

**Pilates Method Alliance  
14th Annual Meeting  
Research Platform Presentations  
Chair: Sherri R. Betz, PT, GCS, PMA®-CPT  
Thursday, November 13, 2014  
San Diego, CA  
2:30-4:30pm**

- 1. Tom Welsh, BA, MS, MA, PhD**  
*Florida State University, Dance Dept., Tallahassee, FL*
- 2. Kimberly Kuznitz,**  
*BENT Pilates Studio, New York, NY*
- 3. Diedra Manns, DPT, PMA-CPT, COMT**  
*Monarch Wellness Group, Los Angeles, CA*
- 4. Andrea Borgman-Quist, PMA®-CPT**  
*Pilates Monterey, Monterey, CA*
- 5. Felipe Macabeli Menezes**  
*Trevisian School of Business, Sao Paulo/SP-Brazil*
- 6. Craig Ruby, PT, DEd, MPT**  
*Wheeling Jesuit University, Wheeling, WV*
- 7. Francine Picolli, MD**  
*Simétrico – Saúde e Movimento, Porto Alegre, RS, Brazil.*
- 8. Aline Nogueira Haas, PE, PMA®-CPT, PhD**
- 9. Sarah Holmes, PhD**  
*University of California, Riverside. Riverside, CA*
- 10. Holly Wallis**  
*ReActive, Oakland, CA*
- 11. Débora da Rocha Werba,**  
*Federal University of Rio Grande do Sul, Porto Alegre, Brazil*

## **USING WITHIN-SUBJECT RESEARCH DESIGNS TO ASSESS THE EFFECTS OF PILATES TRAINING: A DANCER TRAINING EXAMPLE**

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**PRESENTER:** Tom Welsh, BA, MS, MA, PhD; University of Utah, Salt Lake City, UT & Florida State University, Tallahassee, Florida, USA

**PURPOSE:** Group comparison research designs, while state-of-the-art for clinical trials, have limitations that make them challenging to use when assessing the effects of individualized approaches to training like Pilates. This presentation will describe a within-subject experimental analysis of the influence of a multi-component intervention featuring Pilates mat exercises on pelvic alignment in university ballet dancers.

**PARTICIPANTS & SETTING:** Three female, ballet majors with anterior pelvic tilt exceeding the degree judged acceptable by their dance teachers participated in three weeks of individual tutoring that included nine Pilates mat exercises. Tutoring was conducted one-on-one in a dance studio at the university where the dancers trained.

**MATERIALS/METHODS:** Pelvic alignment on the sagittal plane was measured repeatedly (twice a week) for 11 weeks for all three dancers, and training was implemented one dancer at a time, for three weeks each.

**ANALYSIS:** This protocol allowed the results to be displayed graphically with each individual serving as her own control and it allowed the effects of the intervention to be analyzed visually using a multiple-baseline experimental analysis.

**RESULTS:** Pelvic alignment improved markedly for all three dancers when the training intervention was applied and all three dancers maintained or continued to improve their pelvic alignment once improved. Ratings by the dancers suggested that good pelvic alignment is important to dancers and that the dancers attributed the improvements in alignment to the individual tutoring.

**CONCLUSIONS:** The results of this study suggest that learning and performing Pilates mat exercises can contribute to improved skeletal alignment in dancers. The features that can make within-subject experimental designs useful in assessing the influences of Pilates training will be highlighted.

**FUNDING SOURCE:** None

# PILATES BASED EXERCISE FOR MULTIPLE SCLEROSIS

**AUTHOR:** Kuznitz, K; BENT Pilates Studio NY, NY USA, [kkuznitz@gmail.com](mailto:kkuznitz@gmail.com)

**PURPOSE:** The purpose of this research was to adapt the Pilates method to clients with Multiple Sclerosis (MS) and create guidelines for Pilates Instructors and Personal Trainers for use in treating clients with MS.

**FOUNDATION:** Pilates exercises were introduced, and when the subject was unable to elicit a muscle contraction, Muscle Activation Technique and Structural Integration were implemented to facilitate the subject's muscle contraction.

## DESCRIPTION:

**Subject:** One male client 60 years of age with Multiple Sclerosis.

**Methods/Materials:** Pilates apparatus and Mat work incorporating props, Muscle Activation Technique, Structural Integration.

Modified Pilates exercises were introduced to the client in the initial sessions. Muscle Activation Technique (M.A.T.) was introduced for 6 months and then combined with Pilates. M.A.T. is a specific process for evaluating an individual's ability to produce efficient muscle contraction. Range of motion testing indicated which muscles have decreased contractibility, and precise forces are applied to restore that muscle's efficiency.

Partial sample of M.A.T. Tests:

### LOWER LIMB TESTS:

- ROM TEST 1: Straight Leg, Hip Internal Rotation: Left side weak
- ROM TEST 2: Straight Leg, Abduction, Hip Internal Rotation

### TRUNK and SPINE TESTS:

- ROM TEST 1: Isometrics & Pelvic Approximation
- ROM TEST 2: 120 degrees of Hip Flexion (sitting up legs straight) Trunk Rotation and Spinal Flexion (Test right and left): TEST A,B,C

After one year, M.A.T was replaced for 6 months with Structural Integration, a massage technique working with fascia to help restore the body's balanced state. When micro-movements were introduced into the subject's workout functional and gait performance significantly improved.

**OBSERVATIONS:** Standard Pilates exercises were initiated as a point of reference. Incorporating M.A.T. and Structural Integration led to the decision to break down the Pre-Pilates exercises into even smaller micro-movements: isolations of specific weak muscles to contract and strengthen with minimal movements. The subject could feel a difference in the way the muscles were firing, and the subject's walking and functional performance improved as observed in video analysis.

**CONCLUSIONS:** Breaking down components of gait in the program allowed the subject to 'feel' where the muscle fires and appeared to be an efficient way of working with a client with MS. The subject began to understand how to find the connection of specific muscles within his own body and apply during gait and functional activities. This type of training for subjects with MS may be beneficial for the Pilates practice and may help future Instructors train their clients with MS more efficiently. Research with greater numbers of subjects to improve the power of this type of study are necessary to ascertain the benefits of M.A.T. and Structural Integration combined with Pilates.

**FUNDING SOURCE:** None

## **THE IMPRESSION OF A TEN-MINUTE PILATES EXERCISE SESSION ON THE POSTURAL CONTROL OF A COMMUNITY DWELLING FEMALE IN HER FORTIES: A SINGLE CASE STUDY**

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**PRESENTER:** Deidra Manns, DPT, PMA-CPT, COMT; Monarch Wellness Group, Los Angeles, CA

**PURPOSE:** The purpose of this study was to investigate the impression of a single standing Pilates exercise session performed in a pre-perturbed position (PPP) on the postural control of a normal community dwelling adult male or female in their forties.

**SUBJECT:** 1 subject; female aged 48 years old

**MATERIALS/METHODS:** Inclusion criteria: Community dwelling English speaking adult male or female in their fortieth decade of life; independent in all activities of daily living; able to comprehend and follow verbal, audible, visual directions and cues in English. Exclusion criteria: the subject had to be without lower quarter injury or surgery in the last 6 months; neurological diseases /syndromes, adverse neural tension nor active vestibular dysfunction. The subject volunteered and consented to participate in: (1) all data collection procedures (2) a ten minute standing Pilates exercise session (intervention) taught by a Physical Therapist/PMA® Certified Pilates Teacher.

The subject was directed to stand on a two-dimensional force plate under the following conditions: in right and left SLS with eyes closed (EC) for three-ten second trials on each leg. Data collection occurred pre intervention (PI), immediately after intervention (IA) and at three-week follow up (FU). The force plate data collection program captured the path length (PL), and the variance from the center of pressure (COP) of the foot in the frontal plane (COPf) and the sagittal plane (COPs) under the conditions described above.

**RESULTS:** Given the small number of trials the subjects right and left SLS with EC force plate measurements were combined and averaged to compare the results. The subjects average PL minimally improved from PI to IA and further improved at FU. COPs doubled from PI to IA and returned to baseline at the FU. However, the subjects COPf improved IA when compared to PI values and further reduced at the FU trial, where COPf was found to be even less than the PI measures.

**CONCLUSIONS:** These results suggest that the subject may have acquired a new motor strategy that may have improved her postural control in the frontal plane. Previous studies investigating normal postural control mechanisms have determined that frontal plane stability (COPf) is most challenged while in a narrow base of support or in single limb stance. Although further studies with larger populations to determine external validity and generalizability are indicated, a standing Pilates exercise regimen enhanced by the principles of sensory motor training may be an effective tool to pre-emptively preserve or reduce balance deficits in normal community dwelling adults.

**KEYWORDS:** Pilates, Janda, balance, postural control, sensory-motor training, adults

**FUNDING SOURCE:** None

## **PILATES RESTORATION AND BREAST CANCER**

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**PURPOSE:** To determine if and how Pilates exercises could improve the range of motion and functionality for a woman who had a mastectomy. Typically, there is no first line of defense against the loss of shoulder range of motion and function after breast surgery. Physical therapy and/or exercise recommendations are rarely offered, and many women are not aware of the potential side effects of chemotherapy, radiation, and lymph gland removal. My assumption was that Pilates methodology and specific post surgical breast care practices from the Breast Cancer Restoration Master Specialization Program would demonstrate verifiable and physical changes in women who have undergone mastectomy.

**METHODS:** Subject was instructed in Pilates exercises and given education regarding breast surgery and it's physical consequences in order to improve function in activities of daily living, posture, body awareness, and range of motion.

### **Specific Tests:**

- Upper Quadrant Assessment/Reassessment
- Posture Grid
- Apley Scratch Test
- Range of Motion
- Direction of Ease
- Lateral Flexion
- Thoracic Mobility
- Scapular Stability
- Movement in combined planes/joints

**REACTIONS, RESPONSES AND RESULTS:** The response and results were, the Pilates Methodology did in fact increase the range of motion and overall body functionality as measured by the following tests: Posture Grid, Shoulder ROM, Lateral Flexion and Scapular Postural Position. Six weeks after starting the program the subject had increased range of motion in her affected shoulder and a demonstrable change in the symmetry of her shoulders as measured by the Posture Grid photos. The subject reported an increase in body awareness due to the increased range of motion of the shoulder during functional tasks such as grooming and self-care.

**CONCLUSION:** It appears that this type of program may provide PMA® Certified Pilates Teachers with a formula and specific tools for post-mastectomy clients that can increase the functionality and the body awareness of their clients, and also the awareness of the Pilates teachers about working safely and effectively with this special population. More research is recommended and warranted in looking at the benefits of Pilates for post-mastectomy clients.

**FUNDING SOURCE:** Self-funded/Peninsula Pilates Project supported

## **RESULTS MANAGEMENT OF THE PILATES METHOD**

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**PURPOSE:** Based on the principles of the Pilates method, this study sought to demonstrate the significance in the results management of the individuals that practice the Pilates sessions, regardless of where they are practiced. Through literature and field research, we considered the main motivations for individuals to practice the Pilates method. Additionally, we looked at relative improvement of life quality and health beyond other goals outlined at the beginning of the program.

**SUBJECTS:** 82 subjects (51 Females, 31 Males); main age 60 years, age range 25-85 years).

**MATERIALS/METHODS:** Inclusion criteria: practitioners from Sao Paulo, Brazil that were practicing Pilates Mat or Pilates Apparatus one to five times per week in group or private sessions. Subjects answered a subjective questionnaire based on their own feelings and perceptions. The questionnaire contained about seven questions regarding life quality, physical condition and motor capacity.

**RESULTS:** Every subject answered the questionnaire during one month. 63% of the subjects were female and 43% were male. 60% of the subjects practice Pilates about twice a week. All the subjects reported posture improvement. 91% of the subjects reported breathing improvement. 96% of the subjects reported life quality improvement. Subjects understand that life quality is related to decreased pain, greater willingness, greater welfare, self-esteem improvement and quality of sleep improvement. 60% of the subjects reported concentration improvement. 95% of the subjects reported body awareness improvement. 89% of the subjects reported muscle strength improvement. 97% of the subjects reported flexibility improvement.

**CONCLUSIONS:** The field research samples concluded that Pilates is growing regarding numbers of practitioners and practitioners maintaining a life-long practice. Beyond the numbers, the results management comes with the feelings and perceptions of the practitioners. The Pilates adaptability is one of the greatest differences of the method from other forms of exercise. Lastly, Pilates appears to deliver a great deal of benefits and more research on these benefits is warranted.

**KEY WORDS:** Pilates, Assiduity, Life Quality, Management

**FUNDING SOURCE:** None

## THE EFFECTIVENESS OF MAT-BASED PILATES CORE STRENGTHENING ON HAMSTRING FLEXIBILITY

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**PRESENTER:** Craig Ruby, PT, DEd, MPT; *Wheeling Jesuit University, Wheeling, WV*

**PURPOSE:** The purpose of this study was to examine how a Mat-based Pilates core strengthening program influences hamstring flexibility.

**SUBJECTS:** Thirty subjects participated in the study (23 females and 7 males) with a mean age of  $25.00 \pm 2.56$  years. The Pilates group consisted of 12 females and 3 males with a mean age of  $24.8 \pm 2.00$  years. The control group consisted of 11 females and 4 males with a mean age of  $25.13 \pm 3.10$  years.

**MATERIALS/METHODS:** The researchers received IRB approval from Wheeling Jesuit University and informed consent from all participants. The participants were randomly divided into an experimental and a control group. Hamstring flexibility was measured prior to beginning the six-week intervention program and again after the program was completed. The Pilates group met two times per week for six weeks. The Pilates mat program was performed in the following order every time: straight bridge, table top, side plank right, side plank left, leg pull front, and leg pull back. All researchers were present to help guide subjects through each exercise for eight repetitions before moving on to the next, with no rest between positions. The participants in the control group agreed not to change their daily exercise routine.

**ANALYSIS:** Paired t-tests were calculated using the Statistical Package for Social Science (SPSS) version 20.0, with a significance level set at .05.

**RESULTS:** In the Pilates group, mean hamstring flexibility increased on the right side, left side, and combined by  $14^\circ$ ,  $11^\circ$ ,  $13^\circ$  respectively after the six-week intervention ( $p < 0.05$ ). In the control group, no statistically significant increases were seen on the right side, left side, or combined after six weeks of maintaining the current level of activity ( $p > 0.05$ ).

**CONCLUSION:** This study provides evidence that a six-week Pilates mat-based core strengthening intervention was effective at increasing hamstring flexibility. Adding Pilates to a regular exercise routine can not only increase a person's core stability, but also have positive effects on hamstring flexibility. Health care professionals should consider implementing a Pilates program as an intervention for anyone lacking hamstring flexibility.

**FUNDING SOURCE:** None

# THE EFFECTS OF CLASSICAL PILATES TRAINING ON PHYSICAL ACTIVITIES ON HEALTHY WOMEN: A CONTROLLED TRIAL.

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**PRESENTER:** Francine Picolli, MD; Simétrico – Saúde e Movimento, Porto Alegre, RS, Brazil.

**PURPOSE:** To present a comprehensive evaluation of the adaptations of cardiorespiratory parameters, anthropometric and physical fitness provided by the practice of the Classic Pilates Method.

**SUBJECTS:** Twenty-eight healthy participants, subdivided into Pilates Group (PG = 15) and Control Group (CG = 13), mean age  $29 \pm 5$ . All participants had no physical exercise in the last 6 months and were all able to start physical activity.

**MATERIALS/METHODS:** Healthy participants (PG) who underwent training in the Classical Pilates Method for 12 weeks, 3 times a week were evaluated against healthy controls (CG) who maintained their routine activities. Measurements of VO<sub>2</sub> peak, blood pressure, weight, fat percentage, fat mass, lean body mass, range of movement, flexibility, muscular endurance (abdominal, upper and lower limbs) and dynamic balance before and after training for the PG, and before and after 12 weeks for CG were taken. Heart rate was monitored at each training session for the PG.

**ANALYSIS:** Comparisons of variables between PG and CG were performed by analysis of variance for repeated measures double entry (group and time as factors). A value was considered statistically significant at  $p < 0.05$ . For the analysis of heart rate during classes, analysis of variance for repeated measures of an entry with multiple comparisons by the Bonferroni test was used between classroom 1, 9, 18 and 36.

**RESULTS:** The study showed that the exercises practiced resulted in a reduction in body fat percentage ( $p < 0.001$ ) and increased lean body mass ( $p < 0.001$ ). The range of motion and flexibility in all joints evaluated reported improvement ( $p < 0.001$ ), as well as muscle endurance ( $p < 0.001$ ) and dynamic balance ( $p = 0.001$ ). Moreover, this is the first clinical trial that demonstrates improved functional capacity, assessed by measurement of VO<sub>2</sub> peak ( $p < 0.001$ ). Maximum Heart Rate response during class 1, 9, 18, 36 showed  $p < 0.005$  for class 18 and  $p < 0.049$  for class 36 compared to the first class.

**CONCLUSION:** The results suggest that sedentary women obtain significant changes in body composition, joint range of movement, flexibility, muscular endurance and dynamic balance from practicing Classical Pilates Method 3 times a week. Furthermore, they increased functional capacity through the VO<sub>2</sub> peak.

**KEY WORDS:** Peak oxygen consumption, flexibility, body composition, balance, muscular endurance.

**FUNDING SOURCE:** None

## **THE PILATES METHOD PIONEERS IN BRAZIL**

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**PRESENTER:** Aline Nogueira Haas, PE, PMA®-CPT, PhD

**PURPOSE:** The purpose of this study was to analyze the Pilates Method pioneers in Brazil, identify their training and how and when they introduced the Method in Brazil.

**SUBJECTS:** 6 subjects, Pilates Method Pioneers in Brazil.

**METHODS AND MATERIALS:** This study is characterized as field research with qualitative analysis. We used a theoretical and methodological approach to the cultural history and oral history. The interviews were taped in digital media, transcribed, adapted to written format, returned to the interviewees for correction, and published in full. After the data collection, the information was classified, categorized, and interpreted to analyse the content.

**RESULTS:** The Pilates Method was introduced in Brazil through the pioneers in the 90s. The pioneers completed their training program in United States and came back to Brazil to introduce the Pilates Method. The Pilates Elders that influenced these pioneers were Eve Gentry, Carola Trier and Romana Kryzanowska. These Pilates Elders trained at least 5 pioneers. The prior training of the pioneers was physical education, dance, medicine and physiotherapy. Even with such training, four of the pioneers knew Pilates Method through dance and two through involvement with fitness.

### **CONCLUSIONS:**

The Pilates Method was introduced in Brazil in the 90s, through the pioneers that completed their training program in the USA. The Pilates Method consolidated in Brazil when studios were opened and training programs were offered and when the Method was disclosed by local media and advertising.

**KEYWORDS:** Pilates Method, Oral History, Pioneers.

**FUNDING SOURCE:** Coordenação de Aperfeiçoamento de Pessoal do Ensino Superior (CAPES - Brazil).

# THE PILATES PELVIS: RACIAL IMPLICATIONS OF PELVIC STABILIZATION

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**PURPOSE:** This study examines alternative ways we can interpret the exercises of Pilates, for their cultural and racial values and their potential to make and store meaning in the body. These critical perspectives guide an understanding of how cultural and racial legacies are transmitted, perpetuated, revealed, and concealed through the muscle memory, teaching methodology, and Principles of the Pilates practice. By examining the intersections between dance and Pilates history, this study reveals how embodied discourses in Pilates are “white” in nature; situating Pilates as a product of historically constructed social behaviors of dominant Anglo-European culture.

**METHODS:** The method for this study was the adoption of a “Critical Dance Studies” lens to two specific Pilates exercises. This lens considers the body’s participation in its environment through multiple perspectives: class, race, gender, or politics. By utilizing how scholars locate the hips as a site of racial stereotypes, allows analysis of Pilates from a racial perspective. This study examines the treatment of the *cultural and racial* treatment of the pelvis in the Pilates exercises: “Single Leg Stretch” and “Leg Circles” as they are presented in the Peak Pilates and Polestar Pilates Education Manuals. These exercises illuminate how perceived kinesthetic understandings of race in the body may be normalized and privileged.

**RESULTS:** This study found the teaching practices of the hips commonly explained in Pilates educational manuals, reinforce behaviors of a noble-class and racially “white” aesthetic. This study concluded the embodied behaviors of whiteness are most clearly visible in the disciplining of the hips in exercises like the “Single Leg Stretch” and “Leg Circles” where the hips are immobilized, stabilized, and “quieted.”

**CONCLUSIONS:** Central to this study is the troubling notion of white racial superiority and, specifically, the colonizing, prejudicial, and denigrating mentality found in the superiority of whiteness and its embodied behaviors. This study illustrates that Pilates normalizes the whiteness within its practice, thus further contributing to problematic embodied discourses. Whiteness and power are inextricably linked, and the appearance of and construction of the corporeal reinforces what is or is not deemed a “legitimate social body.” The behaviors of “whiteness” and their markings can be seen in the way Pilates immobilizes the pelvis in certain exercises.

**KEY WORDS:** Single Leg Stretch, Leg Circles, Whiteness, Race, Cultural Studies

**FUNDING SOURCE:** None

# THE EFFECT OF PILATES AS TREATMENT FOR DIASTASIS RECTI WITH ASSOCIATED LUMBO-PELVIC DYSFUNCTION: A CASE STUDY.

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**PRESENTER:** Holly Wallis; ReActive, Oakland, CA, USA

**PURPOSE/FOUNDATION:** This case study intends to bring awareness of Diastasis Recti (DR) and associated lumbo-pelvic pain and dysfunction, and the implications for Pilates as rehabilitation for this condition. DR is a common condition that is not well recognized or well managed due to a lack of understanding of the interrelated dysfunction and symptoms. The treatment intervention for DR must comprehensively restore the integrity of the linea alba as well the lumbo-pelvic motor control. A combined Physical Therapy and Pilates approach is instrumental for optimal rehabilitation of this condition.

**DESCRIPTION:** In this case, a 37-year-old female presented six years post-partum with low back and sciatic pain. When prompted, she revealed urinary incontinence with bladder discomfort. She had not previously received treatment for her symptoms.

The female patient presented with pelvic asymmetry, non-optimal firing pattern through trunk and lower extremity, inability to recruit pelvic floor (PF) and transversus abdominis (TA), and protrusion along the linea alba. The final/working diagnosis was DR (three-finger separation at umbilicus) with inner unit dysfunction.

Pilates Principles guided the development of a treatment plan including; breathing, control, centering, and balanced muscle development. To optimize the length of the pelvic floor, Pilates exercises were selected that simultaneously activated the inner unit while supporting a neutral spine and pelvis. The Reformer was specifically used to enhance control and coordination through the pelvis. Treatment included one 60-minute session per week over 12 weeks.

1. Inner unit focus including neutral Pilates exercises, and education regarding contraindicated movements (spinal flexion, thoracic extension, double leg lifts, bracing, quadruped position) (weeks 1-4)
2. Dynamic outer unit stabilization (weeks 4 -8)
3. Functional core stabilization (weeks 8-12)

**OBSERVATIONS:** Repeat assessment at 12 weeks indicated DR reduced to 1 finger separation. GROC: lower back function (7/7) “a very great deal better”; urinary incontinence (4/7) “moderate improvement”.

**CONCLUSIONS:** This program supports a basis for Pilates as effective rehabilitation for DR and lumbo-pelvic dysfunction. Further studies are needed to replicate and substantiate these findings. Women suffering from DR and lumbo-pelvic dysfunction are challenged by traditional exercise that does not address the condition effectively. Practitioners are tested with modifying exercises to allow these women to safely participate in an active program. The extensive Pilates repertoire and equipment provide a safe and effective method to build the necessary trunk support to reduce the DR separation, while simultaneously rehabilitating the underlying lumbo-pelvic dysfunction.

**FUNDING SOURCE:** None

## **ELECTROMYOGRAPHIC ANALYSIS OF *POWER HOUSE* MUSCLES IN THE *TEASER* EXERCISE ON THREE DIFFERENT APPARATUS OF PILATES METHOD**

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**PRESENTER:** Débora da Rocha Werba, PT; Nogueira Haas, PE, PhD, PMA®-CPT Federal University

**PURPOSE:** The purpose of this study was to analyze the electromyographic activation of *power house muscles* (external oblique, multifidus, gluteus medius and adductor longus) in the *Teaser* exercise on the *Mat*, *Wall Unit* and *Reformer*.

**SUBJECTS:** 15 healthy women, practicing Classic Pilates Method more than 6 months, age  $32,6 \pm 7,6$  years, weight  $58,6 \pm 5,8$  Kg, height  $1,64 \pm 0,06$  m.

**METHODS AND MATERIALS:** The subjects performed a series of three repetitions of the *Teaser* exercise on the *Reformer*, *Wall Unit* and on the *Mat*. Electromyographic (EMG) data of the muscles; external oblique (OE), multifidus (MU), gluteus medius (GM) and adductor longus (AL) were collected during trunk flexion. Kinematic data for separating the phases of the motion were also obtained. The root mean square (RMS) was calculated and normalized based on the maximal voluntary contraction. The materials used were a *Reformer*, *Wall Unit*, *Mat*, electromyograph and photographic camera.

**ANALYSIS:** One-way ANOVA was used to investigate EMG differences between muscle activations on each apparatus ( $p < 0,05$ ).

**RESULTS:** The activation of the multifidus muscle was significantly lower on the *Wall Unit* when compared to the *reformer* ( $p < 0.001$ ) and to the *mat* ( $p < 0.001$ ). Conversely, there was no relevant difference in the muscular activation of the external oblique ( $p = 0.27$ ), adductor longus ( $p = 0.249$ ), gluteus medius ( $p = 0.249$ ) muscles in comparing the apparatus.

**CONCLUSIONS:** The *Teaser* exercise needs motor control and stabilization of the trunk and pelvis, requiring a balance of agonist and antagonist muscles. In this study the multifidus was less activated than the other muscles analyzed, probably by spring position on the top of the head that increases the spine length. These outcomes may help the instructor in their practice, generating thought in relation to the choice of the most appropriate apparatus for each client.

**KEY WORDS:** Pilates Method, Biomechanics, Electromyography.

**FUNDING SOURCE:** None