



**Research Platform Presentations
19th Annual Meeting Monterey, CA
Friday October 25, 2019
9:00-10:30am**

Research Committee Chair:

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Research Committee:

Vice-Chair: Karyn Staples, PT, PhD, OCS, NCPT

Secretary: Anne Bishop, EdM, BS, NCPT

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Craig Ruby, MPT, DED, NCPT

AUTHORS PRESENTING:

1. Jane Hein, PT, DPT, NCPT

Mayo Clinic Healthy Living, Rochester, MN

2. Lise Stolze, MPT, DSc NCPT

Stolze Therapies; Denver CO

3. Pamela Hess, OTS, NCPT & Jessica Emlich Jochum, PhD, LAT, ATC

University of Indianapolis

4. Eun Ju Lim, PhD, ACSM-CET/CPT, NCPT

Pilates the Balance (Korea Pilates Federation) Seoul, Korea

PMA RESEARCH COMMITTEE PURPOSE

The purpose of the PMA Research Committee is the collection, evaluation and selection of oral platform or poster research and special interest presentations for the PMA Annual Meeting and PMA publications as well as summarizing and updating current research on Pilates.

Objectives

- A. Create an objective format for evaluating Pilates research.
- B. Build a robust team who can bring the importance of research to the forefront of the Pilates community.
- C. Keep the Pilates research reference list updated.
- D. Summarize current Pilates research for dissemination among the PMA community.
- E. Create an infrastructure that could eventually support the creation of a Pilates Research Journal.
- F. Establish and publish a Pilates Research Journal.

DOES A 12-WEEK PILATES PELVIC FLOOR-STRENGTHENING PROGRAM IMPROVE SHORT-TERM MEASURES OF STRESS URINARY INCONTINENCE IN MIDDLE AGE WOMEN?

AUTHOR: Jane Hein Hein.Jane@mayo.edu
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BACKGROUND: Pilates has been widely touted as a core-strengthening program, but little is known about whether these exercises can reduce stress urinary incontinence (SUI) in women.

OBJECTIVE: The aim of this pilot study was to ascertain whether a Pilates program emphasizing pelvic floor strengthening program could improve self-reported measures of SUI.

DESIGN: Single arm with intervention

METHODS: Eighteen women with self-reported SUI and aged 45 to 68 years were recruited to complete a 12-week, community-based Pilates group class for pelvic floor strengthening. Participants met twice weekly. The primary outcome was change in the International Consultation on Incontinence Short Form (ICIQ-SF) total score before and after the intervention. Secondary outcomes included change in the Linear Analogue Self-Assessment (LASA) and Medical, Epidemiological, Social Aging (MESA) questionnaire scores.

RESULTS: After 12 weeks, participants reported a significant decrease in ICIQ-SF (-4.6 points; 95% CI, -6.2 to -2.9), a decreased frequency of urine leakage (-1.0; 95% CI, -1.5 to -0.6), decreased urine loss (-0.28; 95% CI, -0.5 to -0.1), and decreased perception of how often leaking interfered with daily life (-3.0; 95% CI, -4.1 to -1.9). Participants also had a reduced MESA urge score (-1.6 points; 95% CI, -2.9 to -0.2) and stress score (-5.7 points; 95% CI, -7.8 to -3.6). The ICIQ-SF score was still significantly lower 6 months after the intervention. compared with baseline (-4.5; 95% CI, -6.0 to -3.1).

LIMITATIONS: Sample size was limited in this pilot study. Pilates instructors and participants could not be blinded to the intervention.

CONCLUSIONS: A community-based, Pilates program for pelvic floor strengthening may be an effective exercise option for women with symptoms of SUI.

REFERENCES: Can be found on PMA Website Research Page.
<https://www.pilatesmethodalliance.org/PMA/Get-Involved/Abstract-Library.aspx>

SAFE EXERCISES FOR ADULTS WITH SCOLIOSIS

A Scoping Review With A Proposed Algorithm

AUTHORS: Lise Stolze, Hagit Berdishevsky, Sanja Schreiber, Jean Claude de Mauroy
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PURPOSE: The purpose of this study was to review the evidence on general exercise and exercise guidelines for adults with asymptomatic scoliosis, and to develop an evidence-based algorithm to help this population make safe exercise choices.

BACKGROUND: Adults with scoliosis are at risk for curve progression, pain and disability. Exercise evidence for adults with scoliosis has focused on Physiotherapy Scoliosis Specific Exercise (PSSE), and not on general exercise. Because this population often practices fitness programs like Yoga or Pilates, it is important for them to understand how to exercise safely and minimize risk of future pain and disability.

METHOD(S): A scoping review was done to map the evidence on general exercises or exercise guidelines for adults with asymptomatic scoliosis. MEDLINE database was searched from inception to Nov 12, 2018. To augment the search, we traced the references of key studies and hand searched key journals in the subject area. Inclusion criteria: cohort studies with control group, controlled clinical trials (randomized and quasi randomized) and guidelines on exercises for symptomatic and asymptomatic adults with scoliosis. Exclusion criteria: studies and guidelines investigating the effect of PSSE. We applied screening in duplicate. The evidence was synthesized narratively. PRISMA Extension for Scoping Reviews (PRISMA-ScR) Checklist was consulted.

ANALYSIS AND RESULT(S): The search yielded 396 references. We found no fitness exercise recommendations for adults with asymptomatic scoliosis. Consequently, an algorithm was developed based on current understanding of scoliosis spine mechanics and research describing the impact of adult spine modifiers on adults with scoliosis. Resulting guidelines propose: 1) adults with symptomatic scoliosis should consult a scoliosis specialist prior to beginning general exercise programs; 2) adults with asymptomatic scoliosis who have adult modifiers verified clinically or radiographically should exercise in neutral spinal positions; 3) adults with asymptomatic scoliosis and no radiographic or clinical modifiers may practice general exercises in non-neutral spinal positions provided they can minimize forces that increase spinal collapse (Conditional Program); 4) adults with asymptomatic scoliosis and no clinical modifiers who lack a radiograph may practice a Conditional Program if the primary curve is not Lumbar or Thoraco-lumbar.

CONCLUSION(S): Adults with scoliosis should adapt exercises based on the presence of pain, adult spine modifiers and the ability to control spinal compression. A scoping review identified a lack of guidelines on safe exercising for adults with scoliosis. A theoretical framework and algorithm have been proposed to help guide safe exercise choices for this population.

FUNDING: None

REFERENCES: <https://www.pilatesmethodalliance.org/PMA/Get-Involved/Abstract-Library.aspx>

THE EFFECT OF PILATES AND MYOFASCIAL RELEASE TECHNIQUES ON THE POSTERIOR KINETIC CHAIN IN HEALTHY ADULTS, A RANDOMIZED CONTROL TRIAL

AUTHORS: Pamela Hess, Jessica Jochum; hessp@uindy.edu
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PURPOSE: Previous studies have shown the positive effects Pilates can have on flexibility, core strength and overall health in adults (Kibar, Yardimci, Evcik, Ay, Alhan, Manco, & Ergin, 2016; Kao, Liou, Huang, Tsai, & Wang, 2015; Manshour, Rahnama, & Khorzoghi, 2014). The purpose of this randomized controlled study is to determine the effects of Pilates exercise when combined with self myofascial release (SMFR) of the feet on the flexibility of the posterior kinetic chain in healthy adults.

SUBJECTS: Sixty healthy adults, aged 18-55, will be recruited to participate in the study. Participants will be randomly assigned into three groups; foot SMFR and Pilates, sham technique and Pilates, and the control group. Written informed consent and HRPP approval will be obtained prior to the study.

METHODS/MATERIALS:

Ankle dorsiflexion will be measured in a closed kinetic chain position. Hamstring flexibility will be measured using the knee extension angle and trunk flexibility will be determined by sit-and-reach. Flexibility measurements will be determined both pre and post Pilates interventions.

Pilates-based mat sessions were designed by a PMA Certified Pilates Instructor to be progressively challenging yet adjusted to the participant's abilities (Pilates, 2012; Kraemer, Adams, Cafarelli, Dudley, Dooly, Feigenbaum, ... & Newton, 2002). Subjects will perform the foot SMFR technique or the sham technique prior to the 45 minute mat Pilates session offered two times a week. Participants will also be given a foot SMFR technique or sham technique protocol to follow on non-Pilates days (Black, 2015). Participants in the control group will be asked to maintain their current level of fitness and refrain from beginning any new activities.

ANALYSIS: Power calculations were conducted using SDs on selected outcomes from previous studies at an alpha level of $p < .05$. From this calculation, the proposed sample size of 60 is expected to yield sufficient power to reject the hypotheses. SPSS 25 will be used for all statistical analyses, a priori at $p < .05$.

RESULTS: Data collection for this study will span from January through March 2019.

CONCLUSIONS: We anticipate the results to support our hypothesis that posterior kinetic chain flexibility will be improved with Pilates and those using SMFR techniques will have greater improvements when compared to the control.

FUNDING SOURCE: None

REFERENCES: Can be found on PMA Website Research Page.
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SAFETY CONSIDERATION FOR THE DESIGN AND OPERATION OF A PILATES FITNESS CENTER

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PURPOSE: The purpose of study is to assess the risks of injury and disease to employees and clients that arise from the operation of Pilates fitness center. Once identified, these risks can be minimized by proper planning, design and operation of the center. This information will be of value for making a center OSHA compliant and for reducing incidents of accidents at Pilates centers.

METHODS: Available safety guidelines from the US Occupational Safety and Health Administration (OSHA), the Australian Occupational Health Service Guide for Fitness Centers, and the Pilates Equipment Liability and Safety Guides were reviewed, and sections relevant to the operation of a standard Pilates fitness center were compiled. Design features such as spacing, lighting, risk from falling objects, use of springs, first aid, and emergency planning were considered. Recommendations for use of warning signs and for safety training of Pilates instructors were developed, as were safety recommendation for the spacing and use of specific Pilates equipment.

RESULTS: OSHA compliance: Six occupational safety checklists were identified that are relevant to worker safety at Pilates centers. These checklists covered fall protection, occupational injury and illness reporting, medical services and first aid, toxic and hazardous substance exposure, accident prevention signs and tags, and emergency alarm systems and evacuation plans. In addition, 18 categories of health risks that need to be considered in the operation of a Pilates center were identified, with highest risk coming from issues related to staff/contractor qualifications or training, risks of injury from improper exercise, overexertion, and risks from improperly used or improperly maintained equipment. Additional risks come from unhygienic conditions, slippery surfaces, inadequate ventilation, and risk of injury from moving parts of equipment. To minimize these risks, Pilates center operators should review and comply with OSHA checklists, provide appropriate training for instructors in regards to workplace risks and use of first aid and emergency procedures, plan proper spacing of trapeze tables, reformers and other equipment to minimize risks of clients falling, kicking another person, or unexpected contact between equipment and center mirrors and windows. Signs identifying risks should be prominently displayed in languages used by the center's clients.

CONCLUSIONS: This study identified the OSHA requirements that Pilates center directors need to consider when planning and operating their facilities to make them compliant with OSHA regulations that will reduce risks of accident or disease to employees. Additionally, recommendations provided for workplace design and management (lighting, equipment spacing, signage, emergency supplies, training and inspections) will be helpful for making Pilates centers places where clients can improve their health with minimal risk of accidents.

REFERENCES: Can be found on PMA Website Research Page.

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