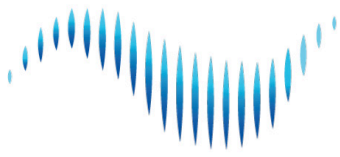
MOVE YOUR MENTAL HEALTH™

A REVIEW OF THE SCIENTIFIC EVIDENCE ON THE ROLE OF EXERCISE AND PHYSICAL ACTIVITY ON MENTAL HEALTH

EXECUTIVE SUMMARY



JOHN W. BRICK
MENTAL HEALTH FOUNDATION

MAY 2021

About Us

The John W. Brick Mental Health Foundation is changing the way the world treats mental health. Our purpose is integrating salutogenic approaches – such as exercise, nutrition, and mind-body practices – for treating mental illness and promoting mental wellness. We 1) fund and promote evidence-based research on how exercise, nutrition, and mind-body practices benefit mental health resilience, 2) support programs and initiatives that integrate evidence-based holistic approaches into the mental health care delivery system, and 3) serve as a collaborative hub for an array of partners to advance a roadmap for an integrated approach to mental health care.

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MOVE YOUR MENTAL HEALTH
EXECUTIVE SUMMARY

Mental Illness is prevalent in the United States and globally, with 18% of people in the US experiencing mental illness at any given time. Depression is one of the leading causes of disability worldwide. Suicide rates are up 35% since 1999, and someone in the world takes their own life every 40 seconds. By any measure, mental illness is an epidemic in the United States and around the world, and our attempts to treat it are only partially successful.

There is an urgent need to 1) discover more effective interventions and identify better means of prevention to ease the suffering, societal cost, and loss of life associated with mental illness, and 2) identify better and complementary means of prevention and treatment.

Physical health is clearly intertwined with mental health, in a bidirectional fashion. Scientific evidence shows that changes in thinking patterns and behaviors affect neurological, endocrine, and immune systems. Conversely, disruption in these biological systems negatively impacts mental health. In addition to medication, holistic approaches such as exercise and physical activity, nutrition, and mind-body practices such as yoga can improve mental health. However, these approaches are rarely included in prevention and treatment of mental illness, and mental health care providers are not well trained in their evidence-base or clinical utility.

In particular, an important point of intervention at the nexus of physical health and mental health is reducing sedentary behavior and increasing physical activity. This can be challenging, since the same symptoms that exercise and physical activity can help to improve, such as depression, anxiety, lethargy, and impairments in functioning, serve as barriers to increasing exercise and physical activity. Having said that, multiple clinical trials indicate that introducing exercise and physical activity in early intervention and treatment for mental health conditions is feasible and effective, particularly in the form of supervised group activities or when paired with personal training.

Research overwhelmingly supports a beneficial role of exercise and increased physical activity for addressing mental health issues, particularly depression and anxiety, for which a combination of cardiovascular and aerobic exercise and strength training at moderate to high intensity several times per week appears to be supported by the evidence. Exercise appears to improve mental health through social and self-efficacy pathways, as well as biological pathways – such as increasing brain neurotransmitters and improving hormone function involved in mental health.

More research is needed on what type, duration, and intensity of exercise are ideal for specific symptom configurations and populations, and for more serious mental illnesses such as schizophrenia and bipolar disorder. Innovation is required in customization of exercise and physical activity protocols for specific populations and disorders, and overcoming barriers to implementation. Effectiveness studies in real-world settings are necessary to determine large-scale feasibility and and effects beyond controlled research settings. Promising trends deserve further investigation such as exergaming, positive stress activities such as exercise or breathing combined with heat or cold exposure, and affect-based exercise prescriptions which take participant enjoyment into account in addition to exercise outcomes. And studies investigating longer intervention periods are needed to assess stable symptom reduction.

"Physical health is clearly intertwined with mental health. Moving our bodies regularly is one of the key elements in the ecosystem of factors that keep us mentally and emotionally balanced."

What is the Move Your Mental Health™ Report?

The Move Your Mental Health Report is an overview of scientific evidence published over the last 30 years on the link between exercise and mental health. The report is the outcome of a scoping review of over 1000 scientific studies to date on how exercise and physical activity is related to mental health.

A scoping review casts a wide net to determine the number of studies available on a specific topic, provide an overview of the topic, summarize themes across articles, and identify gaps in research. A search was conducted to attempt to locate every article published on any form of exercise, physical activity, or type of movement in relation to any mental health outcome between January 1,1990 and November 15, 2020.

We identified 1161 articles including qualitative and correlational studies, systematic reviews and meta-analyses, case studies and theoretical papers, and clinical trials. These have been categorized by type of exercise, type of mental health condition or outcome, numbers and types of studies in each category, and whether results were statistically significant or not. The exercise categories reflect the types of exercise reported on in the literature, and those where a specific type of exercise or movement was not specified placed into the category of "general physical activity."

What is the Purpose of the Report?

The scientific literature on exercise, physical activity and mental health outcomes is broad and substantial in volume, making it difficult to navigate. The purpose of this project has been to:

1) identify as many published and peer-reviewed scientific articles on the topic as possible;

2) provide an overview of and access to articles in each category of exercise stratified by type of exercise and mental health outcome,

3) summarize the proportion of articles reporting significant results (positive or not) in each category,

4) describe trends across the results of each category and in the overall literature, and

5) provide accompanying online data visualization that allows viewers to quickly grasp and explore the existing data in their categories of interest.

This report is a resource for all stakeholders – mental health professionals, educators, clinic directors, policy makers, patients, and families – to assess the evidence for various forms of exercise and physical activity for mental health. Our intention is that the report helps readers identify activities and interventions that hold promise for their situation or setting, and learn what factors can support integration of evidence-based activities into treatment, early intervention and prevention efforts. We also highlight which types of physical activity hold the most promise for which mental health outcomes, and which do not appear to be helpful. Finally, this report is a preliminary step in identifying gaps in evidence, limitations of current research, and the most promising research directions for future funding decisions by the JWB Foundation, our partners and other funding agencies.

How Many Studies Support the Role of Exercise in Mental Health?

When we look at all studies identified in this project, they overwhelmingly report positive relationships between exercise/physical activity and mental health outcomes (see two bars on the left in Figure 1). Out of a total of 1161 number of studies included in this review, 1031 or 89% of them reported significant positive relationships between physical activity and mental health outcomes. Types of physical activity with the greatest number of positive studies were general physical activity (a term referring to the amount of daily or weekly physical activity people engage in, irrespective of type) with 370 studies showing significant and positive results, cardiovascular and aerobic activity with 189 positive studies, and yoga with 165 positive studies.

When examining only randomized controlled trials (RCTs) (in other words, studies that assigned people randomly to groups that exercised vs. groups that did not), the vast majority report positive effects of exercise/physical activity on mental health outcomes (see two bars on the right in Figure 1). Fifty-six percent of the studies we reviewed were randomized trials. Out of a total of 646 number of randomized trials included in this review, 564 or 87% of them reported significant positive relationships between physical activity and mental health.

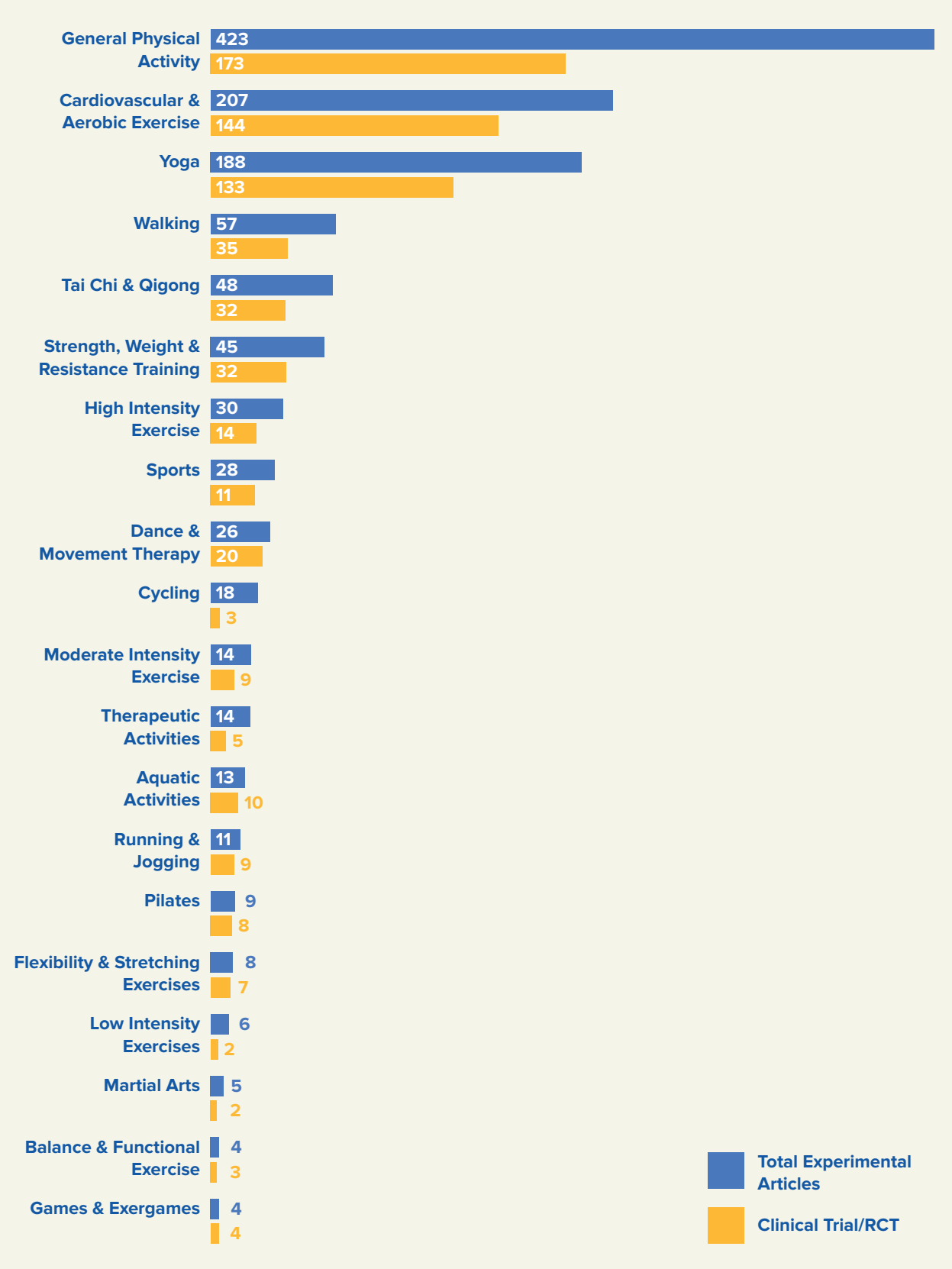

Figure 1: Number of Research and Randomized Controlled Trial (RCT-Only) Articles Categorized by Exercise Type

What Types of Studies Were Reviewed?

While Randomized Clinical Trials are the gold standard for determining effectiveness of exercise and physical activity on mental health outcomes, other types of studies also provide useful information. Figure 2 shows types of studies categorized by type of exercise/physical activity. In addition, we reviewed 170 meta-analyses and systematic reviews, and 116 narrative reviews to create this report.

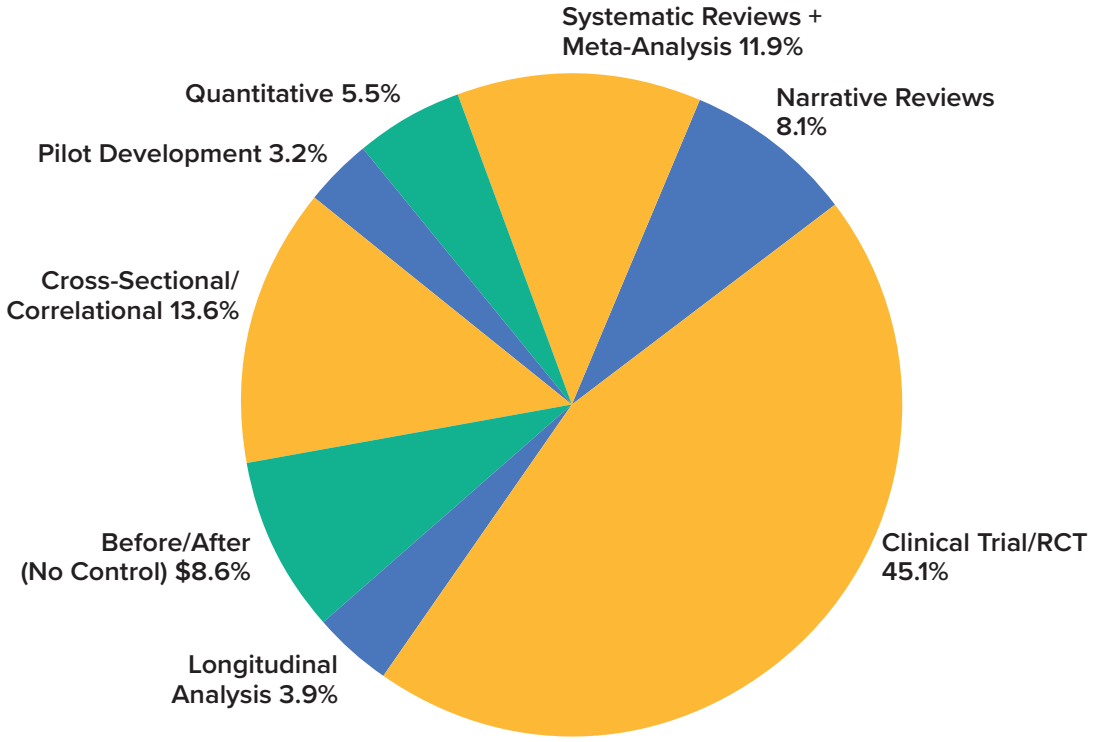

Figure 2: Types of Studies Reviewed for this Report

What are the Key Conclusions?

Do Exercise and Physical Activity Benefit Mental Health?

- Existing scientific research overwhelmingly indicates that exercise and physical activity benefit mental health.
- 89% of all published peer-reviewed research between 1990 and 2020 found a positive, statistically significant relationship between exercise/physical activity and mental health.
- In general, the optimal type, intensity, and duration of exercise remain unclear, although several conclusions about specific types of exercise can be made, detailed below.

How Much Exercise and How Often?

- Overall, three to five 30-45-minute moderate to vigorous exercise sessions per week appear to deliver optimal mental health benefits (Chekroud et al., 2018).
- High-frequency exercise (3-5 times per week) is better for reducing depressive symptoms than low-frequency exercise (1 time per week) (Womack and Safranek, 2010).
- More exercise is not always better. There appears to be a U-shaped curve, in which people who engage in moderate to vigorous exercise 3-5 times per week show better mental health than those who exercise under three or over five times per week. Some high-intensity exercise can increase anxiety immediately post-exercise.

What Type of Exercise?

- High-intensity exercise regimens are generally more effective than low-intensity regimens (Aylett et al., 2018).
- Combining or alternating strength/resistance training with cardiovascular/aerobic exercise shows stronger benefits on mental health outcomes than either one alone.
- Mindfulness-based activities like yoga and tai chi, though they can be lower intensity forms of movement, deliver more mental health benefits than walking.
- Team sports, cycling, and aerobic or gym exercise are the top three forms of exercise associated with over 20% fewer “poor mental health” days per month (Chekroud et al., 2018).

What Mental Health Outcomes are Most Impacted by Exercise?

- Exercise is strongly associated with general mental and emotional well-being including reduced stress, and improved mood and quality of life.
- Evidence strongly supports cardiovascular/aerobic exercise for reducing depression, showing medium to large effect sizes.
- Evidence shows moderate but reliable effect sizes for cardiovascular/aerobic exercise reducing symptoms in people with anxiety disorders.
- Yoga and other mindful exercises such as Tai Chi and Qigong show strong evidence for reducing symptoms of anxiety and depression.
- In severe mental illness (SMI) such as schizophrenia, exercise appears to benefit physical health and “negative” psychological symptoms such as emotional numbing and being withdrawn, more than “positive” symptoms such as hallucinations and delusions.

What Recommendations Can Be Made?

Clinical Recommendations

- ***Depression.*** People meeting criteria for depressive disorders should be prescribed 30-45 minutes of moderate to vigorous exercise 3-5 times per week, ideally beginning with structured group supervised exercise, or individual coaching by a physical therapist or fitness professional.
- ***Anxiety:*** Evidence supports prescribing yoga, qi gong, or mind-body movement for people experiencing symptoms of anxiety. Cardiovascular/aerobic and strength/resistance training should be encouraged and monitored for effectiveness.
- ***Clinical Delivery:*** Recommendations for exercise, physical activity, or movement for people experiencing mental illness symptoms should be accompanied by evidence-based support for behavior change, such as:

  –motivational interviewing

  – structured group and peer support

  – initial supervision individually or in groups

  – gradually increasing exercise duration and intensity

  – online and app-based programs

  – behavior change coaching
- ***Customization:*** Adaptations of exercise interventions to be relevant to patient enjoyment, cultural and regional diversity should be explored. Without this, difficulty adhering to recommendations may backfire, increasing depression or anxiety.

Overall, based on the numerous meta-analyses and controlled trials reviewed for this report, we conclude that exercise and movement can now be considered mainstream elements of mental health care, particularly anxiety and depression, as opposed to optional complementary or alternative modalities.

Research Recommendations

- ***Optimal Dose:*** Future research should investigate variations in frequency, intensity, type, and time (F.I.T.T.) or "dose" of exercise on mental health outcomes, and begin to converge on data-driven and consensus-based standards.
- ***Translational Research:*** For exercise types and mental health outcomes showing robust effects, pragmatic trials allowing scalable replication and implementation in routine practice are needed.
- ***Mechanisms:*** Identification of psychological mediators and biomarkers responsible for antidepressant.antianxiety responses to exercise should be prioritized.
- ***Serious Mental Illness:*** More research should focus on innovating types of exercise/physical activity that are feasible with people with serious mental illness, and investigate effects.
- ***Treatment Matching:*** A one-size fits all approach is unlikely to be successful. Future studies should focus on identifying subgroups based on symptoms and biopsychosocial characteristics to examine differential responses to exercise interventions (Schuch et al., 2017)

What is Trending in Exercise and Mental Health?

What is the future of exercise? Among the trends discussed in this report:

- Stress-reduction is a universal goal in well-being research, but studies indicate that positive stress such as intense breathing and exposure to heat or cold may have mental health benefits.
- Exergaming, or gamification of exercise using video games and virtual/augmented reality are proliferating and becoming immensely popular. These exergames are engineered to be emotionally, socially, and biochemically rewarding and may be powerful for reinforcing new behaviors.
- Community-based exercise interventions, such as the "walking school bus" in which families walk kids to school together, hold promise for incorporating social and peer support, intergenerational wellness, and customizing exercise to be culturally-aligned.
- Green exercise including physical activity or exercise that takes place outside may add value, benefiting mental health more than exercise alone.

Take Home Messages

- Exercise should be integrated into the treatment of people with depressive symptoms or major depression;
- Exercise (along with mindful movement such as yoga, Tai Chi or Qigong) should be strongly considered for integration into treatment of symptoms of anxiety;
- The evidence is not strong enough in either direction to exclude the possibility exercise may be beneficial for these more serious forms of mental illness, or to recommend it strongly;
- Exercise and physical activity may play a protective role – reducing risk for mental illness – as well as helping to sustain mental wellness over time.

Explore the Data

To get a sense of the scientific literature on this topic, these articles will get you started:

- Association between physical exercise and mental health in 1·2 million individuals in the USA between 2011 and 2015: a cross-sectional study (Chekroud et al., 2018)
- Physical Exercise in Major Depression: Reducing the Mortality Gap While Improving Clinical Outcomes (Murri et al., 2019)
- Does Exercise Alleviate Symptoms of Depression (Womak & Safranek, 2010)
- Effects of exercise and physical activity on anxiety (Anderson & Shivakumar, 2013)

JOHN W. BRICK
MENTAL HEALTH FOUNDATION

You can help change the way the world treats mental health.

MAKE A DIFFERENCE TODAY, WE WELCOME YOUR SUPPORT!

The John W. Brick Mental Health Foundation was founded in 2015 by Victor and Lynne Brick in honor of Victor's oldest brother, John, who suffered and eventually died from complications of schizophrenia. Throughout decades of treatment, often in the finest mental health institutions available, John was never once offered a fully integrated program that included healthy lifestyle practices along with conventional treatments. Our purpose is to integrate salutogenic approaches, such as exercise, nutrition and mind-body practices, into treating mental illness and promoting mental wellness.

We do this by funding and promoting evidence-based research on how exercise, nutrition and mind-body practices benefit mental health resilience, supporting programs and initiatives that integrate evidence-based holistic approaches into the mental healthcare delivery system, and serving as a collaborative hub for an array of partners to advance a roadmap for an integrated approach to mental healthcare.

Please consider partnering with us in this important work with a donation, stock transfer, corporate sponsorship, or estate gift.

Learn more at: https://www.johnwbrickfoundation.org/donations or contact us at:
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