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Exercise as a Tool for Treating Anxiety and Depression

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EXERCISE AS A TOOL FOR TREATING ANXIETY AND DEPRESSION

Lizzi Hahn, MS3
CVPH Family Medicine
Rotation 7, Feb-March 2021
Mentor: Dr. Aubrey Wheeler
What is the problem?

- The 12-month prevalence of at least one major depressive episode in the US is 6.7% of adults and 12.5% of adolescents\(^1\)
- The 12-month prevalence of any anxiety disorder in the US is 18.1%
- Research demonstrates that physical activity is as effective at reducing and preventing symptoms of anxiety and depression as other commonly used modalities, such as medication and CBT, and is furthermore a useful adjunct to these therapies (see next 2 slides)
- Despite this data, approximately 80% of US adults are not meeting the minimum recommendations for aerobic and muscle-strengthening activity\(^2\)
The benefits of physical activity for brain health

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Population</th>
<th>Benefit</th>
<th>Acute</th>
<th>Habitual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognition</td>
<td>Children ages 6 to 13 years</td>
<td>Improved cognition (performance on academic achievement tests, executive function, processing speed, memory)</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Adults</td>
<td>Reduced risk of dementia (including Alzheimer’s disease)</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Adults older than age 50 years</td>
<td>Improved cognition (executive function, attention, memory, crystallized intelligence, processing speed)</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Quality of life</td>
<td>Adults</td>
<td>Improved quality of life</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Depressed mood and depression</td>
<td>Children ages 6 to 17 years and adults</td>
<td>Reduced risk of depression, Reduced depressed mood</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Adults</td>
<td>Reduced short-term feelings of anxiety (state anxiety)</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Adults</td>
<td>Reduced long-term feelings and signs of anxiety (trait anxiety) for people with and without anxiety disorders</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Sleep</td>
<td>Adults</td>
<td>Improved sleep outcomes (increased sleep efficiency, sleep quality, deep sleep; reduced daytime sleepiness, frequency of use of medication to aid sleep)</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Adults</td>
<td>Improved sleep outcomes that increase with duration of acute episode</td>
<td></td>
<td>●</td>
</tr>
</tbody>
</table>

Shown left is a figure adapted from the US Department of Health and Human Services’ *Physical Activity Guidelines for Americans, 2nd edition* demonstrating the positive effects of physical activity on cognition, quality of life, depression, depressed mood, anxiety, and sleep.
Reduction of mental health burden by exercise

Below are figures adapted from Chekroud, et al.’s 2018 study examining the relationship between exercise and mental health.³ It used data from 1.2 million Americans – making it the largest cross-sectional sample to date.

This study found that people who exercised had 43.2% fewer days of poor mental health than those who did not exercise, regardless of exercise type. It also demonstrated the impact of exercise type, duration (left), and frequency (right) on the associated mental health benefits.

Figure 2: Mental health burden as a function of exercise duration
(A) across the whole sample, individuals who exercised for approximately 45 min per session had the lowest mental health burden. Durations less than 45 min were associated with higher mental health burden, and durations longer than 60 min were generally not better than 45 min. (B) This pattern was broadly consistent across several exercise categories. Lines represent smoothed conditional means with generalised additive model smoothing, with ribbons representing 95% CIs. Dashed lines indicate exercise durations of 45 min.

Figure 3: Mental health burden as a function of exercise frequency
(A) across the whole sample, individuals who exercised between three and five times per week had the lowest mental health burden. (B) The pattern was remarkably consistent across most exercise groups. Frequencies of less than three per week (2.2 times per month), or more than five per week (20 times per month) were associated with greater mental health burden. Lines represent smoothed conditional means using generalised additive model smoothing with cubic regression splines, with ribbons representing 95% CIs. Dashed lines indicate exercise frequencies of three, four, and five times per week (12, 16, and 20 times per month).
Public health cost in the US

**Cost of anxiety and depression**
- 1990: annual costs associated with anxiety disorders were over $46 billion¹
- 2010: the annual costs associated with depression was $210.5 billion, and MDD was the #1 cause of disability for Americans ages 15-44
- 2014: the annual expenditure on the treatment of mental health disorders was $186 billion, and the cost of treating patients with both mental health and other somatic health conditions was 2-3 times greater than those without mental health conditions.⁴

**Cost of insufficient exercise**
- Insufficient exercise by Americans is associated with around $117 billion in annual health care costs, as well as approximately 10% of premature mortality²
Community perspective: interviews with CVPH providers

- Dr. Wheeler (attending)
- Dr. Tusa (resident)
Interview with Dr. Wheeler

LH: Other than expanding the capacity of mental healthcare providers, are there changes we could make in the outpatient setting for mental health that you think would be really high yield for improving quality of life?

AW: I think having the whole ‘primary care as a medical home’ care model - where you have a counselor or a therapist in your team that you can refer to right away - I think that is probably most helpful.

You know, my clinic just doesn’t have nearly enough staff. We do have nurses checking in on patients, but I think ideally, in between appointments - especially for someone with acute anxiety, depression, or like an acute worsening of symptoms or a new diagnosis - we could follow-up. Having someone call and check on them would be helpful. Just like a nurse call to check in. But most clinics don’t have the staff right now for that.

We have a medical home nurse who I’ve used before since someone is having trouble getting in with a therapist. Especially with COVID, where someone will say, “I called all the numbers on the list and I only got voicemails - and no one’s called me back.” Then I will reach out to the medical home nurse and she can kind of make those contacts and help connect people. And the office nurses can do that too. Sometimes clinic staff will have better luck talking with the mental health clinics.

So let’s see. What else would be helpful? I do like your project - the idea of providing other non-medical/counseling treatments for anxiety and depression; encouraging regular sleep; avoiding excessive substance use like marijuana - and talking with people about how that can actually make things a lot worse. Exercise is really huge. So I think promoting that more would be helpful.

LH: How often is exercise a part of practitioner’s conversation about mental health?

AW: I don’t think I’ve seen it at least documented in most other people’s notes: that doesn’t necessarily mean it’s not recommended, but I just don’t see it documented. I routinely ask about it, I think because I’ve just personally seen how beneficial exercise can be for mental health. I know that it’s really helpful and I think there’s a lot of evidence for (exercise) improving mental health and wellbeing, as well as reducing anxiety and depression. So I routinely talk about it. I mean, I can’t say it’s a hundred percent of the time, especially if someone comes in and they’re doing well, we might just be like, you’re doing well!

LH: Do you think the way that people talk about exercise in clinics is typically good or bad for mental health?

AW: I think it’s important to get a feel for where a patient is and what their beliefs are about exercise. Because some people think, well, if I’m not running, or if I’m not going to the gym, then that’s not exercise, you know? As opposed to thinking of it as just routine increased activity throughout the day - like just getting outside and going for a walk during lunch, taking the stairs... There’s lots of different ways to exercise. Doing home exercises... Sports with friends. I think you need to get a feel for what people think of as exercise, because if you tell them to exercise and they think you need to start going to the gym or running - like going from zero to 100 it’s going to be unattainable, you know? And then typically people who have depression, anxiety - they have a lot of guilt already. And then you could be just adding to that by giving them this unattainable goal.

LH: Do you think that patients have a good understanding of the role that exercise plays in mental health?

AW: No. I think people know superficially that exercise is good for them, but they don’t actually understand that it affects you down to your cellular level - I don’t think most people know how important and essential it is. I think it’s kind of like, you know, when your mom says, “broccoli’s good for you.” And you’re like, “yeah, yeah. Okay, Broccoli is good for me, sure.” But you don’t really appreciate how it’s a great source of vitamin C and fiber and all these antioxidants. So no, I don’t think people understand: I think people know superficially, but they either don’t fully understand - or they don’t believe it. They’re like “oh yeah, exercise is good, but there’s no way it’s actually going to make me feel better.”

LH: That makes me wonder if patients ever feel like exercise counseling is condescending or trivializing. Like, “my depression has been going on so long - why would you think something like exercise could fix it?” Do you think it ever comes off as patronizing?

AW: I don’t know. It’s always been hard for me to try not to. It’s getting easier as I talked about it more and more. But especially when I first started out, it was really hard for me to talk about exercise and weight loss, because I’ve never struggled with that before. And I feel like patients are like, “Oh, she doesn’t know anything about my struggles. You know, you’re healthy and young. So I think that could be a barrier for certain providers. Other providers who maybe aren’t very healthy and maybe have an obese body habitus may feel hypochrtical prescribing something they don’t do themselves. So I think there’s a lot of reasons why it’s just easier not to talk about, because it’s hard. And I think there’s a lot of stigma around it that it isn’t around something like hypotension. It’s easier to just target something that doesn’t hurt self esteem.

LH: What types of exercises does your patient population engage in most frequently?

AW: I would say the majority of my patient population doesn’t exercise. I do have patients who go to the gym, even with COVID, but I also have patients who say they used to go to the gym but don’t feel comfortable because of COVID. Also, most people this time of year say, well, I don’t right now because it’s cold outside, but when it gets warmer, I have all these grand plans. And I don’t know if they’ll actually do those or not. So it seems like lately a lot of people are waiting for the weather to turn.

I don’t have too many people who report that they have home exercise equipment. I have some who say they have stuff at home - a treadmill, a bike and weights. But the majority of people don’t mention that. But a lot of our patients can’t really afford that.

LH: Are there tactics that you think would help people overcome the barrier of not being able to go to the gym because of COVID or transportation issues?

AW: Having specific resources. So when they say that “I can’t go to the gym” or “I can’t afford going to the gym” or “I have to be at home for whatever reason,” I ask if they have any kind of a tablet, screen, computer, phone - and most do. And then I ask if they’ve tried looking up free exercise videos. And most give me a blank stare or say they haven’t. And so I think having a specific few places to send them to for some good quality free exercises would be helpful.

I think having some exercise bands, which are not expensive, would also be helpful because that gives the ability to do resistance exercises that aren’t weight based. So, you know, a lot of people can’t do pushups for whatever reason, but they may be able to use resistance bands to do bicep curls and tricep stuff - in a seated position if they need that. It gives another way to exercise.

Goal setting is always really helpful - specific goal setting and then close follow up. I think a lot of times we tell people to exercise and lose weight, and then we just say, let’s follow up in a year. Which, I mean, I think if you have follow-up in four to six weeks, it kind of gives them more accountability. A lot of times that’s a barrier though for clinics, because there’s so much demand for clinic appointments that it’s hard to get people in for a follow-up in four to six weeks, even for things that definitely “need” to come in. And I’m not saying anxiety, depression doesn’t definitely need to come in. But they do usually get trumped.

Something else that might be helpful is telling people what qualifies for exercise. People may not realize that things that they do on a daily basis - if they did them just a little faster - would be exercise. You know, old advice of parking further away, taking the stairs, that kind of stuff - little ways to increase exercise - things that are more attainable than “go run on a treadmill for 30 minutes even if you haven’t done anything.”

Another thing that’s helpful for people who are really interested and seem motivated are planned programs like Couch to 5K where they tell people, “okay, today you’re gonna walk this distance, and then once you’re getting good at that, then you walk this, and you’re going to run for 30 seconds or jog for 30 seconds and walk,” you know, something like that. Having something planned is important. I know personally. When I was deployed, a lot of people lifted weights and I kind of wanted to try it out, but I had no idea where to start. Like what weight do I start at? And how fast do I increase? And what kind of exercise should I be doing? So having something to point your patients to, or refer them to, can be helpful.
Interview with Dr. Tusa

LH: My first question is what information, resources and/or coping strategies do patients receive when they first get a mental health diagnosis?

CT: Right now it's a little hard but we used to have - and then they got cut from the budget - therapists in this building. Then that went away. And so like, yes, we are a patient centered medical home, but we don't have the like FQHC qualifications, which, if we had that, we would have the ability to have more handoffs to behavioral health. So we don't have that capability. And so, for example, with that patient who’s scheduled in the afternoon, who is often fully manic at my office - she needs lithium. But what if I had never prescribed anyone lithium in the outpatient setting?

LH: What's the level of mental health awareness in your clinic? Do you think that knowing exercise is an effective treatment approach for mental health problems is a motive for people to engage in physical activity? Or are there just so many barriers already that it wouldn't make a difference?

CT: Right now it's a little hard but we used to have - and then they got cut from the budget - therapists in this building. Then that went away. And so like, yes, we are a patient centered medical home, but we don't have the like FQHC qualifications, which, if we had that, we would have the ability to have more handoffs to behavioral health. So we don't have that capability. And so, for example, with that patient who’s scheduled in the afternoon, who is often fully manic at my office - she needs lithium. But what if I had never prescribed anyone lithium in the outpatient setting?

LH: And what format do the resources about counseling and medications come in - for example is it a conversation, or printed materials?

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LH: Do you think that the way exercise is talked about in conversations with patients - whether it’s about mental health or not - is overall helpful or toxic?

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LH: Last question - how have people been overcoming the barriers to engaging in exercise presented by COVID?

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LH: Other than like just increasing capacity of mental health practitioners, are there other changes you can think of that could improve outpatient resources for mental health?
Intervention and methodology

Anxiety and depression are prevalent, debilitating, and costly

Exercise is an effective treatment for mental health conditions

Exercise should be emphasized as a valuable tool in treating anxiety and depression

What are the barriers to this initiative and how might they be overcome?
Intervention and methodology

Plan: create after-visit patient resource sheet to address two likely barriers to utilization of exercise in treatment of mental health:

**BARRIERS**
- Insufficient patient understanding of benefits of exercise in treatment of MH symptoms and conditions
- The Covid-19 pandemic has reduced patient engagement in exercise by limiting access to gyms and participation in team sports

**INTERVENTIONS**
- Provide information about the benefits of exercise in treatment of MH symptoms and conditions
- Provide recommendations for free, online exercises resources that can be done at home
The below documents were made into Dot Phrases on EPIC and shared with providers at the CVPH Family Medicine Center, to be included in after-visit summaries for patients.

Exercise for the Treatment of Anxiety and Depression

Exercise is not only important for your physical health—it also plays a critical part in your sleep, cognition, and mental health. Research has shown that physical activity can prevent and treat symptoms of mental health conditions like anxiety and depression, both on its own and in combination with other treatment approaches like therapy and medication.

Who can benefit?

Exercise can be effective at reducing a person’s anxiety and depressive symptoms—whether or not they have a diagnosis of an anxiety or major depression disorder.

How much exercise is enough?

The CDC recommends at least 150 minutes per week of moderate intensity aerobic activity. While meeting this goal or increasing the intensity, duration, and frequency of physical activity can lead to greater benefits for anxiety and depression, even low amounts of exercise have been shown to improve symptoms—so do what you can. Any level of exercise is better than no exercise.

What kind of exercise is best?

The bottom line is that any type of physical activity is likely to have a positive impact on your mood, so when starting out, try to focus on just getting your body moving. Research has shown that even doing active household chores can lead to an immediate improvement in mental health! Exercises with a known benefit for anxiety and depression include engaging in team sports, cycling, aerobic and gym activities, jogging, running, walking, and yoga.

What kind of exercises can be done at home?

In addition to simple exercises like walking, climbing stairs, and doing jumping-jacks, there are many free, guided workouts that can be found online. Don’t get discouraged if the first few workouts you try aren’t for you—it may take a few trials to find something suited to your intensity level and preferences! Look for additional descriptors in the titles of workout videos to help you find ones that meet your needs—for example, exercises described as “low impact” or “apartment friendly” are easier on the joints and can thus be good for users with arthritis.

Below is a list of YouTube channels that provide a wide range of open-access videos to help you get started...

<table>
<thead>
<tr>
<th>Aerobic cardio</th>
<th>Dance</th>
<th>Yoga</th>
<th>Strength training</th>
</tr>
</thead>
<tbody>
<tr>
<td>MadFit</td>
<td>Zumba Class</td>
<td>Yoga with Adriene</td>
<td>Blogilates</td>
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<tr>
<td>Chloe Ting</td>
<td>Afrifitness</td>
<td>Yoga with Kassandra</td>
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<tr>
<td>Body Project</td>
<td>Sabah Kadir</td>
<td>Arianne Elizabeth</td>
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<tr>
<td>Orangetheory Fitness</td>
<td>The Fitness Marshall</td>
<td>Boho Beautiful</td>
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<tr>
<td>Nourish Move Love</td>
<td>305 Fitness</td>
<td>YoginiMelbourne</td>
<td>Tone It Up</td>
</tr>
<tr>
<td>Pop Sugar Fitness</td>
<td>Zumba Sulu</td>
<td>Jessica Richburg</td>
<td>Move with Nicole</td>
</tr>
</tbody>
</table>

Psychiatry Referrals

You are responsible for scheduling your appointment. Please make sure your insurance is accepted before scheduling. Also, be aware that there may be a long waiting time to see these providers, due to high patient demand versus the small amount of qualified providers in our area.

Clinton County Mental Health (CCMH)

*to see a Psychiatrist at CCMH, you must also receive counseling services at their facility
130 Arizona Avenue
Plattsburgh, NY 12903
Ph: 518-565-4060
Fax: 518-566-0168

Behavioral Health Services north (BHSN)

*to see a Psychiatrist at BHSN, you must also receive counseling services at their facility
2155 State Route 228
Morrisonville, NY 12962
Ph: 518-563-8000
Fax: 518-563-9001

Citizen Advocates

Northstar Behavioral Health Services
70 Edgewood Rd
Saranac Lake, NY 12983
Ph: 518-891-5535

31 Sixth Street
Makran, NY 12953
Ph: 518-483-3261 or 518-483-8980

Champlain Valley Psychiatric Associates

Hal Rubin, MD & Lorna Clark Rubin, MD
11 Hammond Lane, Suite A
Plattsburgh NY 12901
Ph: 518-561-0063

Adirondack Psychiatric Associates, P.C.

Kevin Gitlin, MD & Daniela Gitlin, MD
3 Cumberland Avenue
Plattsburgh, NY 12901
Ph: 518-566-6000

North Country Behavioral Medicine PLLC

Dino Santoro, MD, Archil Chechelashvili MD
8 Broad Street
Plattsburgh, NY 12901
Ph: 518-825-1533
Fax: 518-825-1550

*must complete and return intake form found at
https://northeasternpsychiatry.com/intake-forms/
to get an appointment; office contacts patient
once form is processed.

Cristina Trutia, MD
22 US Oval, Suite 207
Plattsburgh NY 12901
Ph: 518-324-4803

Breanna Lamont
159 Margaret Street, Suite 250
Plattsburgh, NY 12901
Ph: 518-593-1914

Portis Alleo-Turco
110 West Bay Plaza
Plattsburgh, NY 12901
Ph: 518-593-7790

Libby Yokum
22 US Oval, Suite 122
Plattsburgh NY 12901
Ph: 518-561-2869
## Evaluating outcomes and project limitations

### Evaluating outcomes
- Chart review to assess provider use of info sheet
- Survey patients for the following, before and after accessing resources:
  - Understanding of link between MH and exercise
  - Awareness of options for home exercise
  - Degree of patient engagement in exercises, including type and modality (i.e. did they use YouTube links?)
  - PHQ-9 and GAD-7 to assess symptoms
- Interview providers to gage their use and satisfaction with the materials

### Limitations
- Did not provide home exercise resources for patients without internet access
- Materials not comprehensive: did not provide information regarding other MH treatment approaches (e.g. CBT, social supports, medication, meditation, diet) and how to integrate exercise into multi-faceted treatment plan
- Not able to evaluate and address all barriers to exercise
  - For many patients, the challenge to engaging in physical activity is not lack of knowledge regarding benefits of exercise, but rather multi-factorial and includes free time, motivation*, adherence, and chronic disease that can make exercise painful

*Motivation, energy, and inertia are often decreased in depression and other MH conditions*
Future directions

• Perform the assessments discussed on previous slide

• Create similar resources for other factors of mental health treatment/maintenance – e.g. diet, sleep, mediation

• Survey patients to determine what motivates them to engage in physical activity and what resources have best facilitated their exercise in the past

• Create app that recommends specific exercise activities/videos based on patient selection of different criteria, such as duration, energy levels, MH symptoms, and co-existing medical conditions
References


