts without resisting. On the other hand, beginners and advanced athletes experience self-critic thoughts such as "Why I am not good at snatch," and "Hate this! I wish I was better" (figure W). They also make some excuses to perform poorly like "It's fine if I don't finish it," and "I didn't workout or eat well for 4 days" (figure X). Some of them mentioned that they ignore negative thoughts and it brings them down.

Through my journey of self-reflective practices and participatory design research, I found out that performance depends on self-confidence, focus, and motivation. I designed an App called MindFit that features these three elements. It consists of daily practices, tracking your performance, and mindfulness exercises including breathing. MindFit helps you build confidence through daily self-talk practice. It helps you to stay focused by emptying your mind of negativity through mindfulness. Finally, it keeps you motivated by setting small goals in every training session and tracking your performance after a period of time. In order to see real results, athletes need to be consistent, therefore this app has a reminder that shows notifications to call athletes to do the work. This App is not fully completed, and due to time limitation, I couldn't finish it nor test it with a group of athletes. I am going to continue working on MindFit App to complete it and test it among CrossFit athletes.

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Appendix A

The effect of self-talk on performance in CrossFit	2023-02-13, 12:17 AM	The effect of self-tak on performance in CrossFit	2023-02-13, 12:17 AM	The effect of self-tak on performance in CrossFit	2023-02-13, 12:17 AM
		the physical body, guiding them graphically on how to use self-tall their thoughts, and finally giving them exercises to help them prac-		2. What gender do you identify as?	
The effect of self-talk on performance	in	athlete you are welcome to participate in this survey.			
CrossFit Principal Investigator:		WHAT'S INVOLVED This survey consists of nine questions and is ten minutes. Your participation in this on-line survey is voluntary. Y questions as you wish, or stop at any time. By answering the quest	ou may choose to answer as many		
Dr.Bonne Zabolotney		to participate. There will be no negative consequences if you choo			
Associate Professor		CONFIDENTIALITY The survey asks for no direct identifiers and a			
Faculty of Design + Dynamic Media		confidential. The information that you provide will be summarized possible, though unlikely, that you may be identifiable through the		3. Do you experience any negative thoughts during your workouts?	
Emily Carr University of Art + Design		data collected in this survey will be kept in secure storage at Emily following the conclusion of this study, after which time it will be de	Carr University for five years		
520, E, 1st Avenue		following the conclusion of this study, after which time it will be de	estroyeu.		
V5T 1E1		SURVEY RESULTS Results of this study may be published in repor journals, and/or students' theses. In any publication, the data will			
British Colombia, Canada		Study results will be available by Fajer Alfadhalah (Co-Investigator), and you will be notified of the		
Email: bzabolot@ecuad.ca		completion of the research via e-mail. In the event that your surver in the United States, you are advised that its governments, courts,			
		agencies may be able to obtain disclosure of the data through the	laws of the United States.		
Co-Investigator:		QUESTIONS ABOUT THE RESEARCH If you have further question: to contact Fajer Alfadhalah (Co-Investigator) by sending an email		 If you answered yes, can you describe them and at what point during the 	workout it happened?
Fajer Alfadhalah		survey has been approved by the Emily Carr University Research E			
Graduate Student, Mdes 2023					
Emily Carr University of Art + Design		1. How long have you been doing CrossFit?			
520, E, 1st, Avenue					
V5T 1E1					
British Colombia, Canada					
Email: falfadhalah@ecuad.ca					
INVITATION & PROJECT DESCRIPTION You are invited to participate in an on-line a research study at Emily Carr University. The purpose of the effect of self-talk on CrossFit research study is to help CrossFit athletes improve their performance by techniques. This research will help athletes understand the importance of training	performance in adapting self-talk				
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6. What are some keywords/thoughts/phrases/motivational state

5. How did you react to negative thoughts?

The effect of se	I-taik on performance in CrossFit	2023-02-13, 12:17 AM
8.	If you answered yes, how did it help you?	
9.	If you were coaching someone else in self-talk, how would you begin to advise	them?
	This content is neither created nor endorsed by Google.	
	Google Forms	
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Online Questionnaire:

Consist of nine short answers questions. Fifteen female participated in filling this online questionnaire.

Appendix B



Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2: CORE 2022): Certificate of Completion.

Appendix C



Self-Reflective Diagrams:

These are more diagram designs of my self-reflective practice. These diagrams are based on my daily training sessions showing the negative thoughts I experienced and how I responded to them.











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A CRITICAL & PROCESS DOCUMENTATION PAPER SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF DESIGN

EMILY CARR UNIVERSITY OF ART + DESIGN

Fajer Alfadhalah, 2023

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