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Overcome Of Sleep Disorder with Exercises

Nor Masitah Mohamed Shukri[1] , Jothi Priya[2]
First Year BDS[1] , Professor[2]
Department of Physiology,
Saveetha Dental College and Hospital, Chennai, India

Abstract
Sleep is very essential for one's need as it plays an important role in physical health. Adequate sleep ensures us a bright daylong which makes us feel better and somehow reduces our stress. An optimal sleep time for adults are between 7 to 8 hours per night and it is varies in individuals. Yet, there is still some people who do not have enough time of quality sleep and half of them may have trouble to sleep. They usually feel grumpy, moody and may not doing their best in work or something. Nowadays, there are so many initiatives that can offer a better and restful sleep. For instance, stick to a sleep schedule, control stress and emotion, limit daytime naps and consume nutritious meals. In addition, exercising is one of the simplest and nature ways to promote an adequate sleep if it is only done regularly before bedtime. Simple exercises such as aerobic and Tai Chi can naturally increase body temperature for a period of five hours before bedtime. A significant drop of body temperature later is believed to be a trigger for a better sleep.

INTRODUCTION

Sleeping is a functional state that comprises a complex combination of physiology and behavioral processes that include a natural lie down for humans[1]. Moreover, sleep is multifaceted and it is characterized by a reduction in voluntary body movement and decreased awareness of the surrounding[2]. Most of us spend around 8 hours of sleep and each individual needs varies amount of sleep according to his or her preferences. In fact, babies and adolescents need a lot more sleep than adults[1]. All mammals including humans are in need of sleep as it can regulate our mood and also relates to learning and memory function. As people get older, their amount of sleep gradually drop a day because lots of responsibilities and restrains[4].

Sleeping disorder are a bunch collections of conditions that have disturbance in amount, quality and timing of sleep in which impaired daytime functioning[3]. Types of sleeping disorder include sleep apnea, insomnia, restless legs syndrome (RLS), circadian rhythm disorders, narcolepsy and parasomnias.

A good quality and enough time to sleep are paramount for a healthy and productive lifestyle. This is because sleep is important for immunity boosting[6], daily performance[5], brain maturation[7], development of body[8], increase in brain mass[9], memory consolidation[10] and regulate catecholamines in brain[6].

TYPES OF SLEEP DISORDERS

Based on American Academy of Sleep Medicine, there are 81 kinds of sleep disorders and some of them are as follows:

- Insomnia
- Narcolepsy
- Sleep apnea
- Sleep walking
- Snoring
- Night terrors
- Rapid eye movement (REM) sleep behavior disorder
- Restless legs syndrome (RLS)

Insomnia

Insomnia is known as the second common painful in primary care settings. It is the less amount of quality time to sleep and associated with difficulty to maintain sleep[1]. The symptoms that can be identified are fatigue, anxiety, tension, depression and irritability[11-13]. Patients with insomnia are associated with stress[14,15], increased frontalis and mentalis electromyogram, increased heart rate, increased finger temperature and unstable frequencies of alpha and beta in electroencephalogram[4].

Exercise for Insomniacs

One cause of insomnia is lack of physical activities in which result less productive daily style, less energy produces and decrease of body-temperature rhythm. Therefore, the best cure is aerobic exercise for only about 20 to 30 minutes, at least 4 to 5 times a week. This is believed as the best way to combat sleeplessness and gain maximum amount of oxygen into our body. Walking, dancing, swimming, jogging, stationary bicycle and kickboxing are the examples for aerobic exercises. All these activities will ensure more oxygen can be consumed to reach the blood. It is preferable to do aerobic exercises in the late afternoon or early evening. This can be explained as rise of body temperature after vigorous activity just a few hours before bed helps a lot to fall just prior to bed-time[4].

Sleep apnea

Sleep apnea is associated with overweight and the common form is known as Obstructive Sleep Apnea(OSA). About 4% of middle-aged men and 2% of middle-aged women has OSA[16-18] and suffers symptoms like loud snoring, choking sensation during sleep, extreme daytime sleepiness and morning headache[19,20].

Exercise in Sleep Apnea

Obviously, exercises that can be suggested purposely to lose weight for reducing severity of OSA. For example, aerobic and endurance exercises are effective for weight reduction. Other than that, incorporate light weight lifting and stretching pre and post workout can also be suggested

to get the most pro benefit. Breathing exercise is a treatment used to strengthen throat muscles and reducing sleep apnea problems[4].

BREATHING EXERCISES IN SLEEP DISORDERS

Quiet mind and body

Performing a deep breathing exercise help to clear mind from worrisome thoughts and often feels backward to many people as it needs concentration to master. When in calm with clear mind sends signals to take slow deep breathes and so it turn down heart rate and nervous activity[4].

Breathe Quietly

Breathing in a correct way can ensure lung to fully expand and compressed. This is by allowing diaphragm to contract when inhalation and then allow it to relax during exhalation. Lung will get compressed and so air is pushed outside thoracic cage as in exhalation occurs[4].

Nasal Breathing

Physiologically, breathing via nose gives more comfort and relaxing because the nasal cavity is designed to warm or cool air when inhales. It also functions to filter the air by removing big particles in which the mouth does not have these same structures. Therefore, it is important to breathe through nose so that air can be efficiently inhaled and exhaled from body. This also helps to slow down activity of heart and nervous system[4].

MECHANISMS THAT MAY EXPLAIN THE EFFECTS OF EXERCISE ON INSOMNIA

Thermogenic Effect

Home and colleagues found out that acute exercise in physically active men had increase in slow-wave sleep and this could be explained by thermogenic effect[20,21]. New evidence also suggested that a decline of body temperature in the evening can stimulate sleep onset which is regulated by the increase of blood flow into periphery skin. It can be explained that an increase of temperature due to acute exercise can be a trigger for sleep onset[22,23].

Anxiety Reduction

Since anxiety is one of the factor of insomnia, reducing it could be plausible to treat insomnia, suggested by Youngstedt[25]. Besides, doing aerobic exercise can also reduce anxiety. This correlation could improve insomnia[26]. In a recent study, older adults that practice Tai Chi exercise had experienced good quality of sleep and anxiety reduction as well[27].

Antidepressant Effects

According to Reid[28] older adults with chronic insomnia showed positive outcome after having 16 weeks program of aerobic exercise. They had established a mutual connection between a reduction in global Pittsburgh Sleep Quality Index (PSQI) and a reduction in depressive symptoms. A 6-months aerobic exercise program was done in elders with chronic insomnia and the effect of this program was evaluated.

The result shows a decrease in Profile of Mood States (POMS) with a significant improvement of sleep diary measures of sleep quality, Sleep Onset Latency (SOL). POMS is a measure of tension and anxiety[29].

Effect On Mental Health

Table 1: Effects of exercise on mental health [30,31,32,33,34,35]

Decreased Anxiety	Decreased Depression
Aerobic exercises give best result	Regular exercises gives better result
Patient with high anxiety to start with respond earlier	Regular exercises at several times a week shows better result
Patients with low fitness level to start with give better result	Strenuous exercises have better result
Performing a long period of regular exercise shows better result	Patients with high depression to start with gives better results

BENEFITS OF EXERCISES IN SLEEP DISORDERS

I. Exercises regulate body temperature accordingly to its need by increasing body temperature followed by a compensatory drop after that. The low body temperature later is important to sleep easily and stay asleep[4].
II. It acts as physical stressor, which initiates the brain to compensate for physical stress by providing a deep sleep[4].
III. Regular exercises improve lung capacity thereby it will be easier to breathe in and out. Otherwise, lung capacity falls over time to a level full capacity is normal breathing and in fact, normal breathing will be difficult[4].
IV. A regular exercise with correct nasal breathing can ensure breathing muscles become more toned and not easily collapse[4].
V. As we get older, the body becomes less flexible and aching frequently. Simple exercises such as Tai Chi and yoga can improve to support breathing muscles and increase flexibility[4].
VI. Endorphin is likely more secreted within the brain and nervous system. It is a hormone that can improve our mood and reduce anxiety, which could interrupt in sleep[4].

SUMMARY

Exercise has been suggested as one of the best cures to treat sleep disorder, as it gives no harm potential side effects to health and wellbeing of an individual. It a positive kind of modification tool to improve sleep quality in all range of ages. In addition, regular exercises with long duration is plausible to brig about improvement if sleep quality. However, an exercise just before bedtime may cause negative effect to body and quality of sleep [36].

REFERENCES

1. H Zeplin, J M Siegel, 1 Tobbler, “Mammalian Sleep”.In: Kryger M H, Roth T & Dement W C (eds) “Principles and practice of sleep medicine”:Philadelphia: WB Saunders Company: 2005: 91 - 100
2. V Madan, S K Jha “ What is sleep and why it is needed?” IJLST (2008), 1(1): 9 - 23
3. Edell-Gustafson, Gustavsson, & Yngman Uhlin,2003; Manocchia, Keller & Ware, 2001; Parish, 2009
4. Kaur J., & Sharma, C (2011). Exercise in Sleep Disorder
5. Rechtschaffen A. “Current perspectives on the function of sleep”, PerspectBiol Med, 1998;41(3):359-930
6. RVT Santos, Tufik S, De Mello TI. “Exercise, Sleep and Cytokines: Is there a relation?” Sleep Medicine Reviews: 2007 : 231-239
7. Graves L, Pack A, Abel T. “Sleep and memory: A molecular perspectives”: Trends Neurose:2001, 24(4), 237-243
8. Marks GA, Shaffery JP, Oksenberg A, Speciale SG and Roffwarg HP. “A functional role for REM Sleep in brain maturation”. Behavi Brain Res:1995, 69(1-2):227-286
9. Mirmiran M, Scholtene J. A functional role for REM Sleep in brain maturation”. Behavi Brain Res:1995, 69(1-2): 1-11
10. Miriam M, Uylings HB, Corner MA. : Pharmacological suppression of REM sleep prior to weaning counters the effectiveness of subsequent environmental enrichment on corticol growth in rats”, Brain Res, 1983, 283(2-3), 227-286
11. Hrayr AP. Epidemiology of Insomnia. In Clinical Handbook of Insomnia (Hrayr P. Attarian, ed) Humana Press, 2004;pp. 11-21
12. Bonnet MH, Arand DL. Physiology Basis of Insomnia. In Clinical Handbook of Insomnia (Hrayr P. Attarian, ed) Humana Press, 2004;pp. 22-38
13. Haynes SN, Follingstad DR, McGowen WT.Insomnia: Sleep patterns and anxiety level. J Psychosom Res 1974;18 : 69-74
14. Haynes SN, Adams A, Franzen M. The Effects of presleep stress on sleep-onset insomnia. J Abn Psychol 1981;90 : 601-606
15. Hall M, Buysse DJ, Nowell PD, Nofzinger EA, Houck P, Reynolds CF et al. Symptoms of stress and depression as correlates of sleep in primary insomnia. Psychosom Med 2000; 62 : 227-30
16. Young T, Palta M, Dempsey J, Skatrud J, Weber S, Badr S. The occurrence of sleep-disordered breathing among middle aged adults. New Engl J Med. 1993; 328 : 1230-5
17. Young T, Skatrud J, Peppard PE. Risk factors for obstructive sleep apnea in adults. JAMA. 2004; 291 : 2013-6
18. Norman JF, Von Essen SG, Fuchs RH, McElligot M. Exercise training effect on obstructive sleep apnea syndrome. Sleep Res Online. 2003; 3 : 121-9
19. Malhotra A, White DP. Obstructive sleep apnea. Lancent. 2002; 360(9328) : 237-47
20. Lamarche CH, Ogilvie RD. Electrophysiological changes during the sleep onset period of psychophysiological insomniacs, psychiatric insomniacs, and normal sleepers. Sleep 1997; 20 : 724-33
21. Horne JA, Moore VJ. Sleep EEG effects of exercise with and without additional body cooling. Electroencephalogr Clin Neurophysiol. 1985;60(1):33-8
22. Horne JA, Staff LH. Exercise and sleep: body-heating effects. Sleep. 1983;6(1):36-46
23. Murphy PJ, Campbell SS. Nighttime drop in body temperature: a physiological trigger for sleep onset? Sleep. 1997;20(7):505-11
24. Krauchi K, Cajochen C, Werth E, Wirz-Justice A. Warm feet promote the rapid onset of sleep. Nature. 1999;401(6748):36-7, http://dx.doi.org/ 10.1038/43366
25. Youngstedt SD. Effects of exercise on sleep. Clin Sports Med. 2005;24(2):355-65, xi
26. Herring MP, O’Connor PJ, Dishman RK. The Effect of Exercise Training on Anxiety Symptoms Among Patients A Systematic Review. Arch Intern Med. 2010;170(4):321-31, http://dx.doi.org/10.1001/archint ernmed.2009.530
27. Wang W, Sawada M, Noriyama Y, Arita K, Ota T, Sadamatsu M, et al. Tai Chi exercise versus rehabilitation for the elderly with cerebral vascular disorder: a single-blinded randomized controlled trial. Psychogeriatrics. 2010;10(3):160-6, http://dx.doi.org/10.1111/j.1479- 8301.2010.00334.x.
28. Reid KJ, Baron KG, Lu B, Naylor E, Wolfe L, Zee PC. Aerobic exercise improves self-reported sleep and quality of life in older adults with insomnia. Sleep Med. 2010;11(9):934-40, http://dx.doi.org/10.1016/ j.sleep.2010.04.014
29. Passos GS, Poyares D, Santana MG, D’Aurea CVR, Youngstedt SD, Tufik S, et al. The effects of moderate aerobic exercise training on chronic Exercise for chronic insomnia Passos GS et al. CLINICS 2012;67(6):653-659 658 primary insomnia. Sleep Med. 2011;12(10):1018-27, http://dx.doi.org/ 10.1016/j.sleep.2011.02.007
30. Youngstedt SD : “ Effects of exercise on sleep”: Clinics in Sports Medicine, 2005; 24:355-365
31. Horne JA: “ The effects of exercise upon sleep: A Critical review”; Biological psychology:1981; 12:241-290
32. Buman MP, King A C; “ Exercise as a treatment to enhance sleep”; Am J Lifestyle Med:Nov-Dec 2010; 500-511
33. King A C, Oman R F, Brassington G S, Bliwise D L, Haskell W L; “ Moderate intensity exercise and self rated quality of sleep in older adults-A randomized controlled trial”;JAMA:1997;277(1):32-37
34. Stathopoulou G, Powers M B, Berry A C, Smits JAJ, Otto M W; “ Exercise interventions for mental health: A Quantitative and Qualitative review”; ClinPsychopSciPrac; 2006; 13: 179-193
35. Landers DM;” The influence of exercise on mental health”; Originally published as series 2, number 12 of the PCPFS Research Digest,[cited 12 july 2012] available from http://www.fitness.gov/mentalhealth.htm
36. Veqar, Z., and M. Ejaz Hussain. "Sleep quality improvement and exercise: A Review." *IJSRP* 2 (2012): 2250-3153