THRIVE: PHYSICAL ACTIVITY ACCESSIBILITY AS AN ISSUE OF SOCIAL JUSTICE, AN INCARCERAL HEALTH WELLNESS PROGRAM MODEL

A Thesis
Submitted to
the Temple University Graduate Board

In Partial Fulfillment
of the Requirements for the Degree
Masters of Art in Urban Bioethics

---

by
Kyra Sloane
May 2024

Thesis Approvals:
Brian Tuohy, PhD. Assistant Professor, Center for Urban Bioethics

ABSTRACT

This thesis is predicated on two ideas: that physical activity is a social determinant of health; and that the American mass incarceral system is a product of structural racism. First, I review the well-known benefits of physical activity and examine the very sparse existent literature on women exercising in American jails and prisons. I then address health disparities for incarcerated populations, exploring historical policies and laws that shaped the current climate of incarceral health. Next, I discuss my motivations and the challenges associated with starting the wellness program I created at a local jail where I lead a workout and meditation class for the female population. I utilize a bioethical lens to compare similarities between my experience in the hospital as a medical student and as a physical fitness instructor at the correctional facility. Finally, I use behavioral theories to highlight the impact exercise can have on individuals and the benefits that extend beyond the bodily and can translate into the increased life skills and personal development needed to impact social change. I conclude with an analysis of how community-based interventions that allow for meaningful engagement, such as exercise programming, can alleviate the stressors associated with incarceration — a physical and metaphorical opportunity for renewal and transformation.

Dedicated to the incarcerated women who continue to demonstrate great amounts of strength and resilience despite their environment or previous circumstances that brought them there.

ACKNOWLEDGEMENTS

I would like to acknowledge Sergeant Mike Quinones, Warden Karen Taylor, and Victoria Nicolosi for being true advocates, recognizing the medicinal power of movement and meditation, allowing me to start this program, and welcoming me to Camden County Correctional Facility with open arms.

My completion of this thesis would not have been possible without my amazing advisor **Dr. Brian Tuohy,** and the Center for Urban Bioethics team. Thank you for bringing together the community of like-minded people that was our MAUB cohort, believing in this project from the beginning, and all of the education and guidance along the way. Much appreciation to my incredible emergency medicine mentors Dr. J. Ufberg and Dr. Caroline Brandon for the inspiration and support during my medical school journey.

Finally, to my family and friends: **Ary, Wes,** Tata, Ñaña, Jeannine, Francesca, Daniella, Liv, Geo, Candace, Kath, Indigo, Zahon, Jeanette, and Klev – my deepest gratitude to all of you for the endless love and support that empowers me to actualize my dreams.

TABLE OF CONTENTS

Page

ABSTRACT iii

DEDICATION iv

ACKNOWLEDGEMENTS v

LIST OF FIGURES viii

CHAPTER

1. INTRODUCTION 1

2. REVIEW OF LITERATURE 3

Movement as Medicine: Exercise Benefits 3

Why Focus on this Population? 4

Literature on Incarcerated Women Exercising 6

Background and History 10

Incarceration as a Social Determinant of Health 13

3. THE PROGRAM 16

Motivations 16

The Process 16

Badge 006, No Buttons 17

4. PRISONS, JAILS, AND HOSPITALS 20

People as Numbers and Supervised Spaces of Confinement 20

Hierarchy and Power Dynamics 21

Resource Limitations and Health Disparities 21

Stillness and the Underwhelming Mundane 23

5. CONCLUSION 25

Movement for Individual Change 25

Movement for Collective Change 27

Analysis and Future Directions 28

BIBLIOGRAPHY 30

LIST OF FIGURES

Figure Page

1. Statistic on Women Incarcerated in the U.S 6

2. Statistic on Women's State Prison Population Growth 10

3. Global Distribution of the Incarcerated Population 13

4. Schematic Depicting Relationship Between Structural Racism, ED Use, and Incarceration 23

5. Behaviors, Beliefs, and Social Change Skills 27

CHAPTER 1

INTRODUCTION

> I would love for the future of fitness not only to be about [WiFi] connected treadmills and luxury clubs where people can go hang out and drink green juice after their workout, but rather for a collective public investment in making fitness and recreation available to everybody and much more accessible than it currently is. We do agree as a culture, for the most part, that exercise is good for you, but our policy environment has not caught up with that. We should acknowledge that that's one of the few things that we can agree on in our culture, and then have a kind of bipartisan shared investment in better physical education, better recreation [spaces] for kids and adults. Mehlman Petrzela, 2022, para. 25

When I entered medical school, I had the naive optimism of believing I could single-handedly transform healthcare in the United States into a more preventative-based system by increasing access to physical activity and consequently allowing the health benefits of movement to be afforded to all. Everyone should be able to thrive, I wrote on my applications. I still believe this to my core; but after gaining more clinical experience, I began to witness how the barriers to health equity, especially as related to preventative wellness and exercise, were so deeply ingrained in our society. Forget thrive – our patients are trying to survive. The stark difference between the attending I worked with who hopped on her peloton before morning rounds and the same age, same sex patient we saw together – with debilitating disease that left her bedridden in her 40s – was alarming. At times I felt quite helpless, but somewhere along the way I also developed the viewpoint that, as medical practitioners, we are in this incredibly unique position to really listen to peoples' stories and place that information in a macro context that considers social determinants of health, and come up with solutions that meet people where they are. But before we can do that, we have to figure out… How did we get here?

To follow is a review of the literature (Chapter 2) which examines the benefits of exercise within the context of the viewpoint that movement is medicinal. A discourse on the limitations of the literature review findings related to incarcerated women that includes a historical perspective, as well as the identification of incarceration as a social determinant of health is also framed. Chapter 3 includes discussion of a program that was implemented in a jail facility for the female population. Insight into how the bureaucratic red tape was negotiated and the process of securing active participation at the facility to conduct the program is highlighted. Chapter 4 provides a perspective on similarities between carceral and healthcare systems while also identifying and discussing resource limitations that are directly correlated with health disparities. Chapter 5 concludes with a summary analysis that focuses on movement for change within the context of both an individual and collective level.

CHAPTER 2

LITERATURE REVIEW

Movement as Medicine: Exercise Benefits

We exist in a culture that appears to value health: glowing skin, athleisure wear, trendy workouts. But as a country, despite high healthcare spending, we are an unhealthy nation: the United States spends more on healthcare than any other nation in the world, yet ranks poorly on nearly every measure of health status (Schroeder, 2007), with glaring disparities existing between different groups of different socioeconomic status. Simply put: we know that social factors are crucial determinants of health outcomes. From a physiological perspective, we know that changes occur in the body as a response to chronic stress, including the production of inflammatory cellular signals (Cohen, Doyle, & Skoner, 1999), and that lower income and education levels are associated with chronic disease such as hypertension and hypercholesterolemia (Kaplan & Keil, 1993). The negative health effects of stress have been proven to negatively impact hormonal, neurological, immune, cardiovascular, and metabolic systems (McEwen & Gianaros, 2010; Seemen et al., 2010). Additionally, research in the evolving field of epigenetics shows that environmental influences can turn certain genes "on or off" (Wolffe & Matzke, 1999), i.e., our environment can influence whether or not certain genes are expressed. Proteins called telomeres that cap the ends of DNA strands are a marker of cellular aging. Telomeres have been studied extensively, and changes to their length has been linked to educational attainment (Steptoe et al., 2011; Surtees et al., 2012), occupational class including manual vs. non-manual work (Cherkas et al., 2006), work schedules (Parks et al., 2011), perceived stress (Epel et al., 2004), and intimate partner

violence (Humphreys et al., 2012). In sum, incontestable objective data confirming the relationship between low SES and poor health exists (Braveman & Gottlieb, 2014). 2011), perceived stress (Epel et al., 2004), and intimate partner violence (Humphreys et al., 2012). In sum, incontestable objective data confirming the relationship between low SES and poor health exists (Braveman & Gottlieb, 2014).

There is also significant international literature that provides indisputable evidence of the relationship between physical exercise and improved physiological and psychological health. Exercise is associated with a decreased risk of developing chronic illnesses such as cardiovascular disease, osteoarthritis, diabetes, depression, and premature death (Mernitz & McDermott 2004; Taylor et al., 2004). Further, appropriate exercise interventions may be just as effective, if not more so, than some medication regimes for some physical chronic illnesses, likely due to reversal or at least delay of illness progression (Warburton et al., 2006). It has been suggested that at minimum, physical exercise should be used as an adjunctive therapy to traditional treatments (Martinsen 1990, California Pulmonary Rehabilitation Collaboration Group 2004).

Exercise is not a one-size-fits-all solution for the health disparities that exist, but increasing access to physical activity is a tangible public health goal that would have positive downstream effects on individuals; the following literature review will explore this concept as it relates to the frequently ignored population of incarcerated women.

Why Focus on This Population?

Over 20 million Americans are currently or have been incarcerated in jail, whereas 9 million Americans cycle in and out of jail each year (Ahalt et al., 2015). Of individuals incarcerated in jail, 10%–15% are women (Minton & Zeng, 2015). Although

more men are incarcerated, the rate of growth of numbers of incarcerated women has outpaced men (Sentencing Project, 2015). Between 1980 and 2014, the number of incarcerated women increased by more than 700%, double the rate among men (Carson, 2015). Despite these statistics, after embarking on a literature review, I learned that the data on the health of incarcerated women is sparse, and information specifically on women exercising in American jails and prisons was nearly nonexistent.

Incarcerated populations are usually from the lowest socioeconomic groups in society. People detained in U.S. jails and prisons are much more likely to be poor women and men of color (Eliason, Taylor, & Williams, 2004). Women who are incarcerated can be considered twice marginalized because they face discrimination associated with patriarchal society, and more professional attention is given to incarcerated men (Davis, 1999). Incarceration of women can be seen as a tool of oppression against the poor and women of color that reflects racism, sexism, and classism (Eliason, Taylor, & Williams, 2004). The incarceration of mothers can be more damaging to family units than the incarceration of fathers since mothers are more likely to have responsibility for the care of children (Mignon & Ransford, 2012; Roberts, 2011). Studies suggest that women in prison globally experience greater mental and physical illness than the general population and than men in prison (Gunter, 2004; Mooney et al., 2002; Plugge and Fitzpatrick, 2005), frequently a result of lifetime abuse and victimization, including post-traumatic stress disorder, depression, anxiety, and phobias (Cashin et al., 2008; Fogel, 1993; Khavjou et al., 2007; Nolan and Scagnelli, 2007; Messina & Grella, 2006; Shaw et al., 1985; Zlotnick, 1997). Women in prison also report weight gain during their imprisonment, attributed to the metabolic changes of drug withdrawal, high-carbohydrate

prison diets, prison food options limited to high-calorie snacks, boredom, and inactivity (London et al., 2004; Meiklejohn et al., 2003; Mohs et al., 1990; Nolan & Scagnelli, 2007; Shaw et al., 1985).

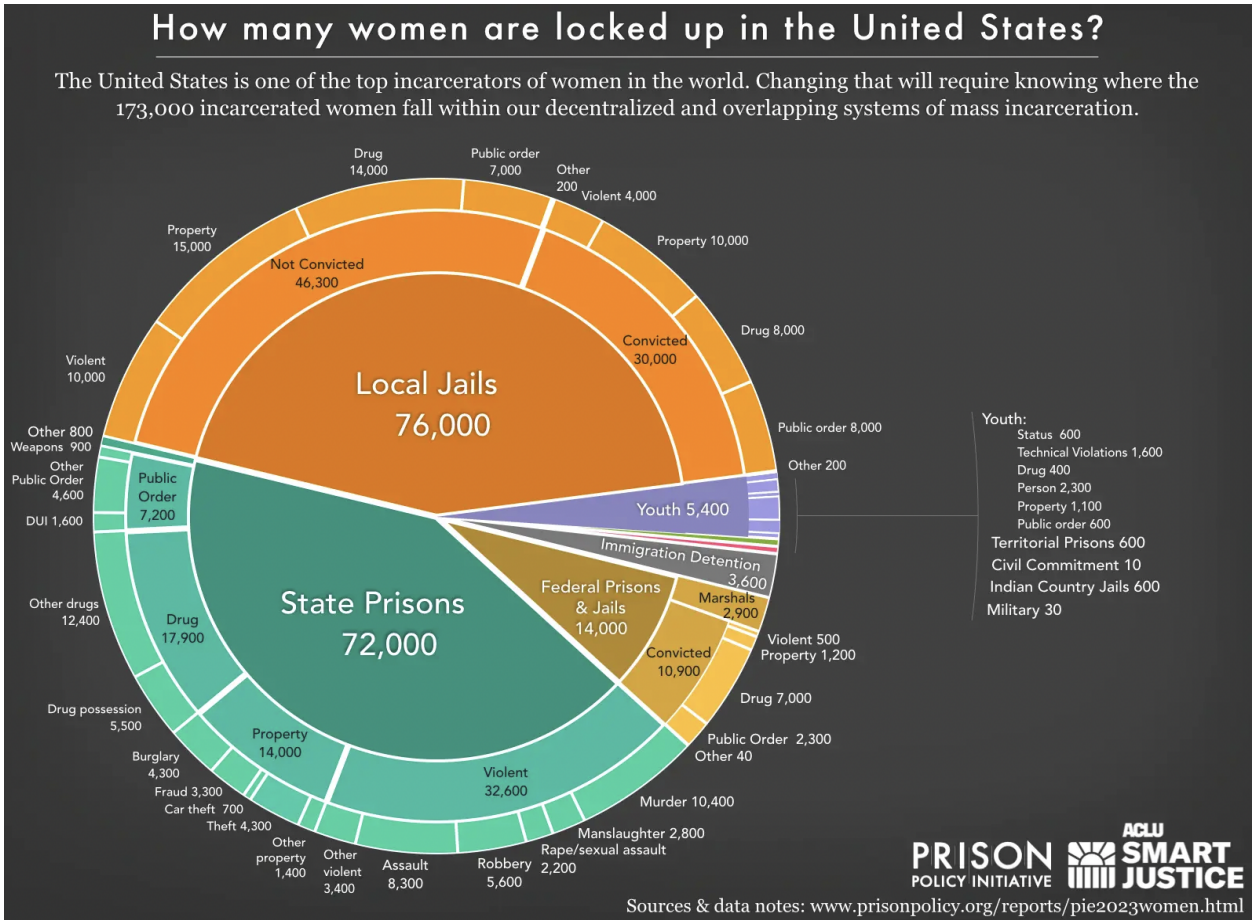

Figure 1. *Statistic on Women Incarcerated in the U.S.*

Literature on Incarcerated Women Exercising

Physical activity is well established for health promotion. Short-term benefits are evident immediately, and regular engagement can help with weight maintenance (Fogelholm & Kukkonen-Harjula, 2000), lower rates of depression, anxiety, anger, and stress (Cashin et al., 2008; Hassmen et al., 2000; Krawczynski & Olszewski, 2000). One bout of moderate-to-vigorous physical activity improves anxiety and depression symptoms (Paluska & Schwenk, 2000), decreases blood pressure (Pescatello et al., 2004),

and improves sleep (Uchida et al., 2012). Notably, physical activity may also improve the chances of success for individuals undergoing substance abuse treatment (Wang et al., 2014).

Other benefits that can occur with regular physical activity include disease risk reduction, improved functionality, and positive neurohormonal shifts, primarily through regulation of body temperature, adrenal activity, and neurotransmission of noradrenaline and dopamine (Brugman & Ferguson, 2002). These regulations can contribute to short-term tranquilizing effects, stress adaptation, and improved mood. The psychological benefits include the sense of control and achievement and the distraction from stressful situations (Brugman & Ferguson, 2002). Thus, notable benefits of physical activity for incarcerated women include positive physiologic changes/ disease risk reduction, protection against stress, improved chances of achieving success for substance abuse treatment, introduction of healthy coping skills, and potential for the creation of a safer, and healthier environment.

One study from a Canadian prison implemented a six-week pilot program that was designed for and by incarcerated women, with self-reported findings of weight loss, decreased stress, improved sleep, and overall feelings of health. These findings are consistent with the known benefits of exercise programs and with a recent report of decreased hopelessness and improved mental well-being among incarcerated people who engaged in an exercise program (Cashin et al., 2008). Women who participated in the exercise program also reported decreased cravings for illicit drugs. Additionally, the authors report the unexpected finding that women highly rated the social aspect of the prison exercise circuit class. There was also a ripple effect of enthusiasm resulting in

increased numbers of women participating as drop-ins to the gym, suggesting that a non-competitive exercise program was a reinforcing factor for healthy behavior. This approach contrasts with the competitive exercise programs that are described in youth and male prison populations (Andrews & Andrews, 2003). The competitive nature of sport, oftentimes the type of physical activity most are familiar with, can be a deterrent to exercising at all. As they successfully did in this study, promoting inclusivity and a sense of community in the realm of fitness should be a public health goal that I believe will translate into greater participation, more enjoyment, and improved physical and mental health outcomes.

Another study from the UK that looked at nine incarcerated women found there were clear psychological, social, and physical benefits of sport and exercise participation for the interviewees including increased confidence, self-esteem, and coping mechanisms to reduce feelings of aggression and anxiety. Some of these women even reported planning their futures around the discipline of training/sport. They continually expressed a desire to lead a "healthy, socially acceptable, and crime free life" (Ozano, 2008).

One French study found that obesity (BMI≥30 kg/m^2) was already frequent in women (18.2%) but rather scarce for men (11%) at prison entry, and that incarceration worsened the rate of obesity in both genders (21.2% and 16.7% respectively). At the time of the study, abdominal obesity, estimated through waist circumference, was particularly prevalent in women (69.7%) versus men (27.8%), and metabolic syndrome was detected in 33% of female and none in incarcerated males. Abdominal obesity was associated with female sex ($p<0.03$), low physical activity ($p<0.05$), and eating disorder ($p = 0.07$) in univariate analyses. Low physical activity remained significant as an explanatory factor

of higher abdominal obesity in multivariate analysis. A marked difference between genders was found for the practice of physical activity with a higher proportion of women compared to men being inactive (37.9% vs. 11.8%) and fewer women being very active (17.2% vs. 41.2%) (Lagarrigue et al., 2017).

The aforementioned studies focus on incarcerated females in Canada, Australia, the UK, and France, but research specifically on the American population equivalent is sparse. One 2019 study study I found by Camplain et al. followed incarcerated women at a Southwest county jail and observed them during recreation time, a time when physical activity is encouraged, to identify the proportion of women who participated in recreation time and their physical activity levels. During observed recreation times, 28% of women attended; 56% were sedentary, 4% engaged in vigorous physical activity, and approximately 40% walked or performed similarly moderate physical activity. The authors identified that 92% wore facility-issued sandals and a small number of women wore purchased sneakers (2%), issued sneakers (1%), and Crocs (5%), shedding light on clothing/equipment as another potential barrier. With no structured fitness programming and inadequate footwear, it is unsurprising that such low percentages of these incarcerated women are using recreation time to exercise.

In the realm of fitness programming in prisons, the existing literature arrives at unsurprising conclusions: that working out has been associated with psychological, social, and physical benefits. Incarceration provides a unique opportunity to form and implement potentially life-long healthy habits, including exercise, a known contributor to health, and a potent form of preventative wellness. Facilitating an inclusive environment with adequate equipment and programming that supports our incarcerated female

population to reap the benefits of working out will not single-handedly change existent health inequities; yet, the viewpoint that access to physical activity is an issue of social justice provides a framework for thinking about movement as a form of medicine that requires attention. Given the rate of growth of women's prison populations, it was apparent to me that this particular group could benefit from the approach that exercise can be an empowering experience with the ability to be an equalizing mechanism, as part of integrated public health measures that aim to address the health of incarcerated women.

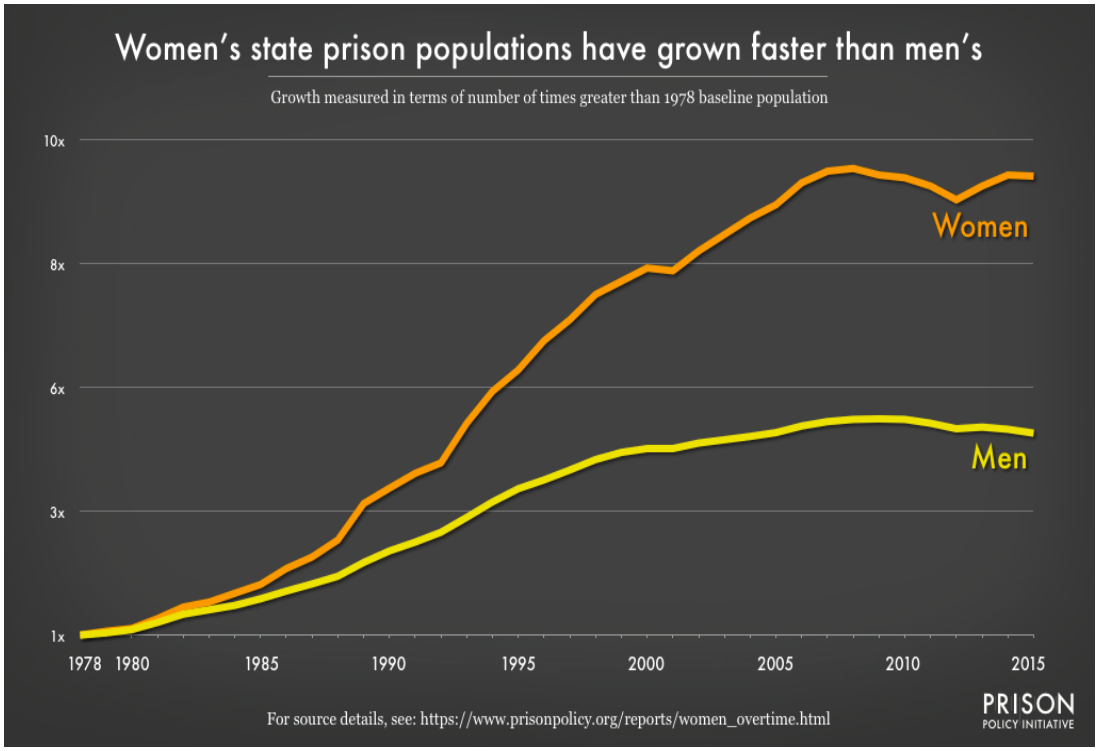

Figure 2. *Statistic on Women's State Prison Population Growth.*

Background and History

In re-addressing my original question: how did we get here? I sought to find out the recent history of events that led to the health disparities we see in incarcerated populations. In the 1970s, American psychiatric hospitals became deinstitutionalized,

leaving patients without mental health treatment. Consequently, people with mental health needs experienced increased incarceration rates. A striking demonstration of this is that there are now "more people with serious mental health disorders in Chicago's Cook County Jail, New York's Riker's Island, or the Los Angeles County Jail than there are in any single psychiatric hospital in the nation." (Macmadu & Rich, 2000). Estimates of psychiatric disorder prevalence include half of the incarcerated population, in contrast to 10% in the general population according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria (Macmadu & Rich, 2000).

In the Supreme Court's 1976 ruling of Estelle v. Gamble, the court ruled that "deliberate indifference to serious medical needs" was the "unnecessary and wanton infliction of pain," and therefore a violation of the Eighth Amendment prohibition of cruel and unusual punishment, and contributed to constitutionally mandated standards of care for incarcerated populations. Unfortunately, under this ruling, incarcerated people must prove both that they received substandard care and that correctional providers demonstrated deliberate indifference, which can be challenging. Furthermore, the Prison Litigation Reform Act of 1996 set the requirement that fees must be paid to file a suit after the "exhaustion rule," which requires all administrative appeal options to be used before filing a case, decreasing the likelihood that a case will be filed and increasing the process time to one that takes up to years to complete (Macmadu & Rich, 2000).

International standards for correctional health care exist, such as those set by the World Health Organization and the United Nations High Commissioner for Human Rights, but the United States has not universally adopted or enforced these guidelines. Guidelines that some American correctional facilities have supported include standards

outlined by the American Public Health Association, the American Correctional Association, and the National Commission on Correctional Healthcare. The National Commission on Correctional Healthcare offers accreditation to those that adopt their standards, but only a few have, and no large-scale study has been done to provide evidence for the benefits of adopting these standards (Macmadu & Rich, 2000).

Healthcare is generally provided by one of three means: public correctional care, and private or academic medical centers. Larger correctional facilities usually use public correctional care, whereas smaller jails typically contract medical care to local providers. In 2004, 32 states used private correctional care, making up around $3 billion of the $7.5 billion correctional healthcare spending. Data from the following year, 2005, showed that 40% of correctional healthcare was administered by for-profit private industries. Research on which type of correctional healthcare provider yields the best health quality outcomes is lacking, and since no universal standard exists for correctional healthcare, there is no universal way to monitor which type of healthcare can provide the best quality of care (Macmadu & Rich, 2000).

In addressing the particular challenges facing correctional health care, Alexandria Macmadu and Josiah Rich recommend lawmakers amend the Prison Litigation Reform Act to provide increased pressure for improved correctional health care, and that the Department of Justice (or another regulatory body) monitor and enforce adherence to correctional care standards (such as those proposed by the National Commission on Correctional Health Care) and uniform screening procedures. Cost issues continually act as barriers to achieving a higher standard of correctional care, yet the spending associated with the unprecedented expansion of the criminal legal system remains a huge expense:

since 1980, state correctional spending has increased by 300% to $50 billion per year. In five states, correctional spending exceeds spending on higher education. In Rhode Island, the cost of one person's incarceration is $53,462 (around the same price as one year of medical school!), and $182,396 annually in high security. Given the systemic underlying causes of incarceration, addiction, mental health treatment, and educational advancement opportunities could be well-funded with the money that it costs to incarcerate people and would address these underlying causes that contribute to incarceration risk (Macmadu & Rich, 2000).

Incarceration as a Social Determinant of Health

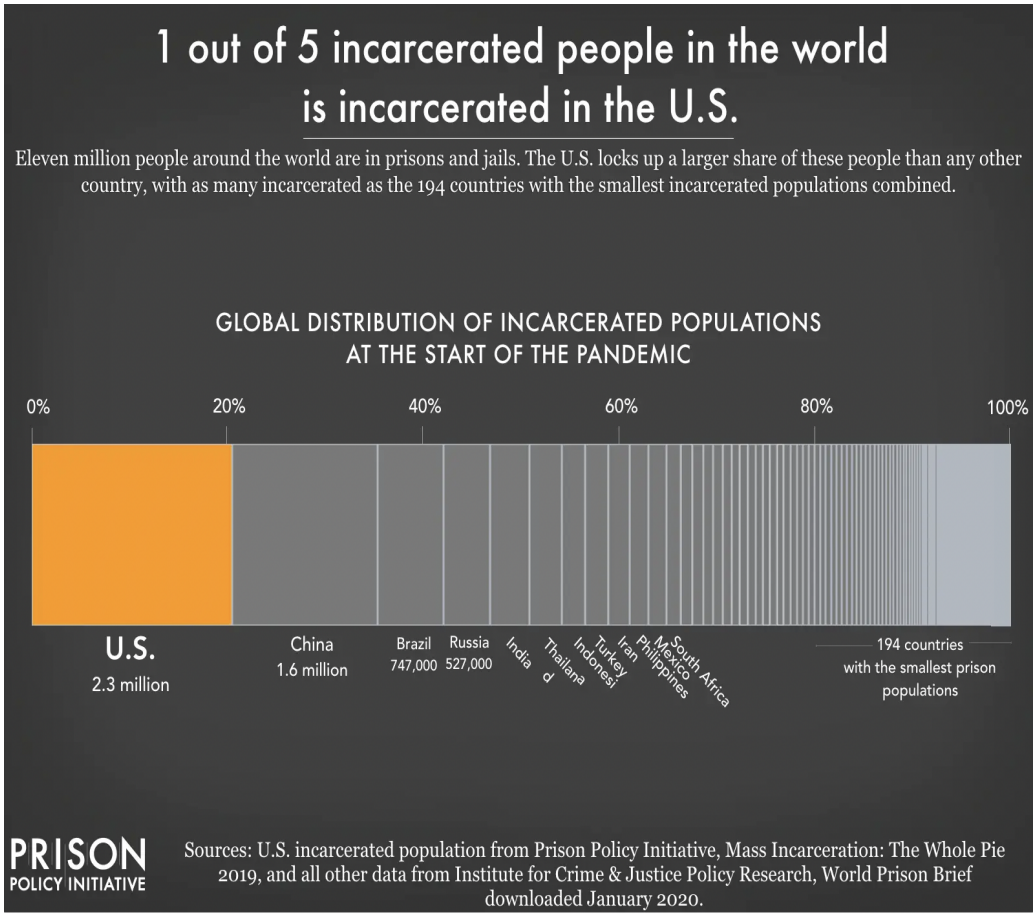

Figure 3. *Global Distribution of the Incarcerated Population*.

Given the sheer rate of incarceration in the United States combined with the fact that over 95% will return to their communities (Macmadu & Rich, 2000), incarceration is a public health issue, and this population's health disparities are alarming. Research shows that when compared to the general population, men and women who are incarcerated are more likely to have chronic conditions such as high blood pressure, asthma, cancer, arthritis, and infectious diseases, such as tuberculosis, hepatitis C, and HIV (Macmadu & Rich, 2000). Incarcerated populations are also more likely to experience early mortality and mental illness, with alarming rates of major depression, bipolar disorder, and schizophrenia (Hirschtritt & Binder, 2017). Unfortunately, incarceration itself is a risk factor for a first psychotic episode (Ramsay, Goulding, Broussard, et. al, 2011). Substance use disorders are also more prevalent in the incarcerated population, and many facilities do not provide adequate treatment (Fiscella, Pless, Meldrum et. al, 2004).

Individuals with opioid use disorder have a markedly increased risk of opioid overdose after release, especially if they are not started on medication-assisted treatment while incarcerated (Merrall, Kariminia, Binswanger et. al, 2010). Studies have also shown that people who have been incarcerated have an increased risk of death at a younger age, with this risk of premature death in incarcerated people disproportionately affecting Black populations when compared to other demographic groups (Sykes, Chavez, & Strong, 2021).

There are characteristics associated with incarceration that can incite or worsen existing mental illness. Lack of movement, privacy, and meaningful activity, as well as the risk of interpersonal danger can all cause stress that can negatively impact the mental

wellbeing of incarcerated people. One proposed protective factor is the presence of meaningful programming to combat idleness and increase sense of self-efficacy and purpose. The availability of such programming varies across facilities, but in general, over the past 30 years vocational training programs have increased on both a state and federal level. Unfortunately, however, college courses have declined, corresponding with the elimination of the Pell Grant funding for incarcerated people. Meaningful programming can be a rehabilitative effort, providing increased wellbeing as well as increasing feelings of self-efficacy, providing emotional regulatory tools and valuable skills, and potentially reducing the likelihood of recidivism (Macmadu & Rich, 2000).

The research discussed in this literature review provided insight into the benefits of exercise and how it can increase all dimensions of wellness including physical, emotional, and social health. Although there is a dearth of research on incarcerated women, particularly as it relates to health and exercise, the review of the available literature was able to provide a historical perspective as well as identify issues of incarceration within the context of social determinants of health. The discussion to follow, The Program (Chapter 3), details the implementation process as well as the myriad challenges associated with gaining access to a jail facility to provide an exercise program directed at the female population.

CHAPTER 3

THE PROGRAM

Motivations

As a second year medical student, I began writing for Prison Health News (PHN), an information network project that publishes a quarterly newsletter for people in prison and responds to requests for health information from people in U.S. prisons and jails. I responded to letters from people in prison about various health topics and answered any questions they had about their diagnoses, care, or treatment in prison. Additionally, I provided appropriate resources about their conditions/ailments, and rights. Through receiving numerous letters, I learned how inadequate the health services can be for this population. Some recurring themes noted from the correspondence were: lack of guided physical activity, nutritious food choices, and follow-up care; and the presence of medication changes and limited patient education. This experience accented the dire need for more health professionals to engage with this group. Inspired by the issues raised by letter-writing for PHN, I reflected on my skills and background to ask myself: what can I do? This led to the development of my jail wellness program.

The Process

After discovering a lack of focus on health for incarcerated individuals, I felt compelled to develop an intervention that would generate a positive impact. The bureaucratic obstacles associated with gaining access to the criminal legal system proved challenging. At first, I tried to do it through individual connections, which led to months of closed doors and rejection. The rejections, combined with the lack of literature on such a program for incarcerated women in the U.S., fueled my desire to actualize this idea and

make the program real. I switched my strategy from trying to utilize connections to directly reaching out to anyone employed by the carceral system. I sent emails to email addresses I could find that belonged to wardens in Pennsylvania, New Jersey, and Delaware. After many more nos, I was finally invited to meet with a warden's staff to explore my proposal. Upon addressing a litany of prerequisites and training, I created, implemented, and executed a weekly group fitness class focused on cardiovascular health, strength training, flexibility, and mindfulness for the female incarcerated population. Foundations of the program involve motivational speaking, breathwork, and guided meditation to encourage self-love, respect, and kindness, while using calisthenics, yoga, and pilates to create strong, flexible, and functional bodies. Classes facilitate a safe space via the usage of trauma-informed care, music, and exercise modifications to promote inclusivity and generate positive group synergy.

Badge 006, No Buttons

Saturday, 8:50 a.m. An officer lets me in through the locked front door of the jail. I go through security, hang up my jacket, and put my phone and keys away behind a front desk. I am given my ID: badge 006, department: physical fitness. On me: a yoga mat, an extra large index card with a written workout, and an old-school battery-operated stopwatch ($10.57 from Amazon). There are no handles on any doors, just cameras looking down as you are closely watched by someone from a control room who operates to open and close the doors from afar. The sliding door opens for me, then closes. Then the second door does the same, and I walk down the hallway to a room where an officer gives me a speaker and an mp3 player. I walk to the elevator which has no up/down buttons, but rather one button that is connected to an intercom system. "1 to 2 please," a

language I learned during my orientation at the jail, which is the floor you are starting on, and the floor you want to end up on. No buttons in the elevator either, just a camera. I'm teaching on the second floor today, in a room with big clear windows, surrounded by a common space, a control room/security center, and a space that holds women of different units, their bunk beds all in close proximity to each other.

Some women work, cleaning, pushing trashcans through the hallway. Some just stare. Some say hi. I usually teach in a small classroom-like space that is in between a room with a phone, and a small room that is used for virtual court. Usually when I come in, there are plastic chairs that I stack against the walls. I connect the mp3 player to the speaker and put on my workout playlist – upbeat remixes to hit songs, (no curse words though). "YOGA!" one of the COs says to a unit of women. They come in after being searched, and each takes one of the mats available — a mismatched collection of donated, worn down yoga mats. The women don't all wear orange like in the movies, some wear blue, and most of them have a white tank underneath. No one has proper workout clothes on. Some opt to take their socks off, others leave them on. There have been a few comments about my French pedicure. We often get ice cold water with small plastic cups – a delicacy in this environment.

I introduce myself as Kyra or Coach K. I see a mix of returning and new faces. I inquire about injuries or areas anyone is looking to strengthen or lengthen, I discuss foundational rules about being respectful and mindful of ourselves and each other, and then we begin our class with a warm-up. Then we do our workout, with me demonstrating at the front of the class, but making sure they know I am just a guide, and that they should take their own movements based on what feels good, and is alignment

with their own breath patterns. I offer modifications for those with joint issues or for those looking for an extra challenge. We cool down and end with a meditation – recently, we've been listening to "Trigger Protection Mantra" by Jhene Aiko, which has been well received.

My class style has changed a lot over the year. It has become heavier on flow and stretching, with more of a focus on breathwork and conscious movement rather than speed or number of repetitions. I've made this change based on feedback from the attendees. Just as in any group fitness or meditation class, the music is upbeat and fun, and the shavasana meditation is calm and relaxing. Even though during the class, since the room has large clear windows, some people wave, some stare, some even mimic tree pose from inside of their cell, it honestly feels like any other workout class – we sweat, energy is high, endorphins are generated. It is a firsthand witness of how movement can truly be equalizing, a universal form of healing.

Chapter 3 (The Program), reflected on the motivations for deciding to conduct this research, and detailed the process of gaining access to the jail facility that led to successfully implementing meaningful programming for incarcerated women. The challenges associated with maneuvering and negotiating access to the jail were presented along with some insight into my experience as an instructor. To follow is Chapter 4: PRISONS, JAILS, AND HOSPITALS, in which the hierarchical structures within the context of power dynamics are discussed. A focus on resource limitations in both the carceral and emerged as themes related to health disparities. A comparative analysis that connects jails and hospitals to near similar outcomes emerged as insightful to understanding what forces are in play to impact the existence of health disparities.

CHAPTER 4

PPRISONS, JAILS, AND HOSPITALS

"This is the first time I felt peace in a long time." one attendee of my class told me after an extended shavasana meditation. Before making this statement, she had her hand on her chest, sitting cross-legged with eyes closed, and I started to panic: "Are you having chest pain?" "No." "Are you feeling dizzy?" "No." "What are you feeling?!" She was feeling peace, for the first time in a long time. She confided that she is the mother of eight children at home and that life got stressful so she turned to street Xanax and developed an addiction that ultimately contributed to her arrest. She explained that while incarcerated she hadn't felt stress relief without the aid of drugs. It was one of the most powerful interactions I've ever had the privilege to be a part of, yet it also began to illuminate the realization that the women I was exercising with in jail were similar to many of the patients I had been working with at the hospital where I was doing clinical rotations. As I gained more clinical experience and taught more classes at Camden County Correctional Facility, I began to notice eerie parallels between patients and incarcerated people.

People as Numbers and Supervised Spaces of Confinement

Both hospitals and jails have supervised spaces of confinement, though for different purposes: jails isolate incarcerated people from society as a means of detention for suspected legal transgression; Hospitals isolate people from the outside world to facilitate medical care and promote healing processes. Both institutions exert control over individual bodies, with both formal and informal rules and guidelines. The medical record number, which translates to a scannable bar code on patient wristbands, is similar

to DOC identification numbers. Classified and numbered, people are organized into their respective spaces: discharge home versus admission to various floors of the hospital, different units based on crime severity and employment status in the jail.

Hierarchy and Power Dynamics

As part of my formal training for clearance to work in the jail, I had to learn about the hierarchy of staff in correctional systems. In the hospital, such hierarchy exists as well, though that knowledge came from experience and observation rather than written education. Correctional officers in jails exercise authority over incarcerated individuals, enforcing rules and regulations through monitoring and disciplinary actions. Healthcare professionals exert authority by controlling treatments and interventions based on medical knowledge. In both settings, power dynamics exist and can influence autonomy and perceptions of autonomy for both incarcerated individuals and patients.

Resource Limitations and Health Disparities

All too often in the hospital I found myself in a frustrating position where an actual long-term fix of the problems patients were coming in with would require a more macro, social-determinants of health approach which, due to resource limitations, was outside of the realm of what was practical. Similarly, resource-limited jails and prisons may find themselves ill-equipped to handle the demands of the needs that incarcerated populations, which are historically medically underserved and face a variety of healthcare disparities, present with. Incarcerated populations are more likely to have medical conditions such as diabetes and hypertension, and infectious conditions such as HIV, hepatitis C, and tuberculosis.

The often substandard living conditions in jails and prisons also negatively impact incarcerated patients' health. E.g., the morbidity and mortality from covid-19 were significantly higher in prisons than in the general public (Esposito, Salerno, Di Nunno et. al 2022). While incarceration can connect individuals who have not had previous access to care with continuity of care and chronic disease medication, many individuals are still unable to access adequate treatment while incarcerated. E.g., cancer patients report inadequate access to pain medications, patients face barriers to surgical care, and pregnant patients report inadequate prenatal care (Armstrong, Hendershot, Newton, et. al, 2023). Even when patients can access care while incarcerated, they often face barriers to healthcare once released (Dumont, Brockmann, Dickman, et. al, 2012).

Both hospitals and carceral systems engage with the challenge of addressing complex, multifaceted needs within a resource-limited environment, where sustainable fixes and comprehensive care may require resources beyond the feasibility of what these institutions can access. If basic medicinal needs are hard to meet, one can imagine how there is little room for preventative wellness measures such as physical activity.

Data also demonstrates a relationship between Emergency Department utilization and incarceration. One large-scale retrospective cross-sectional study set the primary exposure to frequency of ED visits and the primary outcome as the presence of any county jail incarceration during fiscal year 2018-2019 and concluded that frequent ED use is independently associated with incarceration (Eswaran, Raven, Wang, et. al, 2022).

Similar to studies showing excess mortality among those with high-frequency ED use, ED visits do not cause incarceration, but rather reflect this group's underlying biopsychosocial complexities and vulnerabilities. This demonstrates another relationship

and opportunity for the realms of medicine and carceral systems to collaborate: If patients are seen in EDs before incarceration, these interactions have the potential to inform ED-based interventions to address this population's needs, prevent future incarceration, and reduce excess mortality (Eswaran, Raven, Wang, et al., 2022).

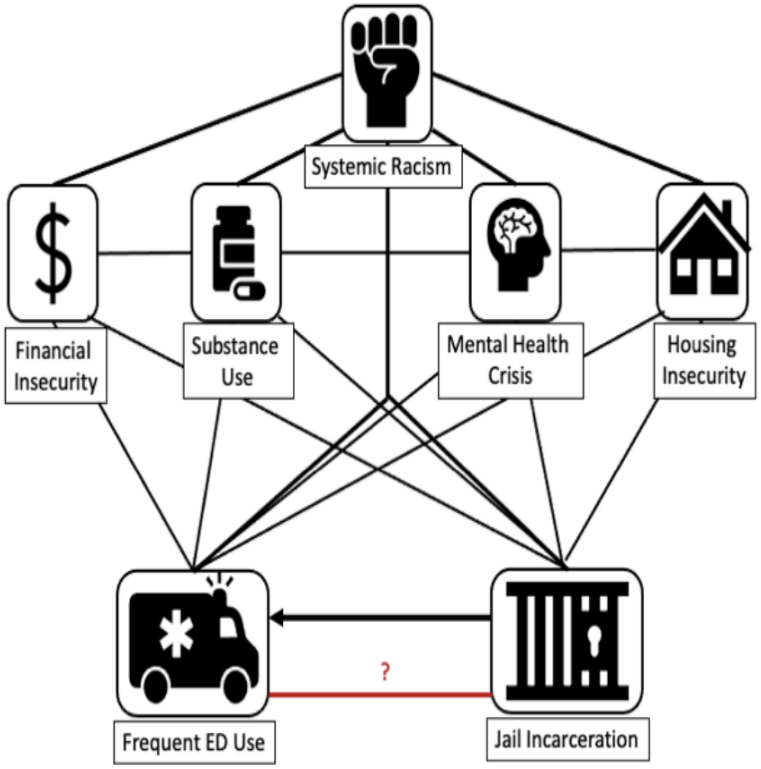

Figure 4. *Schematic Depicting Relationship Between Structural Racism, ED Use, and Incarceration.*

Stillness and the Underwhelming Mundane

A lack of excitement was another observation I made. It was different from what I've seen in media productions. Unsurprisingly, the hospital is not Grey's Anatomy, and jail is not Orange is the New Black. While there are intense, chaotic moments in both settings, I was surprised to discover that a lot of the space and time was just… boring. The majority of the time seems silent and lonely. Patients in their rooms, incarcerated

women in their twin size jail beds – the mundane only infrequently interrupted by moments of emotion, routine disruption, or human interaction.

Chapter 4 was a detailed presentation on the female prison population who participated in the program. It provides a perspective on "power dynamics" within both jails and hospitals, while also identifying and discussing resource limitations that are directly correlated with health disparities. To follow is the Conclusion (Chapter 5). The final chapter summarizes the research findings and presents a focus on the study's participants at both a micro and macro level that addresses individual and collective change.

CHAPTER 5

CONCLUSION

Movement for Individual Change

"My hips don't hurt as much as they usually do." a newcomer in my class told me after her first session. She was over 6 feet tall and barely fit on any of the mats but she made it work. She explained that she went from being sedentary in her cell to getting a job in the kitchen where she spends extended periods on her feet, causing her hips to become tight, but that after class she felt some relief.

Fitness can offer benefits that extend far beyond the physical and physiological. Garrin (2014) proposes that fitness professionals can instill health self-efficacy beliefs, reinforce autonomy and independence, and reconcile the psychosocial barriers to achieving positive health behaviors. He uses a theoretical framework to align self-efficacy, determination, and regulation theories with the positive outcomes of Astin's (1996) social change model for leadership development; in addition to the transtheoretial model that highlights the intention-to-action stage of the behavior change process.

Self-efficacy theory (Bandura, 1997) reflects the capacity of people to achieve their goals and involves perceptions of competence. There is evidence that engagement with fitness professionals can have a positive impact on client self-efficacy as it relates to exercise adherence (Fischer & Bryant, 2008; Lubans, Plotnikoff, Jung, Eves, & Sigal, 2012).

Self-determination theory is an intrinsic form of motivation that includes the triad of competence, autonomy, and relatedness. I.e., self-determined people internalize their ability to control behavior to achieve their goals (competence), believe they cause their

own destinies (autonomy), and are drawn to assimilation with others (relatedness) (Ryan & Deci, 2000). Social support can have a huge impact on autonomous, self-determined exercise intentions (Chatzisarantis, Hagger, Wang, & Thøgersen-Ntoumani, 2009; George et al., 2013; Rouse, Ntoumanis, Duda, Jolly, & Williams, 2011).

Self-regulation refers to the capacity to control the thoughts and emotions that lead to behavior. Standards, motivation, and willpower are primary determinants of self-regulated outcomes (Leventhal, Nerenz, & Steele, 1984). Social support has been shown to have predictive utility for the self-regulation associated with exercise adherence (Anderson-Bill, Winett, & Wojcik, 2011).

The social change theory of leadership (Astin & Astin, 1996) development posits that leadership development occurs as a seven core value process: individual values, which includes self-awareness, behavior that is congruent with personal beliefs, and commitment to a cause; group values refers to collaboration, common purpose, and acknowledging individual differences and need for compromise within the social scheme; and societal values (citizenship, which implies that everyone become linked and committed to the welfare of the group. For the fitness professional-client dynamic, Garrin (2014) proposes that self-efficacy, self-determination, and self-regulation characteristics are first applied to the health behavior-change process and then, once internalized, generalizable to social change skill development.

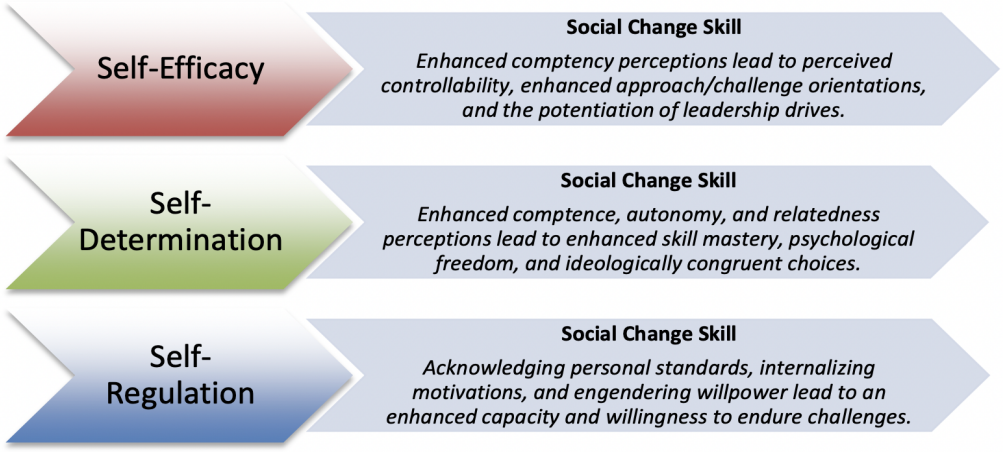

Figure 5. *Behaviors, Beliefs, and Social Change Skills.*

Movement for Collective Change

"It felt like we was at the club." one of the attendees said after the class was over. The first time I ever taught at the jail, I felt nervous as I stood in front of a fluorescently lit classroom, with plastic chairs stacked up to the ceilings and foldable tables pushed against the walls to transform the space into a makeshift workout studio. Before teaching my fitness class, the sergeant told me that I should be prepared for the possibility that some of the women might use this class as an opportunity to be aggressive towards each other or to me, showing me a safety/exit plan. I shoved down my nerves and focused on creating an atmosphere that was positive, safe, and most importantly, respectful to all. After class ended, one woman looked at me with a grin and said that it reminded her of being in a nightclub. In actuality, of course, this was a classroom in jail, but with yoga mats, music, movement, and breathwork, we created an upbeat group synergy.

Group fitness offers the opportunity to create an ecosystem of people from all different athletic backgrounds and abilities, creating a group synergy that can be motivating and fun. Physical activity offers an empowering way to develop self-efficacy,

self-determination, and self-regulation skills that could generalize to other domains of life, including social change. This is particularly meaningful for incarcerated women, who, due to structural racism's permeation of the fabric of both the American healthcare and carceral systems, face the worst sides of intersectionality. Lack of access to movement is a social determinant of health that is best addressed by a multidisciplinary approach. While challenging to actualize, the structured programming I created appeared to be beneficial for the female population at Camden County Correctional Facility.

Analysis and Future Directions

This study, THRIVE: PHYSICAL ACTIVITY ACCESSIBILITY AS AN ISSUE OF SOCIAL JUSTICE, AN INCARCERAL HEALTH WELLNESS PROGRAM MODEL, reviewed and explained the scarcity of research on incarcerated women, highlighted the benefits of exercise within the context of movement as medicine, and analyzed historical and structural factors that contributed to health disparities amongst those in the criminal legal system. Using an ethnographic lens, THRIVE discussed the process and product of implementing a wellness program at a local jail. The final sections addressed similarities between carceral and healthcare systems, and how movement can be an agent for both individual and collective change. I felt compelled to undergo this type of research, implement this program, and write this thesis because incarcerated populations are frequently neglected, yet the implementation of meaningful programming offers opportunities for this group's growth and development – which, given the sheer rate of mass incarceration, would serve as a beneficial public health measure. Future directions for this niche field of carceral health include advocacy for more meaningful

programming such as structured physical activity and meditation, research on exercise, and better equipment/clothing.

Though I am the instructor, the attendees taught me resilience and adaptability. I have a front row seat to watch these women not only persist in their lives but gain strength and commit to becoming better. I have so much gratitude for this experience – to have shared space and time, sweat and stories, and to have substantiated powerful proof that movement is medicine.

BIBLIOGRAPHY

Ahalt, C., Bolano, M., Wang, E. A., & Williams, B. (2015). The state of research funding from the National Institutes of Health for criminal justice health research. Annals of Internal Medicine, 162(5), 345–352. https://doi.org/ 10.7326/M14-2161

Anderson-Bill, E., Winett, R., & Wojcik, J. (2011). Social cognitive determinants of nutrition and physical activity among web-health users enrolling in an online intervention: The influence of social support, self-efficacy, outcome expectations, and self-regulation. Journal of Medical Internet Research, 13, e28. doi:10.2196/jmir.1551

Andrews, J. P., & Andrews, G. J. (2003). Life in a secure unit: the rehabilitation of young people through the use of sport. *Social science & medicine (1982)*, *56*(3), 531–550. https://doi.org/10.1016/s0277-9536(02)00053-9

Astin, H. S., & Astin, A. W. (1996). A social change model of leadership development guidebook (3rd Ed.). The National Clearinghouse of Leadership Programs. Blueprint Leadership Development Program at UC Berkeley.

Bandura, A. (1997). Self-efficacy: The exercise of control. New York, NY: W. H. Freeman.

Braveman, P., Egerter, S., & Williams, D. R. (2011). The Social Determinants of Health: Coming of age. *Annual Review of Public Health*, *32*(1), 381–398. https://doi.org/10.1146/annurev-publhealth-031210-101218

Brugman, T., & Ferguson, S. (2002). Physical exercise and improvements in mental health. *Journal of psychosocial nursing and mental health services*, *40*(8), 24–31. https://doi.org/10.3928/0279-3695-20020801-12

Camplain, R., Pinn, T. A., Becenti, L., Williamson, H. J., Pro, G., Luna, C., & Bret, J. (2022). Patterns of physical activity among women incarcerated in jail. *Journal of Correctional Health Care*, *28*(1), 6–11. https://doi.org/10.1089/jchc.20.05.0041

Carson, E. A. (2015). Prisoners in 2014 (NCJ 248955). Bureau of Justice Statistics. https://bjs.ojp.gov/content/pub/pdf/p14.pdf

Cashin, A., Potter, E., & Butler, T. (2008). The relationship between exercise and hopelessness in prison. *Journal of psychiatric and mental health nursing*, *15*(1), 66–71. https://doi.org/10.1111/j.1365-2850.2007.01207.x

Chatzisarantis, N. D., Hagger, M. S., Wang, C., & Thøgersen-Ntoumani, C. (2009). The effects of social identity and perceived autonomy support on health behaviour within the theory of planned behaviour. Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues, 28, 55–68. doi:10.1007/s12144-009-9043-4

Cherkas, L. F., Aviv, A., Valdes, A. M., Hunkin, J. L., Gardner, J. P., Surdulescu, G. L., Kimura, M., & Spector, T. D. (2006). The effects of social status on biological aging as measured by white-blood-cell telomere length. *Aging Cell*, *5*(5), 361–365. https://doi.org/10.1111/j.1474-9726.2006.00222.x

Dumont, D. M., Brockmann, B., Dickman, S., Alexander, N., & Rich, J. D. (2012). Public health and the epidemic of incarceration. *Annual Review of Public Health*, *33*(1), 325–339. https://doi.org/10.1146/annurev-publhealth-031811-124614

Effects of pulmonary rehabilitation on dyspnea, quality of life, and healthcare costs in California. (2004). *Journal of Cardiopulmonary Rehabilitation*, *24*(1), 52–62. https://doi.org/10.1097/00008483-200401000-00010

Eliason, M. J., Taylor, J. Y., & Williams, R. (2004). Physical Health of women in prison: Relationship to oppression. *Journal of Correctional Health Care*, *10*(2), 175–203. https://doi.org/10.1177/107834580301000204

Epel, E. S., Blackburn, E. H., Lin, J., Dhabhar, F. S., Adler, N. E., Morrow, J. D., & Cawthon, R. M. (2004). Accelerated telomere shortening in response to life stress. *Proceedings of the National Academy of Sciences*, *101*(49), 17312–17315. https://doi.org/10.1073/pnas.0407162101

Esposito, M., Salerno, M., Di Nunno, N., Ministeri, F., Liberto, A., & Sessa, F. (2022). The risk of covid-19 infection in prisons and prevention strategies: A systematic review and a new Strategic protocol of prevention. *Healthcare*, *10*(2), 270. https://doi.org/10.3390/healthcare10020270

Eswaran, V., Raven, M. C., Wang, R. C., Cawley, C., Izenberg, J. M., & Kanzaria, H. K. (2022). Understanding the association between frequent emergency department use and jail incarceration: A cross-sectional analysis. *Academic Emergency Medicine*, *29*(5), 606–614. https://doi.org/10.1111/acem.14437

Fiscella, K., Pless, N., Meldrum, S., & Fiscella, P. (2004). Alcohol and opiate withdrawal in US jails. *American Journal of Public Health*, *94*(9), 1522–1524. https://doi.org/10.2105/ajph.94.9.1522

Fischer, D. V., & Bryant, J. (2008). Effect of certified personal trainer services on stage of exercise behavior and exercise mediators in female college students. Journal of American College Health, 56, 369–376.

Fogel C. I. (1993). Hard time: the stressful nature of incarceration for women. *Issues in mental health nursing*, *14*(4), 367–377. https://doi.org/10.3109/01612849309006900

Fogelholm, M., & Kukkonen-Harjula, K. (2000). Does physical activity prevent weight gain--a systematic review. *Obesity reviews: an official journal of the International Association for the Study of Obesity*, *1*(2), 95–111. https://doi.org/10.1046/j.1467-789x.2000.00016.x

Garrin, J. (2014). Self-Efficacy, Self-Determination, and Self-Regulation: The Role of the Fitness Professional in Social Change Agency. *Journal of Social Change*, *6*(1), 41–54. https://doi.org/10.5590/JOSC.2014.06.1.05

George, M., Eys, M. A., Oddson, B., Roy-Charland, A., Schinke, R. J., & Bruner, M. W. (2013). The role of self-determination in the relationship between social support and physical activity intentions. *Journal of Applied Social Psychology*, 43, 1333–1341. doi:10.1111/jasp.12142

Gunter, T. D. (2004). Incarcerated women and depression: a primer for the primary care provider. *J Am Med Womens Assoc*, *59*(2), 107–112.

Hassmén, P., Koivula, N., & Uutela, A. (2000). Physical exercise and psychological well-being: a population study in Finland. *Preventive medicine*, *30*(1), 17–25. https://doi.org/10.1006/pmed.1999.0597

Hirschtritt, M. E., & Binder, R. L. (2017). Interrupting the mental illness–incarceration-recidivism cycle. *JAMA*, *317*(7), 695-696. https://doi.org/10.1001/jama.2016.20992

Humphreys, J., Epel, E. S., Cooper, B. A., Lin, J., Blackburn, E. H., & Lee, K. A. (2011). Telomere shortening in formerly abused and never abused women. *Biological Research For Nursing*, *14*(2), 115–123. https://doi.org/10.1177/1099800411398479

Jacobson-Hardy, M., & Davis, A. Y. (1999). "A World Unto Itself: Multiple Invisibilities of Imprisonment". In *Behind the razor wire: Portrait of a contemporary American prison system*. essay, New York Univ. Press.

Kajstura, A., & Sawyer, W. (2023). *Women's Mass Incarceration: The Whole Pie 2023*. Prison Policy Initiative. Retrieved from https://www.prisonpolicy.org/reports/pie2023women.html.

Kaplan, G. A., & Keil, J. E. (1993). Socioeconomic factors and cardiovascular disease: A review of the literature. *Circulation*, *88*(4), 1973–1998. https://doi.org/10.1161/01.cir.88.4.1973

Khavjou, O. A., Clarke, J., Hofeldt, R. M., Lihs, P., Loo, R. K., Prabhu, M., Schmidt, N., Stockmyer, C. K., & Will, J. C. (2007). A captive audience: bringing the WISEWOMAN program to South Dakota prisoners. *Women's health issues: official publication of the Jacobs Institute of Women's Health*, *17*(4), 193–201. https://doi.org/10.1016/j.whi.2007.02.008

Krawczynski, M., & Olszewski, H. (2000). Psychological well-being associated with a physical activity programme for persons over 60 years old. *Psychology of Sport and Exercise, 1*(1), 57–63.

Lagarrigue, A., Ajana, S., Capuron, L., Féart, C., & Moisan, M. P. (2017). Obesity in French Inmates: Gender Differences and Relationship with Mood, Eating Behavior and Physical Activity. *PloS one*, *12*(1), e0170413. https://doi.org/10.1371/journal.pone.0170413

Leventhal, H., Nerenz, D., & Steele, D. (1984). Illness representations and coping with health threats. In A. Baum & J. Singer (Eds.), A handbook of psychology and health (Vol. 4) (pp. 219–252). Hillsdale, NJ: Erlbaum.

London, E. D., Simon, S. L., Berman, S. M., Mandelkern, M. A., Lichtman, A. M., Bramen, J., Shinn, A. K., Miotto, K., Learn, J., Dong, Y., Matochik, J. A., Kurian, V., Newton, T., Woods, R., Rawson, R., & Ling, W. (2004). Mood disturbances and regional cerebral metabolic abnormalities in recently abstinent methamphetamine abusers. *Archives of general psychiatry*, *61*(1), 73–84. https://doi.org/10.1001/archpsyc.61.1.73

Lubans, D. R., Plotnikoff, R. C., Jung, M., Eves, N., & Sigal, R. (2012). Testing mediator variables in a resistance training intervention for obese adults with type 2 diabetes. *Psychology & Health*, 27, 1388–1404. doi:10.1080/08870446.20

Macmadu, A., & Rich, J. D. (2015). Correctional Health Is Community Health. *Issues in Science and Technology*, *32*(1).

Martinsen, E. W. (1990). Benefits of exercise for the treatment of depression. *Sports Medicine*, *9*(6), 380–389. https://doi.org/10.2165/00007256-199009060-00006

Meiklejohn, C., Sanders, K., & Butler, S. (2003). Physical health care in medium secure services. *Nursing standard (Royal College of Nursing (Great Britain) : 1987)*, *17*(17), 33–37. https://doi.org/10.7748/ns2003.01.17.17.33.c3323

Mernitz, H., & McDermott, A. Y. (2004). Exercise and the elderly: A scientific rationale for exercise prescription. *Journal of Clinical Outcomes Management*, *11*(2), 106–116.

Merrall, E. L., Kariminia, A., Binswanger, I. A., Hobbs, M. S., Farrell, M., Marsden, J., Hutchinson, S. J., & Bird, S. M. (2010). Meta-analysis of drug-related deaths soon after release from prison. *Addiction*, *105*(9), 1545–1554. https://doi.org/10.1111/j.1360-0443.2010.02990.x

Messina, N., & Grella, C. (2006). Childhood trauma and women's health outcomes in a California prison population. *American journal of public health*, *96*(10), 1842–1848. https://doi.org/10.2105/AJPH.2005.082016

Mignon, S. I., & Ransford, P. (2012). Mothers in prison: Maintaining connections with children. *Social Work in Public Health*, *27*(1-2), 69–88. https://doi.org/10.1080/19371918.2012.630965

Minton, T. D., & Zeng, Z. (2015). Jail inmates at midyear 2014 (NCJ 248629). Bureau of Justice Statistics. https://bjs.ojp.gov/content/pub/pdf/jim14.pdf

Mohs, M. E., Watson, R. R., & Leonard-Green, T. (1990). Nutritional effects of marijuana, heroin, cocaine, and nicotine. *Journal of the American Dietetic Association*, *90*(9), 1261–1267.

Mooney, M., Hannon, F., Barry, M., Friel, S., & Kelleher, C. (2002). Perceived quality of life and mental health status of Irish female prisoners. *Irish medical journal*, *95*(8), 241–243.

Nolan, L. J., & Scagnelli, L. M. (2007). Preference for sweet foods and higher body mass index in patients being treated in long-term methadone maintenance. *Substance use & misuse*, *42*(10), 1555–1566. https://doi.org/10.1080/10826080701517727

Ozano, K. A. (2008). The Role of Physical Education, Sport and Exercise in a Female Prison. Unpublished MSc Dissertation, Chester: University of Chester.

Paluska, S. A., & Schwenk, T. L. (2000). Physical activity and mental health: current concepts. *Sports medicine (Auckland, N.Z.)*, *29*(3), 167–180. https://doi.org/10.2165/00007256-200029030-00003

Parks, C. G., DeRoo, L. A., Miller, D. B., McCanlies, E. C., Cawthon, R. M., & Sandler, D. P. (2011). Employment and work schedule are related to telomere length in women. *Occupational and Environmental Medicine*, *68*(8), 582–589. https://doi.org/10.1136/oem.2010.063214

Pescatello, L. S., Guidry, M. A., Blanchard, B. E., Kerr, A., Taylor, A. L., Johnson, A. N., Maresh, C. M., Rodriguez, N., & Thompson, P. D. (2004). Exercise intensity alters postexercise hypotension. *Journal of hypertension*, *22*(10), 1881–1888. https://doi.org/10.1097/00004872-200410000-00009

Petrzela, N. M. (2022). *Fit nation: The gains and pains of America's exercise obsession*. Univ of Chicago Press. Plugge, E., & Fitzpatrick, R. (2005). Assessing the health of women in prison: A study from the United Kingdom. *Health Care for Women International*, *26*(1), 62–68. https://doi.org/10.1080/07399330590885768

Ramsay, C.E., Goulding, S.M., Broussard, B., Cristofaro, S. L., Abedi, G.R., Compton, M. T. (2011). Prevalence and psychosocial correlates of prior incarcerations in an urban, predominantly African-American sample of hospitalized patients with first-episode psychosis. *J Am Acad Psychiatry Law*. *39*(1):57–64.

Roberts, D. E. (2012, August 1). *Prison, foster care, and the systemic punishment of Black Mothers*. Retrieved February 11, 2023, from https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1431&context=faculty_scholarship

Rouse, P. C., Ntoumanis, N., Duda, J. L., Jolly, K., & Williams, G. C. (2011). In the beginning: Role of autonomy support on the motivation, mental health and intentions of participants entering an exercise referral scheme. Psychology & Health, 26, 729–749. doi:10.1080/08870446.2010.492454

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. American Psychologist, 55, 68–78. doi:10.1037/0003-066X.55.1.68

Sawyer, W. (2018). *Women's state prison populations have grown faster than men's*. Prison Policy Initiative. Retrieved from https://www.prisonpolicy.org/reports/women_overtime.html

Schroeder, S. A. (2007). We can do better — improving the health of the American people. *New England Journal of Medicine*, *357*(12), 1221–1228. https://doi.org/10.1056/nejmsa073350

The Sentencing Project. Incarcerated Women and Girls. 2020. https://wwwsentencingproject.org/publications/incarcerated-women-and-girls/. Accessed February 10, 2023.

Shaw, N. S., Rutherdale, M., & Kenny, J. (1985). Eating more and enjoying it less: U.S. prison diets for women. *Women & health*, *10*(1), 39–57. https://doi.org/10.1300/J013v10n01_04

Steptoe, A., Hamer, M., Butcher, L., Lin, J., Brydon, L., Kivimäki, M., Marmot, M., Blackburn, E., & Erusalimsky, J. D. (2011). Educational attainment but not measures of current socioeconomic circumstances are associated with leukocyte telomere length in healthy older men and women. *Brain, Behavior, and Immunity*, *25*(7), 1292–1298. https://doi.org/10.1016/j.bbi.2011.04.010

Surtees, P. G., Wainwright, N. W. J., Pooley, K. A., Luben, R. N., Khaw, K.-T., Easton, D. F., & Dunning, A. M. (2012). Educational attainment and mean leukocyte telomere length in women in the European Prospective Investigation into cancer (epic)-norfolk population study. *Brain, Behavior, and Immunity*, *26*(3), 414–418. https://doi.org/10.1016/j.bbi.2011.11.009

Sykes, B. L., Chavez, E., & Strong, J. (2021). Mass incarceration and inmate mortality in the United States—Death By Design? *JAMA Network Open*, *4*(12). https://doi.org/10.1001/jamanetworkopen.2021.40349

Taylor, R. S., Brown, A., Ebrahim, S., Jolliffe, J., Noorani, H., Rees, K., Skidmore, B., Stone, J. A., Thompson, D. R., & Oldridge, N. (2004). Exercise-based rehabilitation for patients with coronary heart disease: Systematic review and meta-analysis of randomized controlled trials. *The American Journal of Medicine*, *116*(10), 682–692. https://doi.org/10.1016/j.amjmed.2004.01.009

Uchida, S., Shioda, K., Morita, Y., Kubota, C., Ganeko, M., & Takeda, N. (2012). Exercise effects on sleep physiology. *Frontiers in neurology*, *3*, 48. https://doi.org/10.3389/fneur.2012.00048

Wagner, P. (2020). *1 out of 5 prisoners in the world is incarcerated in the US*. Prison Policy Initiative. Retrieved from https://www.prisonpolicy.org/graphs/percent_incarcerated.html.

Wang, D., Wang, Y., Wang, Y., Li, R., & Zhou, C. (2014). Impact of physical exercise on substance use disorders: a meta-analysis. *PloS one*, *9*(10), e110728. https://doi.org/10.1371/journal.pone.0110728

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

Waxman, O. B., & Mehlman Petrzela, N. (2022, December 28). The White Supremacist Origins of Exercise, and 6 Other Surprising Facts About the History of U.S. Physical Fitness. *Time*. other.

Wolffe, A. P., & Matzke, M. A. (1999). Epigenetics: Regulation through repression. *Science*, *286*(5439), 481–486. https://doi.org/10.1126/science.286.5439.481

Zlotnick C. (1997). Posttraumatic stress disorder (PTSD), PTSD comorbidity, and childhood abuse among incarcerated women. *The Journal of nervous and mental disease*, *185*(12), 761–763.