

Breaking Barriers: Women's Experiences of CrossFit Training During Pregnancy

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CrossFit is a form of resistance training characterized by constantly varied, weight-training, gymnastic, and body weight movements. While resistance training is a popular exercise option among pregnant women, it is not included in current physical activity recommendations for expectant mothers. Additionally, despite negative connotations, there are anecdotal accounts of pregnant women participating in CrossFit training without adverse effects to their pregnancies. Therefore, given the barriers to physical activity during pregnancy and vigorous-intensity exercise, examining the experience of pregnant women participating in CrossFit training is of interest in the present study. Participants in the study included 22 women at least three months post-pregnancy, who had adhered to CrossFit training for at least six months throughout pregnancy and were 18 years of age or older. A semi-structured interview guide was developed and transcripts were analyzed using a thematic content analysis. Researchers searched for themes across the interview data and reached agreement on subsequent themes. Seven themes emerged characterizing the experiences of pregnant women who participated in CrossFit training while pregnant: (1) quitting was not an option, (2) support and community, (3) overcoming judgments and stereotypes, (4) listening to my body and modifying movements, (5) empowerment and pride, (6) easy pregnancy and delivery, and (7) lifestyle and functioning post-baby. Findings offer practical implications for practitioners working with pregnant women hoping to maintain their exercise regimens and demonstrate the barriers and opportunities for pregnant women desiring to maintain healthy lifestyles.

Pregnant women are recommended to engage in at least 150 minutes of moderate-intensity aerobic activity per week (Physical Activity Guidelines Advisory Committee, 2008). An impressive array of health benefits during pregnancy and at childbirth supports this recommendation, including a reduced risk of gestational diabetes, preeclampsia, and excess gestational weight gain for the mother (Dempsey, Butler, & Williams, 2005; Downs, Chasan-Taber, Evenson, Leiferman, & Yeo, 2012; Pivarnik & Mudd, 2009; Pivarnik et al., 2006), as well as preterm birth, operative delivery, and unhealthy birth weight for the baby (Hegaard, Pedersen, Nielsen, & Damm, 2007; Juhl et al., 2008; Pivarnik, 1998). Furthermore, there is evidence that strongly indicates aerobic activity provides various postnatal health benefits for both mother and baby (Blaize, Pearson, & Newcomer, 2015).

Population-based investigations have revealed that only 14–23% of pregnant women currently achieve recommended levels of physical activity (Evenson, Savitz, & Huston, 2004; Evenson & Wen, 2010). For those women who do, walking is by far the most common modality used. Evenson et al. (2004) found that resistance training is the third most common choice, with nearly 11% of pregnant women regularly participating in this type of exercise modality. Despite being a fairly popular exercise option among pregnant women, resistance training is not included in the current physical activity recommendations for this population subgroup. This is likely because the health effects of resistance training during pregnancy have not been clearly established, as they have been with aerobic exercise. Preliminary findings indicate that light to moderate-intensity resistance training may reduce the risk for gestational diabetes and preeclampsia (White, Pivarnik, & Pfeiffer, 2014), as well as some adverse birth outcomes (Hall & Kaufmann, 1987). Additionally, randomized trials have recently reported that light to moderate resistance training during pregnancy does not negatively affect newborn birth size or type of delivery (Barakat, Ruiz, Rodríguez-Romo, Montejo-Rodríguez, & Lucia, 2010; Barakat, Ruiz, Stirling, Zakythinaki, & Lucia, 2009), and

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positively affects glycemic control in gestational diabetic women (de Barros, Lopes, Francisco, Sapienza, & Zugaib, 2010). However, the health effects of vigorous-intensity resistance training have yet to be explored among pregnant women.

One exercise modality that has increased in popularity over the last few years has been CrossFit training, which is characterized by constantly varied, weight training, gymnastic, and body weight movements performed at high intensity (Glassman, 2004). Moreover, previous research has revealed that participants perceive the social connection and sense of community provided by CrossFit is as important as the health and fitness benefits participants experience (Simpson, Prewitt-White, Feito, Giusti, & Shuda, 2017). As such, CrossFit training presents participants with the opportunity to improve factors related to physiological and psychological health (Heinrich et al., 2015; Heinrich & Feito, 2016; Heinrich, Patel, O’Neal, & Heinrich, 2014). Although sometimes criticized for its “extreme” nature (Bergeron et al., 2011) and anecdotal implications regarding severe injuries and life-threatening conditions, such as rhabdomyolysis (Hadeed, Kuehl, Elliot, & Sleight, 2011; Mitchell, 2008; Tilghman, 2010), the available evidence suggests this training modality is not more dangerous than other more traditional training programs (Hak, Hodzovic, & Hickey, 2013; Weisenthal, Beck, Maloney, DeHaven, & Giordano, 2014). Despite these negative connotations, there are multiple anecdotal accounts of pregnant women participating in this form of vigorous-intensity training without any adverse effects. In addition, Brown, Finch, Robinson, Torode, and White (2002) suggested that trained pregnant athletes are likely able to safely engage in activities *beyond* the conservative intensities previously recommended by the American College of Obstetricians and Gynecologists (ACOG) (Artal & O’toole, 2003).

Given the many barriers to physical activity during pregnancy, the experience of pregnant women participating in CrossFit is of particular interest. Such barriers include: physical discomforts, fatigue, childcare or work responsibilities, lack of social support from family or friends, insufficient or inaccurate information from healthcare providers, perceived body image, and concerns of harm to the baby (Cioffi et al., 2010; Clarke & Gross, 2004; Cramp & Bray, 2009; Downs & Hausenblas, 2004; Duncombe, Wertheim, Skouteris, Paxton, & Kelly, 2009; Evenson, Moos, Carrier, & Siega-Riz, 2009; Hegaard, Kjaergaard, Damm, Petersson, & Dykes, 2010; Krans & Chang, 2011; Marshall, Bland, & Melton, 2013). A recent investigation of participants engaged in CrossFit training indicated several motivational factors that encouraged adoption of this training modality and promoted adherence to training (Simpson et al., 2017), which could be of benefit to pregnant women to minimize these barriers. In general, pregnant women may be more likely to be physically active, and specifically engage in resistance training, if they perceive facilitating factors to be greater than their perceived barriers (Petrov Fieril, Fagevik Olsén, Glantz, & Larsson, 2014). However, psychosocial barriers may be particularly prominent for pregnant women who consider engaging in CrossFit training, given its attached negative stigma. Thus, an investigation of pregnant women’s experience with CrossFit training will likely provide invaluable information of how pregnant women can maintain or improve their moderate to high-intensity physical activity behavior in the face of dynamic pregnancy-specific barriers.

Therefore, the purpose of this investigation is to qualitatively examine the factors that encourage and support pregnant women to maintain this high-intensity training modality. The research team believes women who participated in CrossFit training during their

pregnancies may have experienced additional external barriers to participation considering the social norms for pregnant women and believe there is much for the health psychology field to learn about the psychology of vigorous-intensity exercise adoption and adherence for pregnant women. Researchers trust the proposed study will add relevant findings to the field that various exercise programs and health psychology practitioners can benefit from their applied practices.

Methods

Participants

The fundamental purpose of the current study was to understand women’s experiences of participating in CrossFit training while pregnant. Inclusion criteria for this study included women who were at least three months post-pregnancy, had adhered to CrossFit training for at least six months throughout pregnancy, and were 18 years or older. 22 women participated in the study (*Mage* = 33 years, range = 26–39). 17 participants self-identified as Caucasian, three as African American and two as Asian-American (see Table 1). In addition, all 22 participants continued their participation in CrossFit post-pregnancy and deliver.

Procedure

After institutional review board approval was granted, purposeful sampling (Patton, 2002) was used, meaning authors contacted

Table 1 Demographic Information of the Participants

Pseudonym	Age	Race	# of Children	Years participating in CrossFit prior to pregnancy
Ali	34	Caucasian	2	4
Amber	31	Caucasian	1	2.5
Bee	33	African-American	2	5
Carrie	30	Caucasian	1	7
Claire	34	Caucasian	3	2
Devon	26	Caucasian	1	1.5
Diane	31	Asian-American	3	4
Emilia	28	Caucasian	1	1
Fiona	35	Caucasian	1	6
Gina	29	Asian-American	2	3.5
Heather	34	Caucasian	3	4
Jacqui	32	African-American	1	5
Karen	35	Caucasian	4	4.5
Kait	28	Caucasian	1	2
Kelly	37	Caucasian	1	6
Laurie	36	Caucasian	1	3
Madeleine	32	Caucasian	2	3.5
Maureen	38	Caucasian	1	7
Mary	34	Caucasian	3	9
Sarah	31	Caucasian	2	1.5
Sharon	39	African-American	2	3
Teresa	36	Caucasian	2	2

potential participants in person, via email, and via social media. Participants who expressed interest in participating in the study and met the study criteria were contacted for an interview. Semi-structured interviews were chosen because the method allows for flexibility in the interview, broadens the scope of responses and allows concepts to emerge from the conversation between the interviewer and participant (Lincoln & Guba, 1985). Two members of the research team trained in qualitative interviewing conducted the semi-structured interviews over the phone at a time chosen by and convenient for the participant. Participants completed, scanned, or electronically signed written informed consents and emailed the completed documents to the primary investigator prior to being interviewed. In addition, prior to the commencement of the interview, participants were reminded of the voluntary nature of the interview as well as their rights to confidentiality. Interviews were audio recorded and lasted between 32 and 115 minutes ($M = 52$ min, $SD = 9$). All interviews were transcribed verbatim and checked for accuracy by the researchers.

Interview Guide

The interview guide consisted of 23 open-ended questions designed to capture the participants' experience of participating in CrossFit training while pregnant. To accomplish this goal, participants were asked to reflect on their CrossFit training and experiences of doing so prior to (Were you participating in CrossFit® prior to your pregnancy? If so, for how long? Would you please describe your experience of Crossfit prior to being pregnant?) during pregnancy ("How would you describe your overall experience of CrossFit training while pregnant?"). They were then asked more specific questions related to (a) psychological factors, ("In the time between learning you were pregnant and making the decision to continue to participate in CrossFit throughout your pregnancy, what, if any, were some of your thoughts or concerns?"), (b) behavioral attributes and skills ("Can you describe your physical activity patterns and/or workouts during pregnancy?"), and (c) physical activity characteristics ("Can you describe your personal intensity level during a regular CrossFit session while you were pregnant?").

In accordance with recommendations for semi-structured interviewing (Gorden, 1975), the wording and sequence of questions remained the same for each respondent. However, to ensure the data was not misinterpreted, the interviewers had the freedom to probe unclear or ambiguous words or phrases, which in turn helped to validate responses. Furthermore, Patton (1990) suggests that probing allows for interactions between the researcher and participant, which develops rapport and reduces the risk for socially desirable answers. It should be noted that all probes were based on participants' initial responses to the semi-structured guide. In addition, at the end of the interview participants were asked if they had any other thoughts or experiences that they were unable to share, in order to ensure participants had the opportunity to provide all relevant information.

Data Analysis

The procedures used in this study were consistent with Côté, Salmela, Baria, and Russell (1993) guidelines for organizing and interpreting qualitative data. First, transcripts were read in their entirety by six investigators to get a whole sense for the participants' experiences. During the second reading, the investigators engaged in several in-person research meetings to identify meaning

units (e.g., words, phrases or statements) that were deemed as significant. Once this process was completed, similar meaning units were grouped and analyzed to form themes. This process continued until the research team believed all meaning units fit into the organizing system and no new themes or categories emerged (Côté et al., 1993). Once this was achieved, the higher and lower order themes were grouped to form the major themes that encompassed study participants' experience of participating in CrossFit training while pregnant. Once themes were determined, authors selected the most germane quotes for each theme and ensured that the quotations unveiled participants' perceptions. It is important to note that participants referred to the training modality as "CrossFit" and/or "CrossFitting" and we have not altered their responses; however, it should be emphasized that the question addressed CrossFit training as style of training and do not imply any reference to the actual brand (CrossFit, Inc.).

Findings

The results are organized in seven themes: (1) quitting was not an option, (2) support and community, (3) overcoming judgments and stereotypes, (4) listening to my body and modifying movements, (5) empowerment and pride, (6) easy pregnancy and delivery, and (7) lifestyle and functioning post-baby. Pseudonyms were created to protect participants' anonymity and are used with supporting quotations throughout the following sections.

Quitting was not an Option

Perhaps the most prominent theme of pregnant women's CrossFit training experience in the present study was that all participants never considered terminating their CrossFit training during their pregnancies. More specifically, Amber shared:

I actually never even considered not doing CrossFit while I was pregnant. I was always told even growing up that while you're pregnant as long as you continue with something and as long as you don't do anything new or heavier, and if it's something you've done before you can continue it. So, I never even fathomed the idea of not doing CrossFit while pregnant.

Women expressed having every intention to continue their exercise routine throughout gestation and also to continue living as done prior to pregnancy. As Kait described when asked some of her thoughts of continuing CrossFit training after learning she was pregnant, "I just kept doing what I always do. I didn't really think, 'I'm pregnant now so I can't exercise. I continued my lifestyle.'" Furthermore, Emilia shared, "It really was never a second thought for me whether I was going to continue doing CrossFit. My mentality was that as long as I felt like it, there wasn't a question in my mind whether or not to continue." While women shared their full intention to continue participating in CrossFit style training while pregnant, they also expressed they were able to do so as a result of the support found in their CrossFit community as expressed in the next theme, *Support and Community*.

Support and Community

The sense of support and community was paramount for every participant in the present study. For example, Gina expressed:

The community is what mostly encourages me to keep coming back. The exercise in itself was great to be able to do and I was

able to show other people that pregnancy is not disability; and, that just because they are pregnant doesn't mean you have to stop working out or that you can't do it. But, the community allowed me to believe this. The moms that we have at our gym are just great.

Within these communities, the support of fellow moms who also train using the CrossFit methodology was particularly important. More specifically, Kelly shared:

The community was the best thing for me and it continues to be the best thing for me. I think it is important to have a group of moms within your affiliate that you can lean on if you're having a tough time or if you have any questions about the baby. And, if they haven't seen you at a WOD [workout of the day] in a while they are there for you. They also push you to get there if you haven't been there because your baby's been sick or you're losing motivation for yourself.

This support was not limited just to CrossFit style workouts or motivation to exercise, but also extended to challenges outside of the gym (e.g., breastfeeding, returning to work after maternity leave). Maureen spoke to the support she received when she shared, "the first people to call me when I had a baby were my CrossFit [gym] girlfriends. I'd say it's a pretty strong community." In addition to the support provided by other women of the respective affiliates, the community and friendships developed serve the women to deflect criticism and navigate the judgment and stereotypes portrayed by both the media and medical field in regards to their training choices.

Overcoming Judgments and Stereotypes

The stigma surrounding women who participate in CrossFit training during pregnancy was evident in the current study as participants were overtly told they were not thinking clearly or did not care enough about the health of their baby. As Gina laughed when she expressed, "some people said I was crazy." Likewise, Mary shared "a lot of people that weren't my CrossFit friends, said flat out that I was crazy." Bee claimed she believed this stigma is also a cultural stereotype when she added, "In my culture, we say pregnancy is not an illness. We are not sick. But, of course there are some women who say, 'Oh, I'm pregnant—I can't do that. I will sit down and eat.' I wasn't raised with that mentality."

Moreover, participants in the current study expressed their belief that people who had never participated in CrossFit training did not understand the experience. For example, Laurie commented, "people told me I was mildly crazy . . . I didn't really pay attention to them because it's usually from people that have never done CrossFit in their life, and you know, have the idea in their head of what they've seen on TV as CrossFit." Participants reported that such comments were frequently made, and as such, they were accustomed to such judgments. Thus, when participants were told they were "crazy," they intentionally ignored and disregarded these comments, even if it was not easy to do so. To further illustrate this, Kelly shared her frustration:

Just saying you're a woman that CrossFits, you get judged because you lift weights, you get judged 'cause your hands are callused, you get judged because we're trying to hang out with the boys. And, none of those things disappear when you're doing it when you get pregnant. It becomes worse and you're just adding pressure to yourself, honestly. Which I don't think

is fair from society because all you're trying to do is keep yourself healthy and better yourself for the baby . . . people just don't understand.

Many participants also reported negative comments and judgments coming from traditionally powerful sources of support, such as mothers and mother-in-laws. Jacqui said, "My mom said I was nuts and if I wasn't careful I would harm my baby." Naturally, these comments were hurtful and frustrating to study participants. Along with being told they were crazy, some loved ones blamed participants' previous miscarriages on their participation in CrossFit. Teresa shared this sentiment when she stated:

I had a miscarriage in between my two pregnancies and sometimes I wondered, is it because I was doing CrossFit? The doctor assured me that it absolutely was not the case—miscarriages happen and my miscarriage had nothing to do with my lifestyle or activities. It just happened. I never waived, I stayed very committed to it [CrossFit] and I just felt like I was in really good hands and I had the encouragement from other women in our gym who had, who have done CrossFit their whole pregnancy. I just stayed with it . . . some family said I was crazy, some people said that's the reason I had a miscarriage and some people said, "I admire you and that's amazing."

Perhaps equally disappointing was that women felt as though healthcare providers in the medical community supported and contributed to the anti-vigorous-intensity exercise stigma for pregnant women. As Kait disappointedly shared, "I didn't listen to my doctor . . . He just wanted me to walk." Most participants disregarded medical provider advice, when it was suggested that they simply walk or discontinue their weight lifting routines. For example, Diane laughed when she said, "when I first went to my OB/GYM appointment, the nurse told me that I couldn't lift more than a gallon of milk and I remember looking at her like you're crazy, that is just the stupidest thing."

Study participants continually felt as though they were battling misconceptions that pregnant women should not exercise and found themselves particularly disheartened when healthcare providers communicated this. Claire shared, "now one OB, for example, sent me a welcome email and said 'these are some of the things you should do now that you are pregnant,' and the first thing he listed was, 'cut exercise.'"

Such experiences led women to dismiss the advice of some healthcare providers and to seek out healthcare professionals with progressive views on maternal exercise, and specifically one who would support their CrossFit training participation. Heather reflected on how she had two doctors during her pregnancy and her preferred doctor encouraged her to trust herself, listen to her body, and to be careful. She recounted her doctor telling her, "you know your plan, you are already athletic, I don't think you are going to do anything that compromises anything; go for it." From this support, Heather felt empowered to believe she knew her body best. Along these same lines, Mary shared the difference between her first and two later pregnancies when she said:

During my first pregnancy, I was so swollen. I swam and I ran some. But the doctor for my first pregnancy was like 'don't even do yoga, don't run, and you know, you could fall its dangerous'. I was like okay, then I met another doctor and he was like, 'girl, just listen to your body'. This doctor I kept . . . he was my same doctor for the second and the third

[pregnancy]. Yes, I guess I had the knowledge that I could do it. But, so many people who are out there saying, 'Don't do it. Don't work out. Don't do yoga. You might fall.' I can. I can do it and I can stay healthy. There are doctors that agree with it.

Listening to My Body and Modifying Movements

When participants were told they were "crazy," or felt as though they were being judged, they explained their keen awareness of their body to the skeptics and made sure to reiterate they always "listened to their bodies" as they would not do anything to harm their baby. Ali shared that her doctor suggested she listen to her body and was able to continue much of her previous workouts:

When I found out I was pregnant basically I was able to do all the movements that I was doing prior except for handstands, or anything where I was upside down. I didn't do rope climbs 'cause I didn't want to fall, but other than that, as far as lifting and as far as any of the other movements, I was pretty much able to do everything throughout my whole pregnancy.

In addition to listening to their bodies, participants also felt empowered and able to modify, or scale, any movement throughout their pregnancy. Maureen expressed this when she said, "There are different stages of your pregnancy. So, as I progressed, things changed you know. So, I would just kind of tell my [CrossFit] coach how I'm feeling that day or what's kind of changed and we would work together to figure out something for me." Karen's statement also supported the notion of feeling empowered to modify intensity and activities based upon her self-awareness:

There were a lot of the days when I felt like I didn't want to lift very much and I didn't. I controlled my workout. Sometimes I wanted to get a nice cardiorespiratory workout for the day. And, there were days when I really didn't feel like breathing that hard and I wanted to lift heavier. So, I think listening to how I felt each day really helped and knowing I was in control. It really varied throughout the pregnancy what I felt up to doing and I did what I felt like.

Additionally, Carrie also shared similar sentiments when she confirmed:

I felt like I was able to scale everything. So, I'm in control. I just substitute something else if I can't or don't want to do something. So, if I can't do a strict pull up, I can do pull ups with the band or I can do ring dips. I can alter what I do that is still going to focus on that same muscle group. Even though I am pregnant, I just alter the exercise.

Devon further shared her ability to control her intensity level when she said, "If I ever felt like I might be beginning to overdo it, if I was becoming uncomfortable, I would modify. I kept the highest intensity I could while still being able to talk while exercising. That was my indication for my intensity level."

Empowerment and Pride

Women in the present study expressed feelings of empowerment by their participation in CrossFit training and believed if they could continue with their training while pregnant, "delivering a baby would be the easy part" (Kelly). Indeed, the CrossFit training experience seemed to increase participants' confidence that they could do most anything, regardless of their pregnancy.

Maureen shared proudly, "You know, half of my friends were doing the pull-ups with me and then here I was with an eight-month-old pregnancy belly doing the pull-ups . . . that was kind of empowering—and I was thinking, 'this is good for me. I'm still doing it. I'm strong but I'm not overdoing it and I am capable of doing a lot stuff.'"

Women also received a great sense of self-satisfaction from being able to continue their CrossFit training while pregnant as Jacqui expressed when she stated, "I feel proud of what I did and I got a certain amount of street credibility since I 'Crossfitted' for so long while pregnant. People just looked at me in a different light. Like, yeah, she's a fighter and she doesn't give up and she is hardcore."

Feelings of empowerment and pride were certainly felt on a personal level, but also extended to the female gender in general, and specifically with respect to the strength women possess. Mary spoke of this communal respect when she expressed:

CrossFitting throughout my pregnancy really changed the way I even thought about pregnant women . . . the female body can handle a lot more of the pregnancy aches and pains that people complain about. And, women can be in the best shape through all of their pregnancy experience. So, for me, doing CrossFit changed my perception of being pregnant and being a woman. We're strong and we're not supposed to sit on the couch and eat bon bons. We don't have to do that. There is an alternative, and potentially, that alternative is better for us.

Easy Pregnancy and Delivery

In addition, due to CrossFit training throughout pregnancy, participants perceived having higher energy levels, less fatigue and easier deliveries. Teresa alluded to this when she shared:

Pregnancy is a lot on your body, on your skeleton, on your frame and on your hips. In my first pregnancy I had to go to physical therapy because I was having nerve and back pain. I didn't have any of that in my CrossFit pregnancy. In my first pregnancy I'd have to take a nap every single day. My CrossFit pregnancy, I didn't nap at all—I had great energy. My first baby was seven pounds and 12 ounces and I was in labor for 14 hours. My CrossFit baby, my second baby, was nine pounds and five ounces and I was in labor for an hour and a half. I got him out in three pushes.

Moreover, the women expressed feeling like pregnancy was not such a "daunting" task. Sharon shared, "I realized my pregnancies were so easy—both of them. I didn't gain a lot of weight and I never hurt. Even at the end it really, mobility-wise, it wasn't a big deal for me. Pain-wise it wasn't a big deal for me." To elaborate on this point, Laurie expressed similar sentiments when she stated, "I felt great for just about my whole pregnancy. I never had like periods of time where I was overly fatigued or felt really crummy. I think that even during my labor I think there was a huge bonus to doing CrossFit, too. I mean I had a very, very easy labor and delivery." Furthermore, Madeleine thankfully expressed:

I was always in a better mood after a workout. And, then that helps the baby, too. The surge of endorphins and you just being happy about things and you know all the positive hormones that you get during and after exercise really helped me. Plus, the actual strength training helps the most while pregnant so that the body weight you put on doesn't affect you because you are already a strong person.

While all of the women planned to have a vaginal delivery, 20 of the 22 women interviewed were ultimately able to have a vaginal birth experience. The majority of the women gave birth naturally without medication and expressed having an *easy delivery*. Claire shared, “I had an awesome pregnancy. I believe it’s because I stayed healthy and stayed fit and did CrossFit.” Likewise, Carrie stated, “I believe it [CrossFit training] was completely able to help me through an easy labor and easy recovery . . . I pushed for less than an hour and now I am in better shape postpartum than I was ever was even before I got pregnant . . . I don’t know some magic happened.”

Lifestyle and Functioning Post-Baby

Not only did women express having an easy pregnancy and delivery but also expressed CrossFit training was an integral factor in their ability to effectively function in a maternal role. Specifically, Bee shared:

I think knowing what I can do when I CrossFit, translates into real life and when I am trying to juggle both kids and I need to carry both of them somewhere I know I can do it because I CrossFit. Or, I am carrying them and groceries or whatever physical task I am trying to do during the day . . . it just makes it a lot easier because I know I’ll get over it because I just deadlifted X amount. So, surely to goodness you can get these small humans in the house or in the car! I think it translates sort of like a mental toughness during the day of knowing what your body can handle.

Many women expressed feeling perplexed regarding how sedentary postpartum women function with all responsibilities they face as a new mother. Most poignantly, Fiona reflected:

I don’t know how women do it who don’t work out, to be completely honest. There are so many heavy things to carry when you’re a mom. Carrying around and closing up strollers and then putting them in cars, and carrying car seats and holding your baby for seven hours a day—that all needs some real muscle.

The women also appreciated not being in need of help as expressed by Emilia, “It’s awesome because I feel like I have an easier time picking up the baby, packing up all her stuff, you know doing all the things we need to do, and I don’t always have to be like ‘Can you carry this? Can you help me?’ I’m like ‘I got it.’”

The benefits of CrossFit training throughout pregnancy, according to study participants, also had positive effects on participants’ families and lifestyle choices in general. Specifically, women expressed eating healthier as they participated in CrossFit training. Fiona stated:

When it comes to CrossFit becoming a lifestyle I tend to look at food as fuel and I think that really helped through pregnancy as well. I realized what me and the baby needed and what I didn’t need and what we don’t need today. CrossFit helped me be strong physically and mentally. CrossFit helped make healthy correlations between what my body needed and what maybe I thought I was craving. And, all in all I think it created a much healthier pregnancy and lifestyle for me in that way.

In addition, all but two women expressed having lost all of their baby weight. As an example, Sarah stated, “I had my babies six months ago and I’ve lost all my weight. Like you wouldn’t be

able to tell I had twins.” And, Heather elaborated on this point when she shared:

I gained the appropriate amount of weight during pregnancy, and my friends who were not working out while pregnant, gained much more than they should have, so I think I avoided a lot of health issues. Any excess weight I gained I was able to lose fairly quickly as well. I think it was also helpful for the baby. I think my recovery was way fast. CrossFit helped with my recovery, it helped with my attitude.

Discussion

CrossFit training has been heavily criticized for being too intense, and potentially dangerous (Bergeron et al., 2011). However, recent evidence suggests this training modality is a safe (Giordano & Weisenthal, 2014; Hak et al., 2013; Weisenthal et al., 2014) and effective way to improve fitness (Buckley et al., 2015; Heinrich et al., 2015), promote exercise adherence (Heinrich et al., 2014), and enjoyment (Bycura, Feito, & Prather, 2017) among healthy individuals. Considering the number of barriers to engage in the recommended amounts of physical activity experienced by women during pregnancy, this training modality may serve as an effective way to reduce these barriers and encourage an active lifestyle for expecting mothers.

Therefore, the purpose of this investigation was to qualitatively examine factors that encourage and support pregnant women to participate in CrossFit training. By extension, these findings provide a more comprehensive understanding of physical activity barriers commonly experienced by women who attempt to engage in CrossFit training and potentially other less traditional high-intensity exercise modalities. Our findings provided seven higher-order themes, which characterize the experience of pregnant women who engaged in CrossFit training during their pregnancy. Overall, the findings of the current study suggest women who regularly participate in CrossFit training during pregnancy face additional barriers beyond those commonly experienced by women who engage in other forms of exercise. Thus, the application of these findings should provide clinicians and researchers invaluable information for effective future research interventions and eventual initiatives to increase moderate to vigorous-intensity physical activity among pregnant women.

All 22 women interviewed expressed never considering not participating in CrossFit training during pregnancy because it was an important part of their pre-pregnancy lifestyle. This aligns with Bandura’s Social Cognitive Theory (Bandura, 1986), specifically that past experience is an extremely strong predictor of future behavior, as mediating by self-efficacy. The CrossFit training experience during pregnancy, provided study participants with a deep sense of empowerment, indeed citing the ability to successfully complete difficult physical tasks *while* growing a baby. Participants expressed feeling that if they could CrossFit train throughout their pregnancy, then they could successfully give birth and overcome any physical or emotional challenge during motherhood. Feelings of empowerment were further enhanced via their respective CrossFit communities, as study participants cited the examples of other pregnant women or new mothers fully engaged in their CrossFit training. It seems that observing the success of their peers who voluntarily physically challenged their bodies through their participation in CrossFit training provided motivation and feelings of personal empowerment for the observer as well as feelings of pride in their physical capabilities for the women in the

study. These observations and social interactions also translated into study participants developing deep feelings of loyalty toward their respective CrossFit communities.

Despite the overwhelming body of scientific evidence that a physically active pregnancy lifestyle yields maternal-fetal health benefits (Dempsey et al., 2005; Hegaard et al., 2007; Juhl et al., 2008; Pivarnik & Mudd, 2009), exercise during pregnancy in general is still heavily stigmatized. This may be particularly prominent for women who are pregnant and engage in CrossFit training, considering its exaggerated “extreme” reputation purported by various media sources (Gregory, 2014). In addition, two of the 22 women openly shared having miscarriages in previous pregnancies and people blaming their involvement in CrossFit as the reason for their miscarriages. Unfortunately, study participants reported a plethora of negative comments from family and friends relating to their participation in CrossFit training and felt judged by others, including healthcare professionals. Lack of social support has been often reported as a formidable barrier to physical activity during pregnancy. In contrast, strong social support from a variety of sources is important to facilitating optimal health behaviors during pregnancy (Connolly, Feltz, & Pivarnik, 2014; Elsenbruch et al., 2006). Bandura (1986) postulates that, next to past experience, the examples and experiences of others and social persuasions are most impactful – both of which are common products of a robust social support network. However, the aforementioned social support from peers in each participant’s CrossFit affiliate community (including other pregnant women and young mothers) and feelings of empowerment appear to serve as an effective mechanism by which participants were able to ignore other individuals’ negative comments and claims about their participation in this training modality. It is also possible, that the strong community support and positive pre-pregnancy experiences the women in the current study had with CrossFit training lead to their increased levels of physical activity self-efficacy, which has been shown to yield heightened physical activity behavior when perceived risks are outweighed (Connolly et al., 2016).

Participants also cited a lack of support from their healthcare providers, some specifically recommending that they discontinue vigorous-intensity activity and not engage in CrossFit training. Previous investigations reveal that when physical activity recommendations are given by prenatal healthcare providers, they often do not align with the current exercise guidelines and sometimes reflect those discontinued long ago (Bauer, Broman, & Pivarnik, 2010; Krans et al., 2005). Within the current study, some participants experienced providers that recommended discontinuing *all* kinds of resistance training, causing them to locate healthcare providers who had progressive views on pregnancy exercise. Current physical activity guidelines from the U.S. Department of Health and Human Services (DHHS) (Physical Activity Guidelines Advisory Committee, 2008) and the American College of Obstetricians and Gynecologists (ACOG) clearly state that pregnant women may and should *continue* to engage in resistance/strength exercises if regularly performed prior to pregnancy (American College of Obstetricians and Gynecologists, 2015). These guidelines also strongly indicate that prenatal healthcare providers must have a current knowledge of these guidelines in order to effectively discuss pregnancy physical activity with their patients and help them modify their exercise regimens should contraindications to exercise emerge. While scientific evidence strongly supports vigorous-intensity physical activity during pregnancy (as long as regularly performed previously), the current guidelines do stipulate that some vigorous-intensity activities are

not safe, such as contact sports, supine exercises, and activities performed in a specific hot climate (American College of Obstetricians and Gynecologists, 2015). A detailed knowledge of these guidelines is critical for prenatal healthcare providers to accurately discuss personalized activity plans with pregnant women.

Participants in the current study expressed feeling attuned with their bodies, and suggested that they exercised according to what their body told them was “okay.” It is important to note that all of the women had participated in CrossFit training for at least one year prior to becoming pregnant. Thus, participants interviewed did not fear injuring themselves or harming their baby while engaged in CrossFit training during pregnancy. Women also expressed being knowledgeable of modifications and were aware of when they may need to decrease the intensity of their workout due to discomfort. While “listening to my body” to dictate exercise behavior during pregnancy can be a very good thing for those who are well-informed, it can also be dangerous when not aware of all contraindications to exercise and activities to be specifically avoided (e.g., contact sports, activities with high risk of falling or abdominal trauma). Thus, the findings highlight the importance of progressive prenatal healthcare providers who provide *all* pregnant women with accurate and detailed information regarding moderate to vigorous-intensity activity and who help create a personalized activity plan according to patient obstetric and physical activity histories.

Additionally, participants in the present study perceived having higher energy levels and less fatigue than other pregnant women who were not physically active. One out of the 22 women experienced health complications during pregnancy and miscarried her baby. In this instance, the physician informed her that if she had not been CrossFit training, she may have not lived and/or recuperated as quickly. In addition, few to no delivery complications were experienced and most reported relatively easy labors. Indeed, most participants gave birth naturally without medication and expressed that labor and delivery was a continuation of an “easy” pregnancy. Most attributed this directly to their regular CrossFit training throughout pregnancy, specifically that their emotional and physical strength developed through CrossFit training, which afforded them the ability to deliver quickly. Another key finding of the present research was the reported amount of time women expressed returning back to their pre-pregnancy weight. The majority of women in the present study expressed returning to their pre-pregnancy weight between two weeks to three months. Only one participant, who had a cesarean delivery, expressed that due to her surgery and its complications, she had yet to return to her previous fitness level and weight.

In summary, we believe that pregnant women who actively participate in CrossFit training throughout their pregnancies will continue to be criticized by the media, society, their families and friends; however, the experiences provided by the women in the present study reveal that not only was CrossFit training a healthy fitness modality for them during this particular period in their lives, and their babies, but it also provided the participants with the confidence and ability to 1) have an active and healthy pregnancy, 2) have a natural child birth experience, and 3) return back to their normal physical activity regimens and pre-pregnancy birth weight.

Future Research

In light of the findings of this research, future researchers should attempt to identify women who chose to discontinue CrossFit

participation after learning of their pregnancies. Interviewing women who paused their CrossFit training during their pregnancies would provide an opportunity to unveil the beliefs and experiences of women who had counter understandings and beliefs to those expressed by the participants in the current study. In addition, it would be fascinating to study the dissonance and accord between women who CrossFit train while they are pregnant and their family members (e.g., parents, mother-in-laws, spouses) and friends who urge and/or prefer for the mothers to discontinue their participation in CrossFit for not only the mothers' but also their babies' health. Due to the norms of society, it would be informative to understand the evolution of both parties' beliefs regarding healthy pregnancies and to provide a space for individuals to voice how they navigate and negotiate these differences in beliefs. Along these lines, future interviews with health care professionals (e.g., OB/GYNs and midwives) would uncover the training, convictions and values that guide various medical practitioners' practices and recommendations provided to active pregnant mothers. Lastly, future research could also examine the differences in experiences of women who CrossFit while pregnant from those who meet moderate aerobic physical activity guidelines.

Recommendations for CrossFit Coaches and Participants

CrossFit Coaches. While women in the present study appeared to rely mostly on their own ability to listen to their bodies, CrossFit coaches need to be educated in appropriate modifications for CrossFit movements for pregnant women. In addition, CrossFit coaches should encourage women to trust how they are feeling as the women in the present study suggested that this was an empowering aspect of their CrossFit training while pregnant. The participants in the present study expressed the CrossFit community being one of their greatest supports to them not only during their pregnancies but also into motherhood. Thus, CrossFit coaches would be prudent to connect previous and/or current pregnant CrossFit participants to one another to provide women with additional emotional, psychological and maternal sustenance.

CrossFit While Pregnant Participants. Given the findings of this study of 22 women who participated in CrossFit training while pregnant, we recommend women who desire to continue Crossfitting throughout their pregnancies find a healthcare professional familiar with CrossFit training and its benefits to pregnant moms and their babies. If this is not possible, finding a health care provider knowledgeable about the benefits of exercising while pregnant and one who encourages physical activity throughout pregnancy may increase the feelings of support and encouragement desired. In addition, findings of the current study suggest that women know their bodies best and are best positioned to trust and "listen" to their bodies as they continue to break the barriers placed on pregnant women.

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