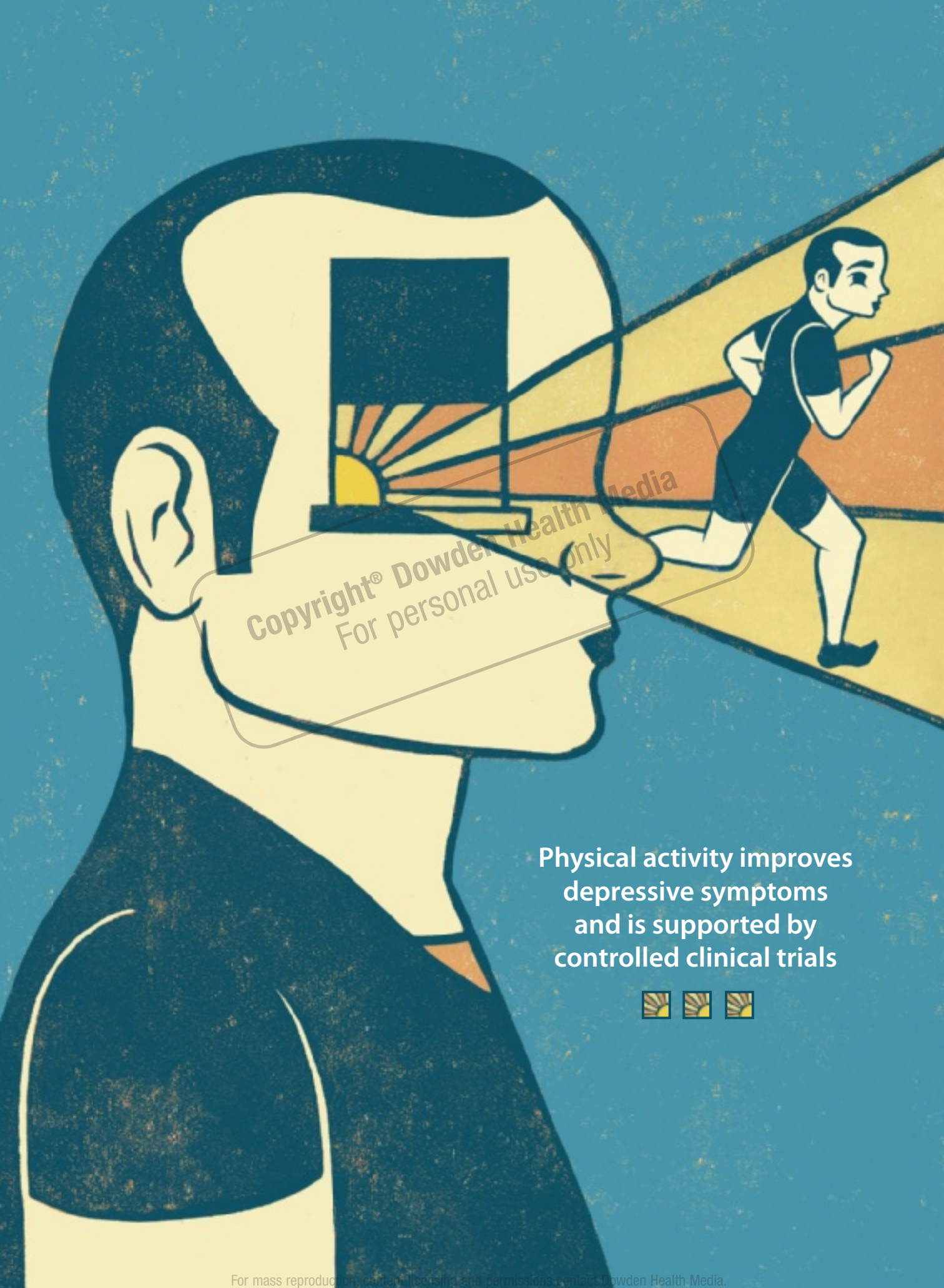

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EXERCISE prescription

A PRACTICAL, EFFECTIVE THERAPY FOR DEPRESSION

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Mrs. S, age 44, is on leave from her job as a bank cashier because depressive symptoms interfered with her performance. At a university-based psychiatric clinic she reports feeling depressed, reduced interest in daily activities, problems with sleep onset and maintenance, inconsistent appetite, low energy, hopelessness, and decreased memory and concentration.

The resident psychiatrist diagnoses major depressive disorder (MDD) and starts Mrs. S on sertraline, 50 mg/d. The dosage is gradually titrated to 200 mg/d, and after 8 weeks she reports substantial improvement.

Mrs. S returns to her job but experiences residual low energy, lethargy, and inconsistent sleep. Her work schedule and caring for her 2 children at home prevent her from continuing weekly cognitive-behavioral therapy (CBT), but she soon notices that she feels more energetic. She reports that because of high gasoline prices she has been walking several miles daily to commute by train to work. The resident psychiatrist sees this as an opportunity to reinforce the benefits of exercise for depression.

Antidepressants alone do not adequately treat many patients with depression. In the STAR*D Project—which compared long-term outcomes of various depression treatments—only 28% to 33% of outpatients achieved remission with selective serotonin reuptake inhibitor (SSRI) monotherapy. Rates were somewhat higher with bupropion or serotonin norepinephrine reuptake inhibitor (SNRI) monotherapy, but greater benefit was obtained from augmenting SSRIs.[1]

Combining antidepressants with psychotherapy[2] and lifestyle changes—particularly exercise—makes sense intuitively and is supported by well-designed studies:

- The 60% of adults in the National Comorbidity Survey who said

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Exercise for depression

Clinical Point

Set small, realistic exercise goals for depressed patients, and discuss how to solve problems and remove barriers

Box 1

How does exercise affect mood? Possible mechanisms

Elevation of endorphins in the CNS
Changes in neurotransmitters such as serotonin and norepinephrine
Increased levels of brain-derived neurotrophic factor
Reduction of serum cortisol
Elevation of body temperature
Improved self-esteem
Distraction from daily stress
Induction of a relaxed state via biofeedback

they exercised regularly reported lower rates of depression and anxiety, compared with less active adults.[3]

- A meta-analysis of 11 randomized, controlled trials supports the use of exercise as an effective intervention for clinical depression.[4]

This article examines the evidence supporting exercise for treating and preventing clinical depression. We begin by addressing clinicians' concerns about motivating depressed patients to exercise.

Overcoming barriers

Physician issues. Busy physicians often omit discussions about exercise during brief office visits. Only 34% of 9,299 patients in a population-based survey[5] reported that their doctors counseled them about exercise during their most recent visits. Counseling patients does not have to be time-intensive, however. A study of the Physician-based Assessment and Counseling for Exercise (PACE) project showed that 70% of physicians could provide exercise counseling in 3 to 5 minutes, and most patients reported following their physicians' advice.[6]

Highly depressed individuals are at risk to quit when they encounter barriers to exercise and to respond to difficulties with frustration and self-disappointment. Thus, depressed patients may need support and encouragement to initiate and maintain regular exercise routines.[7] Set small, realistic goals for them, and discuss how to solve problems and remove barriers to increase their likelihood to exercise.

Interventions are most likely to be effective when you counsel patients about exercise as prescription and discuss exercise at each visit.[8] Previously sedentary patients have shown short-term moderate increases in physical activity in response to physician counseling. In a study of 212 adults (mean age 39, 84% female), the PACE project significantly increased minutes of weekly walking.[9] More than one-half (52%) of patients increased their physical activity, compared with 12% of controls whose physicians did not provide the PACE intervention.

Patient issues. Lack of time and no appropriate space to exercise are common complaints, particularly among residents of regions with long, cold winters. Some patients perceive regular exercise as monotonous or boring, and others may lack the necessary initiative because of poor physical health, fear, negative experiences, or lack of knowledge about exercising. These barriers can be pronounced in older depressed persons. In a cross-sectional study of 645 residents of Jyväskylä, Finland, those age >75 with depressive symptoms were more than twice as likely to be physically inactive as nondepressed residents.[10]

An intensive exercise program is not the optimal starting point for many patients. Even walking or light jogging can be an effective exercise for depressed individuals with physical limitations. For these patients, a consultation with their primary physician may be necessary if a more intensive program has to be recommended.

Exercise as monotherapy

A dose-response relationship? Various mechanisms have been suggested for the benefits of exercise in depression (***Box 1***). Exercise alone—without medication—may be an effective treatment for mild and in some cases moderate MDD, and aerobic exercise may reduce depressive symptoms in a dose-response relationship.[11]

A study of exercise in a supervised laboratory setting demonstrated this relationship in 80 adults age 20 to 45 with mild-to-moderate depressive symptoms. Subjects were randomly assigned to an exercise control group (3 days/week of flexibility exercise) or 1 of 4 aerobic exercise groups that varied in total energy expenditure (a "low dose" of 7.0 kcal/kg/week or a "public health dose" of 17.5 kcal/kg/week). The 17-item Hamilton Rating Scale for Depression (HRSD) was the primary outcome measure.

After 12 weeks, HRSD scores declined from baseline by 47% in subjects engaged in the public health dose of aerobic exercise—a significant reduction. Depressive symptoms declined by 30% in the low-dose exercisers, but this was comparable to the 29% reduction in the control group.

Comment. The effective exercise dose in this study is similar to the public health recommendation of 30 minutes of moderate-to-vigorous activity on all or most days per week (***see Related Resources, page 51***). Antidepressant effects have been associated with more modest physical activity, however, which may be easier to initiate and maintain for individuals with depression. The study did not find significant differences in outcomes based on the subjects' age, gender, or exercise frequency. Nevertheless, the exercise dose may be important to produce an antidepressant effect.

An inverse relationship? Compared with occasional exercise, habitual physical activity usually is associated with greater cardiorespiratory fitness. Whether habitual activity also results in fewer depressive symptoms and greater emotional well-being remains to be seen.

A large, cross-sectional, National Institutes of Health-funded study of 5,451 men and 1,277 women[12] suggests an inverse relationship between physical activity and depressive symptoms. Subjects underwent a treadmill exercise test to evaluate physical fitness. A 20-point self-report scale assessed depressive symptoms, and the General Well-Being Schedule[13] was used to assess emotional well-being. Depressive symptoms were more severe in "inactive" and "insufficiently active" subjects compared with "sufficiently active" and "highly active" subjects.

On the other hand, although regular exercise may be associated with reduced depressive symptoms in the population at large, no cause-effect relationship was found in a population-based, longitudinal study of 5,952 twins.[14]

A prospective, randomized, controlled trial[15] suggests that exercise could be an important treatment tool in patients diagnosed with MDD. The 202 adult subjects (153 women, 49 men) were randomly assigned to 1 of 4 treatments:

- supervised exercise in a group setting
- home-based exercise
- antidepressant medication (sertraline, 50 to 200 mg/d)
- placebo pills.

Patients underwent the structured clinical interview for depression and completed the HRSD. After 16 weeks, 41% of participants achieved remission, defined as no longer meeting MDD criteria and a HRSD score <8. Compared with placebo controls, patients receiving active treatments tended to have higher remission rates:

- 45% with supervised exercise
- 40% with home-based exercise
- 47% with medication
- 31% with placebo.

Comment. The placebo response rate was relatively high in this study, and antidepressant dosages might not have been optimal. These factors could explain why remission rates with supervised exercise and antidepressant medication were comparable. The study might have been more reliable if it had included a medication plus exercise arm. Patients treated in an office setting might not fare as well as these study subjects whose exercise was supervised.

Postpartum depression occurs in an estimated 13% of new mothers.[16] In a controlled trial, 80 women with depression at 4 weeks

Clinical Point

For the greatest benefit, counsel patients about exercise as a plan or prescription, and discuss exercise at each visit

Exercise for depression

Clinical Point

Aerobic exercise may reduce depressive symptoms in a dose-response relationship

Box 2

Prescribing exercise regimens for depressed patients

Most depressed patients can benefit from aerobic exercise or high-intensity progressive resistance training (PRT). Consult with your patient's primary care physician before designing an exercise regimen. Incorporate warm-up and cool-down periods during each exercise session.

Aerobics. A 30- to 45-minute daily regimen of running, walking, swimming, biking, dancing, or elliptical training is recommended for most people. An optimum regimen achieves a target heart rate of 70% to 85% of the individual's maximum heart rate. A goal of 40% to 50% of maximum heart rate is an appropriate goal for patients starting an exercise program. At least 10 minutes of aerobic activity is necessary to produce the desired benefit.

PRT. High-intensity progressive resistance training may be recommended in consultation with a physical therapist or certified trainer. This usually consists of 30 to 45 minutes of systematic training of various muscle groups 3 days a week. An optimal resistance of 80% of maximal load is desirable, but this may be adjusted for individual patients. Lifting weights, push-ups, sit-ups, using resistance bands, and heavy gardening may be part of this regimen.

postpartum were assigned to either:

- an exercise support program (1 hour supervised exercise and 2 sessions at home each week for 3 months)
- standard care.

No subjects received medication. Women in the exercise support program were less likely to have high scores on the Edinburgh Postnatal Depression Scale, compared with controls. Women who exercised also reported a greater sense of well-being. Differences between the 2 groups were not statistically significant at 4 weeks postpartum but achieved significance at 5 months.[17]

Depressive symptoms may exacerbate fatigue in postpartum women.[18] A study of 88 women with postpartum depression showed the benefits of a home-based exercise program on physical and mental fatigue.[19] This finding may be important because fatigue often is associated with treatment-resistant depression and may increase the likelihood of relapse in women with postpartum depression.[20]

Late-life depression. Exercise can benefit the depressed elderly as well. In a 10-week randomized, controlled trial[21] of volunteers age ≥60 with major or minor depression or dysthymia, progressive resistance training (PRT) significantly reduced depression, as measured by the Beck Depression Inventory (BDI) and HRSD. PRT also improved quality of life, vitality, social functioning, and emotional well-being when compared with a control group (***Box 2***).

A dose-response relationship of exercise for treating late-life depression was shown in a blinded, controlled trial[22] of 60 community-dwelling, depressed subjects age >60. These patients were randomly assigned to high-intensity PRT, low-intensity PRT, or standard care by a general practitioner (GP). A ≥50% reduction in HRSD score was achieved by:

- 61% of the high-intensity PRT group
- 29% of the low-intensity PRT group
- 21% of the GP care group.

Sleep quality improved in all participants, with the greatest relative change in the high-intensity PRT group.

Exercise vs psychotherapy. The benefits of exercise may be comparable or superior to those of cognitive or group psychotherapy.[23,24] This may be good news for patients such as Mrs. S who lack time or financial resources for regular psychotherapy.

Adjunctive exercise

In depressed patients, exercise may increase the perceived quality of life when combined with medication. This was demonstrated in a randomized, 32-week naturalistic study of 30 women, age 40 to 60, with treatment-resistant MDD.[25] The 10 women who received various antidepressants plus physical exercise showed significantly greater long-term improvement in depression symptoms, as measured by the HRSD and Global Assessment of Functioning (GAF) scores, compared with 20 women who received pharmacotherapy alone.[26] Study limitations included the absence of a placebo arm, small sample size, and inclusion of subjects with comorbid anxiety disorders.

Group aerobic exercise programs can be an effective and feasible treatment for depression, particularly for older adults. In a controlled trial,[27] 156 men and women age >50 with MDD were randomly assigned to 3 groups: a program of aerobic exercise; sertraline, ≤200 mg/d; or exercise plus sertraline. HRSD and BDI scores before and after treatment were the primary outcome measures. Secondary measures included aerobic capacity, life satisfaction, self-esteem, anxiety, and dysfunctional cognitions. After 16 weeks of treatment, similar percentages of patients in each group no longer met DSM-IV-TR criteria for MDD:

- 60.4% of patients in the exercise-only group
- 68.8% of patients in the medication-only group
- 65.5% of patients receiving exercise plus medication.

Depression severity appeared to predict the rate of response to the different treatments. Patients who received medication alone seemed to have the most rapid response to treatment. Patients with less severe depression appeared to respond more quickly to exercise plus medication than those with more severe depression.

Long-term benefits

Because depression is a chronic, relapsing illness, any treatment will be widely accepted only if its benefits are long-term. A study of aerobic exercise in 156 adults age ≥50 with MDD[28] found that benefits were sustained for >6 months.

Participants were randomly assigned to 4 months of aerobic exercise; sertraline, ≤200 mg/d; or a combination of exercise and sertraline. Aerobic exercise consisted of 30 minutes of brisk walking and jogging on a treadmill, with training ranges equivalent to 70% to 85% of individuals' maximum heart rate. Appropriate warm-up and cool-down sessions of 5 to 10 minutes were included.

Depressive symptoms improved significantly from baseline in all 3 groups—as assessed by clinical interview, HRSD, and BDI—and after 4 months a comparable number in each group no longer met diagnostic criteria for MDD. When subjects were reassessed 6 months later, the exercisers had significantly lower relapse rates than those receiving medication (P = .01). Those who continued to exercise also were less likely to meet MDD criteria at the end of the 10-month study.

Even when unsupervised, exercise can have long-term benefits—as was shown in a randomized, blinded, controlled study of 32 elderly subjects.[29] An active treatment group underwent 10 weeks of supervised weight lifting, followed by 10 weeks of unsupervised exercise. Controls received no active treatment. Depression scores as measured by BDI were significantly lower at 20 weeks and 26 months in exercisers compared with controls. An antidepressant effect was seen in 73% of exercisers vs 36% of controls at 20 weeks of treatment.

Comment. These studies show that exercise can maintain an antidepressant effect for 10 to 26 months, but additional randomized controlled studies are needed.

Preventing depression? Inactive nondepressed individuals may be at greater risk to develop depression compared with active individuals, according to a 29-year longitudinal study of Californians age 17 to 94. This association was somewhat diminished when findings were adjusted for the Alameda County residents' physical

Box 3

5 ways to help depressed patients start and maintain an exercise program

Ask about physical activity at every visit to gauge motivation to exercise
Discuss benefits of exercise for depression and other ailments, and use motivational interviewing techniques when appropriate
Screen for barriers to an exercise routine, and discuss strategies to overcome barriers
Recommend exercise as a prescription, rather than simply advice, because adherence may be greater
Encourage patients to increase physical activity each day, participate in exercise support groups, and seek support from coworkers, family, and friends

Clinical Point

The benefits of exercise may be comparable or superior to those of cognitive therapy or group psychotherapy

Exercise for depression

Clinical Point

Studies show an antidepressant effect of exercise being maintained for up to 10 to 26 months

Box 4

Simple steps to build physical activity into daily life

The American Heart Association offers helpful tips for increasing daily exercise at home, at work, and at play. For additional suggestions, go to www.americanheart.org.

At home

Do housework yourself instead of hiring someone else to do it

Work in the garden or mow the grass (using a riding mower doesn't count); rake leaves, prune, dig, and pick up trash

Go out for a short walk before breakfast, after dinner or both; start with 5 to 10 minutes and work up to 30 minutes

Walk or bike to the corner store instead of driving

When walking, increase the pace from leisurely to brisk; choose a hilly route

At the office

Brainstorm project ideas with a coworker while taking a walk

Stand while talking on the telephone

Walk down the hall to speak with someone rather than using the telephone

Take the stairs instead of the elevator, or get off a few floors early and take the stairs the rest of the way

Schedule exercise time on your business calendar, and treat it as any other important appointment

At play

Plan family outings and vacations that include physical activity (hiking, backpacking, swimming, etc.)

See the sights in new cities by walking, jogging, or bicycling

Make a date with a friend to enjoy your favorite physical activities, and do them regularly

Play your favorite music while exercising, something that motivates you

Dance with someone or by yourself; take dancing lessons

Join a recreational club that emphasizes physical activity

When golfing, walk the course instead of using a cart

health, socioeconomic status, social supports, life events, and other health habits.[30] The authors recommended that exercise programs be offered in community mental health programs.

CASE CONTINUED

Removing barriers to exercise

The resident psychiatrist treating Mrs. S encourages her to join an aerobic exercise class at the nearby fitness facility. Because cost is a potential barrier, he helps her negotiate a discount for the first 6 months of membership. Her husband agrees in a joint counseling session to help more with the care of their children so that she can attend the classes.

With continued sertraline, 200 mg/d, and aerobic exercise, Mrs. S's residual depressive symptoms gradually improve. She still has days when she is unable to attend the exercise classes, but she benefits from the program and is functioning better at work and home.

Getting started

We recommend that psychiatrists inquire about physical activity at every visit to gauge patients' perception and motivation to exercise. Find ways to overcome patients' fears and negative experiences with exercise. Provide information to help increase physical activity among patients with depressive symptoms[10] (***see Related Resources***).

Encourage patients to take steps each day to increase their physical activity (***Box 3, page 49***). Depending on the severity of the individual's depression and inactivity, a realistic starting point may be to take the stairs instead of an elevator, play with children and pets, or take short brisk walks in the yard or neighborhood (***Box 4***). Consider stationary bikes or swimming as alternatives for physically handicapped individuals and patients who have undergone knee replacements.

References

1. Warden D, Rush AJ, Trivedi MH, et al. The STAR*D Project results: a comprehensive review of findings. Curr Psychiatry Rep. 2007;9(6):449-459.
2. Thase ME, Friedman ES, Biggs MM, et al. Cognitive therapy versus medication in augmentation and switch strategies as second-step treatments: a STAR*D report. Am J Psychiatry. 2007;164(5):739-752.
3. Goodwin RD. Association between physical activity and mental disorders among adults in the United States. Prev Med. 2003;36(6):698-703.

Related Resources

- 2008 physical activity guidelines for Americans. U.S. Department of Health and Human Services; 2008:vi-viii. www.health.gov/paguidelines.
- American College of Sports Medicine/American Health Association physical activity guidelines and keys to exercise success. www.acsm.org.
- American Heart Association. www.americanheart.org.
- U.S. Department of Health and Human Services. Quick Guide for Healthy Living. Get Active. www.healthfinder.gov/prevention/ViewTopic.aspx?topicID=22.

Drug Brand Names

Bupropion • Wellbutrin Sertraline • Zoloft

Disclosure

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4. Stathopoulou G, Powers MB, Berry AC, et al. Exercise interventions for mental health: a quantitative and qualitative review. Clinical Psychology Science and Practice. 2006;13(2):179-193.
5. Wee CC, McCarthy EP, Davis RB, et al. Physician counseling about exercise. JAMA. 1999;282(16):1583-1588.
6. Long BJ, Calfas KJ, Wooten W, et al. A multisite field test of the acceptability of physical activity counseling in primary care: project PACE. Am J Prev Med. 1996;12(2):73-81.
7. Vickers KS, Nies MA, Patten CA, et al. Patients with diabetes and depression may need additional support for exercise. Am J Health Behav. 2006;30(4):353-362.
8. Weidinger KA, Lovegreen SL, Elliott MB, et al. How to make exercise counseling more effective: lessons from rural America. J Fam Pract. 2008;57(6):394-402.
9. Calfas KJ, Long BJ, Sallis JF, et al. A controlled trial of physician counseling to promote the adoption of physical activity. Prev Med. 1996;25(3):225-233.
10. Rosqvist E, Heikkinen E, Lyyra TM, et al. Factors affecting the increased risk of physical inactivity among older people with depressive symptoms. Scand J Med Sci Sports. 2008 May 22 [Epub ahead of print].
11. Dunn AL, Trivedi MH, Kampert JB, et al. Exercise treatment for depression: efficacy and dose response. Am J Prev Med. 2005;28(1):1-8.
12. Galper DI, Trivedi MH, Barlow CE, et al. Inverse association between physical inactivity and mental health in men and women. Med Sci Sports Exerc. 2006;38(1):173-178.
13. Fazio AF. A concurrent validation study of the NCHS General Well-Being Schedule. Vital and Health Statistics. Hyattsville, MD: National Center for Health Statistics, US Public Health Service; September 1977. Series 2, No. 73, DHEW Publication No. (HRA) 78-1347:1-13.
14. De Moor MH, Boomsma DI, Stubbe JH, et al. Testing causality in the association between regular exercise and symptoms of anxiety and depression. Arch Gen Psychiatry. 2008;65(8):897-905.
15. Blumenthal JA, Babyak MA, Doraiswamy PM, et al. Exercise and pharmacotherapy in the treatment of major depressive disorder. Psychosom Med. 2007;69(7):587-596.
16. O'Hara MW, Swain AM. Rates and risk of postpartum depression—a meta-analysis. Int Rev Psychiatry. 1996;8(1):37-54.
17. Heh SS, Huang LH, Ho SM, et al. Effectiveness of an exercise support program in reducing the severity of postnatal depression in Taiwanese women. Birth. 2008;35(1):60-65.
18. Saurel-Cubizolles MJ, Romito P, Lelong N, et al. Women's health after childbirth: a longitudinal study in France and Italy. BJOG. 2000;107(10):1202-1209.
19. Dritsa M, Da Costa D, Dupuis G, et al. Effects of a home-based exercise intervention on fatigue in postpartum depressed women: results of a randomized controlled trial. Ann Behav Med. 2008;35(2):179-187.
20. Corwin EJ, Brownstead J, Barton N, et al. The impact of fatigue on the development of postpartum depression. J Obstet Gynecol Neonatal Nurs. 2005;34(5):577-586.
21. Singh NA, Clements KM, Fiatarone MA. A randomized controlled trial of progressive resistance training in depressed elders. J Gerontol A Biol Sci Med Sci. 1997;52(1):M27-35.
22. Singh NA, Stavrinos TM, Scarbek Y, et al. A randomized controlled trial of high versus low intensity weight training versus general practitioner care for clinical depression in older adults. J Gerontol A Biol Sci Med Sci. 2005;60(6):768-776.
23. Fremont J, Wilcoxon Craighead L. Aerobic exercise and cognitive therapy in the treatment of dysphoric moods. Cognit Ther Res. 1987;11(2):241-251.
24. Klein MH, Greist JH, Gurman RA, et al. A comparative outcome study of group psychotherapy vs. exercise treatments for depression. Int J Ment Health. 1985;13:148-177.
25. Carta MG, Hardoy MC, Pilu A, et al. Improving physical quality of life with group physical activity in the adjunctive treatment of major depressive disorder. Clin Pract Epidemiol Ment Health. 2008;4:1.
26. Pilu A, Sorba M, Hardoy MC, et al. Efficacy of physical activity in the adjunctive treatment of major depressive disorders: preliminary results. Clin Pract Epidemiol Ment Health. 2007;3:8.
27. Blumenthal JA, Babyak MA, Moore KA, et al. Effects of exercise training on older patients with major depression. Arch Intern Med. 1999;159(19):2349-2356.
28. Babyak M, Blumenthal JA, Herman S, et al. Exercise treatment for major depression: maintenance of therapeutic benefit at 10 months. Psychosom Med. 2000;62(5):633-638.
29. Singh NA, Clements KM, Singh MA. The efficacy of exercise as a long-term antidepressant in elderly subjects: a randomized, controlled trial. J Gerontol A Biol Sci Med Sci. 2001;56(8):M497-504.
30. Camacho TC, Roberts RE, Lazarus NB, et al. Physical activity and depression: evidence from the Alameda County Study. Am J Epidemiol. 1991;134(2):220-231.

Bottom Line

Exercise may be an effective treatment for mild—and in some cases moderate—major depressive disorder. When combined with antidepressant medication, exercise may increase patients' perceived quality of life. Counsel patients about exercise as a plan or prescription, and discuss exercise at each visit. Structured physical fitness programs can improve adherence in depressed patients who have been inactive or are not sure how to exercise.

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Clinical Point

A realistic starting point might be to play with children or pets or take short, brisk walks in the yard or neighborhood