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Role of Pilates on Lifestyle Disorders: A Review of Literature

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ABSTRACT

We conducted a review of literature on role of Pilates on lifestyle disorders and generated the list of articles that formed the basis of the evidence reviewed. The articles on Pilates that were ultimately selected for review had to include a focus on these terms i.e. body composition, low back pain, cardiometabolic parameters, diabetes, osteoarthritis. Pilates are one of the emerging exercises nowadays and we concluded that they are effective in controlling these lifestyle disorders. It mainly has significant effect on obesity which is one of the major disorder of sedentary lifestyle. These benefits have a clinically relevant impact on morbidity and mortality. However, more randomized controlled trials need to be conducted in all these areas for more studies.

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INTRODUCTION

Due to the technological advancement, our lifestyle has changed from manual to mechanical to computerized even more advanced to imaginary. Even though this advancement is good for our use and helping us in making the workload easier, but this is also having very bad effect on our health and making the person to live a sedentary lifestyle and led to many health problems of different body systems.

Obesity represents a major public health problem and carries with it the risk of developing significant medical problems. The global burden of obesity is rising at an alarming rate.

Worldwide obesity has more than tripled since 1975. In 2016, more than 1.9 billion adults, 18 years and older, were overweight.[1]

Cardiovascular diseases are the number one cause of death globally, more people die annually from CVDs than from any other cause. An estimated 17.7 million people died from CVDs in 2015, representing 31% of all global deaths. Most cardiovascular diseases can be prevented by addressing behavioural risk factors such as tobacco use, unhealthy diet and obesity, physical inactivity and harmful use of alcohol using population-wide strartegies.[2]

The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014. The global prevalence of diabetes among adults over 18 years of age has risen from 4.7% in 1980 to 8.5% in 2014.[3]

The 2010 Global Burden of Disease Study estimated that low back pain is among the top 10 diseases and injuries that account for the highest number of DALYs (Disability-adjusted life year) worldwide.[4]

Osteoarthritis (OA) is the second most common rheumatologic problem and is most frequent joint disease with prevalence of 22% to 39% in India Osteoarthritis is more common in women than men but the prevalence increases dramatically with age mental mechanism of an individual.[5]

Pilates Exercise

Pilates, (developed by the late Joseph Pilates) is a series of non-impact exercises designed to stretch, strengthen, and balance the body. It is a complete approach for developing body alignment, awareness and improved posture. This technique involves more than five hundred controlled movements performed either on a padded floor mat or with special equipment. A Pilates body training program is a health course therapy conditioning both the physical and mental mechanism of an individual.[6]

METHODS

To generate the list of articles that formed the basis of the evidence reviewed in this report we conducted an extensive search of the published literature. The databases employed for the search included EMBASE, PubMed, and Scholar Google. The criterion for articles to be included in the search was inclusion of the following keywords: Pilates, Effect of Pilates. The articles on Pilates that were ultimately selected for review had to include a focus on these terms i.e. body composition, low back pain, cardiometabolic parameters, diabetes, osteoarthritis. We excluded articles on Pilates related to balance, pregnancy, pelvic floor, multiple sclerosis, cancer. We further delimited the search to include literature published over the time period from 1997 to 2016. Finally, only English-language articles were included, retrieved, and reviewed.

Findings

Using the search term Pilates, our search generated 319 articles in PubMed, 67 in EMBASE, and some in Google scholar, most of which did not meet our inclusion criteria for articles with a focus on Pilates effect on body composition, low back pain, cardiometabolic parameters, diabetes, osteoarthritis. Thus, combining all the terms, we generated 32 articles that did meet the criteria. We grouped the existing literature into five parts as follows: (a) Pilates has significant role in controlling Obesity, (b) Pilates is not a method of preventing or treating diabetes. Pilates is simply another exercise program that can be used to help you accomplish your fitness goals (c) Pilates has some positive effect on cardiometabolic parameters like systolic B.P., (d) Pilates has a significant role in decreasing LBP and disability, (e) Pilates is beneficial for an osteoarthritic knee.

Table no. 1: Pilates and Obesity[7-13]

Study	Participants	Exercise intervention	Result
Jago (2005)	30 11-yr old girls assigned to an Exercise (n=16) or control (n=14)	Pilates for 1 hour per day, 5 days a week, for 4 weeks.	Large reduction in BMI Percentile of healthy girls.
O. Çakmakçi (2010)	61 sedentary obese women assigned to an exercise (n=34) or control (n=27)	Pilates for one hour per day four days per week for 8 weeks.	Effective on weight, BMI, Lean body mass, waist-hip ratio, biceps, triceps, fat percentage, BMR, and flexibility in exercise group.
Ramezankhany (2010)	Forty six women (age 36.41±3.47) were recruited and divided into aerobic exercise group (Ex), Pilates exercise group (Pilates), low calorie diet (LCD) and control group (C).	Pilates exercise group performed standard training 3 sessions/week, 45 min/session for 16 weeks.	serum leptin concentrations and waist-hip ratio (WHR) showed significant changes.
Fourie (2013)	Fifty sedentary females aged 60 yrs and older were randomly assigned a control (CG, n=25) or an intervention (IG, n=25) group	Pilates for 3 times weekly and for 8 weeks.	Significant decrease in %BF & FM, increase in LBM and no changes in BM & BMI.
Wolkodoff (2013)	Fourteen previously sedentary subjects, (2 male, 12 female), were recruited with 10 being assigned to the intervention group, and 4 to the control group.	Programs started with 40 minutes of duration and progressed to 45-50 minutes of duration by the conclusion of the program for five sessions per week, for six weeks.	Overall weight loss, improved body composition (BF & BMI), decreased waist/hip measurements, decrease in systolic blood pressure, increase in muscular endurance.
Amirsasan (2015)	24 middle aged sedentary overweight women were chosen and randomly divided into two Pilates training and control groups each including 12	60 minutes of Pilates training per day, three days a week for eight weeks.	statistically significant improvement for weight, BF%, waist hip ratio, systolic and

	persons.		diastolic BP, fasting blood sugar, total cholesterol and LDL-C in the training group.
Pestana (2016)	Seventy eight individuals aged 60 to 85 years old were selected and divided by random assignment into two experimental groups: Group Pilates mat based exercises [GP], n=39 and Group Resistance Exercise [GR], n= 39.	Pilates performed for 60 minutes twice per week for a total of 20 weeks.	Mat Pilates based exercises promoted a significant reduction of the serum hs-CRP levels and anthropometric measurements in elderly individuals

Pilates and Diabetes[14, 1 5]

Study	Participants	Exercise intervention	Result
Tunar (2012)	31 sedentary patients with type 1 DM age from 12 to 17 assigned to an exercise (n=17) or control(n=14)	Pilates for 3 times per week, for 12 weeks. Sessions for 40 minutes per day.	Physical performance increased via Pilates exercise but no change in metabolic control.
Yusel (2016)	Study was conducted with patients of type 2 DM. 24 women in the Pilates group and 21 women in the control group.	Pilates for 3 times per week, for 12 weeks. Sessions were initially 45 minutes long but were increased to 70 minutes by the end of the study.	PBMEs affect the parameters of QoL in women with type 2 diabetes, and they might be recommended as a part of their treatment program.

Table no. 2: Pilates and Cardiovascular Diseases[16, 17]

Study	Participants	Exercise intervention	Result
Bocchi (2011)	Sixteen pts with HF, left ventricular ejection fraction 27 ± 14%, NYHA class I–II were randomly assigned to conventional cardiac rehabilitation program (n = 8) or mat Pilates training (n = 8).	30 min of aerobic exercise followed by 20 min of the specific program for 16 weeks.	Both groups showed significantly increase on exercise time and only the Pilates group increased significantly the ventilation, peak VO2 and O2 pulse.
Marinda (2013)	Fifty sedentary, apparently healthy females aged 60 and older were randomly assigned into a control (CG,n = 25) or an intervention(IG, n= 25) group.	The IG took part in an eight-week progressive mat Pilates exercise program, three times weekly.	The IG only demonstrated a significant ($p \leq 0.05$) decrease in systolic BP and a significant increase in blood glucose.

Table no.3: Pilates and Low Back Pain[18, 19, 20]

Study	Participants	Exercise intervention	Result
Rydeard (2006)	Thirty-nine physically active subjects between 20 and 55 years old with chronic LBP were randomly assigned to 1 of 2 groups.	The specific-exercise-training group participated in a 4-week program consisting of training on specialized (Pilates) exercise equipment, while the control group received the usual care.	There was a significantly lower level of functional disability and average pain intensity in the specific-exercise-training group than in the control group following the treatment intervention period.
Donzelli (2006)	Fifty three patients with at least 3 months of non-specific low back pain were entered into a Pilates therapy or a back school treatment group, 43 of which completed the study.	Small exercise groups of 7 patients each followed by a daily kinesiotherapy protocol.	The Pilates method group showed better compliance and subjective response to treatment with a significant reduction in pain intensity and disability.
Wajswelner (2012)	Eighty-seven community volunteers with low back pain for Q3 months and age 18–70 were randomized to either the Pilates (n = 44) or general exercise (n = 43) group.	All participants attended 60-min exercise sessions twice weekly for 6 wk and performed daily home exercises that were continued during the follow-up.	At 6 wk, no difference was found between groups for change in the Quebec scale, both groups showed significant improvements. Similar results were found at the 12- and 24-wk follow-up and for the secondary outcome measures.

Table no. 4: Pilates and Osteoarthritis of Knee[21]

Study	Participants	Exercise intervention	Result
Rothenmaier (2015)	Eliza is a 59 year old female who has Increased pain from Osteoarthritis. Eliza currently suffers from chronic pain and stiffness in the right knee which is worse in the morning or after long periods of sitting.	15 one hour Pilates sessions are outlined using the BASI Block system, along with potential goals for where to take the client after 15 sessions.	Pilates has so many benefits for an osteoarthritic client. In addition to the inherent benefits to all practitioners of Pilates, the OA client will benefit particularly from the culture of non competition and focus found in most studies.

CONCLUSION

Nowadays Pilates are one of the emerging exercises and in our review, we have concluded that Pilates are effective in controlling the lifestyle disorders such as obesity, low back pain, cardiometabolic parameters, diabetes, and osteoarthritis. It mainly has significant effect on obesity which is one of the major disorders of sedentary lifestyle. These benefits, have a clinically relevant impact on morbidity and mortality. However, more randomized controlled trials need to be conducted in all these areas for more studies.

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