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Original Article

Acute effects of Mat Pilates on ambulatory blood pressure variability in post menopause women

Efeito agudo do Mat Pilates sobre a variabilidade da pressão arterial ambulatorial em mulheres após a menopausa

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ABSTRACT

Background: After menopause, women increase the risk of developing cardiovascular disease. Physical exercise is one of the treatments for reducing the incidence of these diseases, and the Pilates method consists of a complete conditioning program.

Aims: To verify the responses of Ambulatory Blood Pressure Monitoring (ABPM) and Blood Pressure Variability after a single session of Mat Pilates in non-obese post menopause women.

Methods: This is a randomized crossover study with 15 normotensive postmenopausal women, who participated in a single Mat Pilates session and a control session. The Mat Pilates session lasted 50 minutes, with 5 minutes of warm-up. In each exercise, there was 1 set of 10 repetitions with 45 seconds of rest between sets. The control session should have the same duration, but the volunteers remained seated. ABPM was assessed for 24 hours after the intervention. Statistical analysis: Two-way ANOVA with Newman-Keuls post hoc was used to analyze ABPM variables and Student's t test for analysis of blood pressure variability.

Results: There was no significant difference ($p < 0.05$) in systolic blood pressure nor diastolic blood pressure responses during 24h, awake and sleep phases and in its variability between Pilates and Control sessions.

Conclusion: Acute Mat Pilates did not reduce ABPM or its variability in non-obese postmenopausal women.

Key-words: Menopause, Arterial pressure, Exercise therapy.

RESUMO

Introdução: Após a menopausa mulheres tem maior risco de desenvolver doenças cardiovasculares. A prática de exercício físico é um dos tratamentos para e redução da incidência dessas doenças, e o método Pilates consiste em um programa completo de condicionamento físico.

Objetivos: Verificar as respostas da Monitorização Ambulatorial da Pressão Arterial (MAPA) e da Variabilidade da Pressão Arterial após uma única sessão de Mat Pilates em mulheres após a menopausa não obesas.

Métodos: Este é um estudo cruzado randomizado com 15 mulheres pós-menopáusicas normotensas, que participaram de uma única sessão de Mat Pilates e de uma sessão de controle. A sessão de Pilates durou 50 minutos, com 5 minutos de aquecimento. Em cada exercício, houve 1 série de 10 repetições com 45 segundos de descanso entre as séries. A sessão controle teve a mesma duração, mas as voluntárias permaneciam sentadas. A MAPA foi avaliada durante 24 horas após a intervenção. Estatística: Utilizou-se ANOVA de dois fatores com *post hoc* de Newman-Keuls para análise das variáveis da MAPA e teste t de Student para análise da variabilidade de pressão arterial.

Resultados: Não houve diferença significativa ($p < 0,05$) nas respostas da pressão arterial sistólica e diastólica durante 24h, vigília e sono ou em sua variabilidade entre as sessões de Pilates e Controle.

Conclusão: O Mat Pilates não reduziu os valores pressóricos da MAPA ou sua variabilidade em mulheres após a menopausa não obesas.

Palavras-chave: Menopausa, Pressão arterial, Terapia por exercício.

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Introduction

Aging is one of the risk factors for cardiovascular diseases development, especially hypertension (HT) [1]. When comparing HT prevalence between sexes, it is observed that men have greater presence of HT, but after menopause, this prevalence becomes higher in women [2]. The lack of estrogen production, changes in the lipid profile and social factors, which make women become more sedentary [3], generate physiological dysregulations after menopause and therefore may explain this inversion of prevalence.

Among the strategies for treatment and prevention of cardiovascular diseases, the practice of physical exercise is noteworthy. These are responsible for several hemodynamic responses, including reducing blood pressure (BP) after a single session of different exercises (i.e. post exercise hypotension; PEH), both in normotensive and hypertensive individuals [4]. Among the resistance exercises, the Pilates method stands out for the great adherence, especially of middle age women [5].

Pilates method is a complete conditioning program, which aims to work out strength, flexibility and balance [6]. Thus, this method has six essential principles: concentration, control, precision, movement fluidity, breathing control and use of the strength core [7]. Although Joseph Pilates (the creator of the method) and Miller affirm that this method is capable to improve the cardiovascular system [6], few are the studies that demonstrate this [8,9].

In this sense, one of the methods used to evaluate cardiovascular responses to exercise is ambulatory blood pressure monitoring (ABPM). Through this evaluation it is possible to check BP for 24 hours after a physical exercise session [10], making it possible to analyze how these values vary (i.e. blood pressure variability; BPV) [11]. Thus, we have as primary objective to test the hypothesis that a session of Mat Pilates can alter the pressure values of ABPM and secondary, to test the BPV in normotensive post menopause women.

Methods

Study Design

This is a randomized cross-over study with normotensive postmenopausal women. As inclusion criteria, participants were required to be: in post menopause (amenorrhea for at least 12 months and [FSH] > 40 mUI/mL); aged between 50 and 70 years for being the age group in which menopause occurs, and able to perform exercises, since our study evaluates variables after a successful exercise protocol. The study did not include women under hormonal therapy, since the use of these drugs generates physiological variables that we will not analyze; that have history of stroke or acute myocardial infarction, or have diagnosis of diabetes mellitus, and smokers as a way of standardizing the sample. All participants went through a medical evaluation before the intervention, obtaining a certificate to attest individual suitability for exercise practice. Exclusion criteria was applied to volunteers who failed to perform the protocol test and volunteers in which the ABPM presented more than 25% of error. Table I presents the general characteristics of the sample.

Table I - General characteristics (n = 15).

Age (years)	52.8 ± 3.9
Time after menopause (years)	4.9± 3.8
Body mass (kg)	61.2 ± 6.2
Height (m)	1.6 ± 0.1
Body mass index (kg/m²)	24.9 ± 2.5
Waist-Hip ratio	0.77 ± 0.05
SBP at rest (mmHg)	106 ± 8
DBP at rest (mmHg)	67 ± 6
HR at rest (bpm)	69 ± 9

SBP = Systolic blood pressure; DBP = Diastolic blood pressure; HR = Heart Rate.

Before the body composition measurement, all participants were instructed not to perform vigorous physical exercise 24h before the test and to avoid alcohol and caffeine consumption 72h before the test. Regarding the order of execution of the experiment, a simple randomization was performed using a program on the web (https://www.random.org/lists/). The volunteers were randomly selected to know the order of execution, being an acute Mat Pilates session and a control session. The evaluations were carried out in the morning, respecting less than 48 hours between them.

The study was conducted between January and June of 2016, at the Laboratory of Cardiorespiratory and Metabolic Physiology of the Federal University of Uberlândia, Uberlândia/MG, Brazil. It was approved by the local Ethics Committee (002095/2015) and all volunteers assign a consent term.

At the first visit, an anamnesis was performed followed by anthropometric assessments. On the second visit the familiarization with the method was carried out, followed by an explanatory lecture about the six principles of Pilates. On Pilates session, volunteers arrived at the site at 07:00 am and remained in seated position for 20 minutes to assess BP at rest. The exercise protocol was then performed for 50 minutes and soon after the ABPM device was placed on the volunteer's non-dominant arm, being withdrawn 24 hours later. On control session, the same process was performed, but without the exercise protocol, being that the volunteers performed the same exams, however, they sat at rest for 50 minutes, not performing any type of exercise. All participants were instructed to maintain their living habits, including feeding, and not to perform vigorous activities within 48 hours prior to the sessions.

Experimental sessions

The control session lasted 50 minutes. The volunteers were seated, being able to perform some quiet activity, such as conversations, reading books or magazines and even using their cell phones.

The Mat Pilates session lasted 50 minutes, with 5 minutes of warm-up. In each exercise there was 1 set of 10 repetitions with 45 seconds of rest between then. Was used only body weight and auxiliary materials, such as mats, swiss ball and flexible ring, in addition we use the rate of perceived exertion scale (RPE) for intensity control, the session was performed in RPE between 11-14, regarding moderate exercise intensity [12]. Twenty exercises were chosen from the classics, classified as such by the method creator [6], and are described in detail in the supplementary table. Du-

ring the sessions, the volunteers were instructed not to perform the Valsalva maneuver.

Baseline characteristics

Baseline BP and heart rate (HR) were monitored through calibrated and validated automatic oscillometric monitors (Omron HEM-7113, Shimogyo-ku, Kyoto, Japan) in 3 non-consecutive days. At each time frame, 3 measurements of systolic BP (SBP), diastolic BP (DBP), mean BP (MBP) and HR were performed and considered the mean for analysis. The anthropometric evaluations were performed in an isolated environment during the morning. The following variables were evaluated: body mass, through an electronic scale (Filizola, São Paulo, SP, Brazil); height, measured with a fixed stadiometer (Sanny, São Bernardo do Campo, SP, Brazil) and waist and hip circumferences, through an inelastic tape 0.5 cm wide (Filizola, São Paulo, SP, Brazil).

Ambulatorial Blood Pressure Monitoring

To evaluated SBP, DBP and HR in 24-hour, wake and sleep phases, the Dyna-MAPA+ device (Cardios, São Paulo/SP, Brazil) was used. This device took measurements every 15 minutes from 07:00am to 11:00pm and every 30 minutes from 11:00pm to 07:00am. The device was placed shortly after the end of the experimental sessions. Through 24 hours recording, the mean BP values were calculated every two hours for point-to-point analysis. From the information reported in an events diary in which volunteers indicated the moment they slept and woke up during the use of the device, the values of the 24h, wake and sleep phases were performed. Through ABPM records, BPV was evaluated through the indices: SD_{24} (mean of 24-hour standard deviations), SD_{dn} (mean values of diurnal and nocturnal standard deviations corrected for the number of hours included in each phase) and ARV (mean differences weighted by the time interval between consecutive readings).

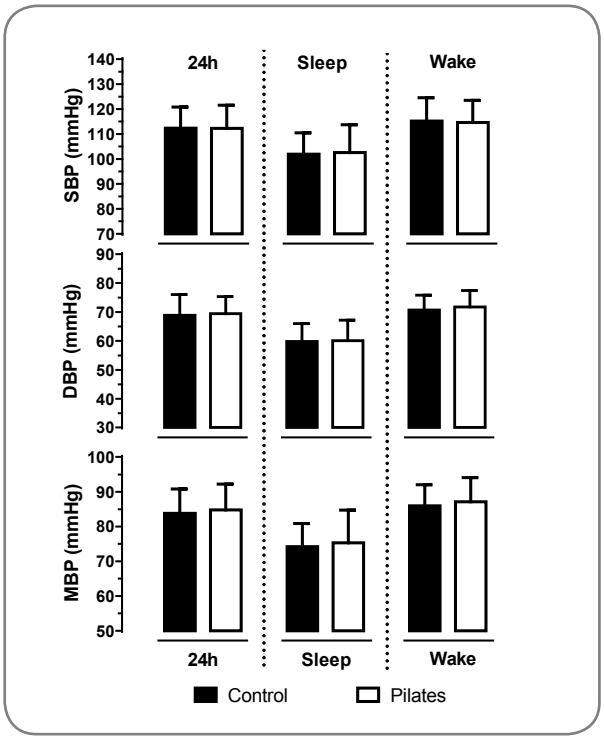
Statistical Analysis

The sample size (n = 15) was calculated using G*Power 3.1 ($\alpha = 0.05$; power = 0.80; effect size = 0.7). This effect size was calculated from the average difference in systolic hypotension between the Pilates and control sessions, considered as 3.3±3.6 mmHg [13]. Since we did not find studies with Pilates and 24-hour measurements, the effect size found (ES = 0.91) was reduced to 0.7 to suit a more pessimistic situation with 24-hour measurements. The descriptive results are presented in mean ± standard deviation. The Shapiro-Wilk test was applied to verify data normality. The two-way ANOVA for repeated measurements was used to compare the sessions in 24-hour, sleep and wake phases, as well as every two hours in ABPM. The Newman-Keuls post hoc was applied when necessary. For BPV analysis, the Student t-test was applied. All analyzes were performed using the software Statistica 10.0 (TIBCO Software Inc., Palo Alto, CA, USA), adopting a level of significance of $p < 0.05$.

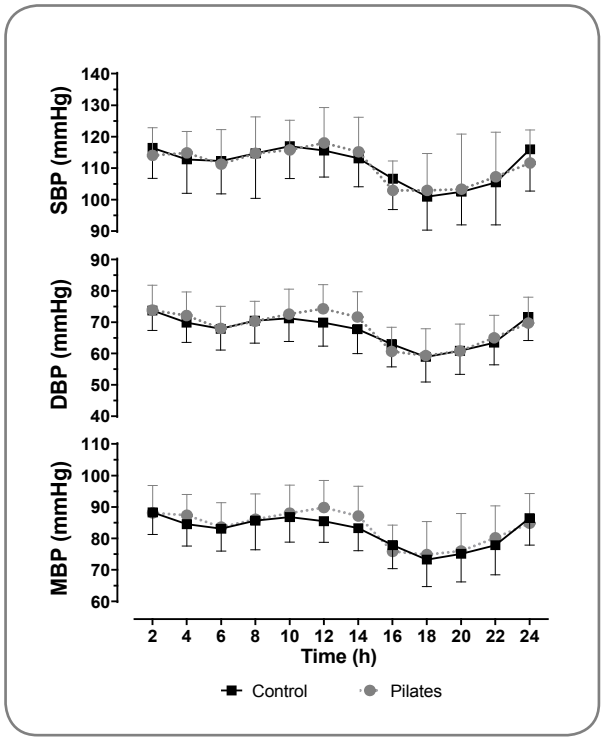
Results

After we recruited twenty women that fit in the inclusion criteria, five volunteers did not agree to participate, and fifteen non-obese postmenopausal women finished all the sessions. Figure 1 shows the results of ABPM from all women. There were no differences in SBP, DBP and MBP responses during total 24 hours, awake and sleep phases between sessions. Figure 2 shows SBP, DBP and MBP responses over time (every 2 hours). Statistical analysis showed no significant difference between

the Mat Pilates and control sessions. Additionally, table II shows BPV variables (SD_{24}, SD_{dn} and ARV) from SBP, DBP and MBP, and t student test did not show significant differences between sessions.



SBP = Systolic blood pressure; DBP = Diastolic blood pressure; MBP = Mean blood pressure. Statistical difference by two-way ANOVA.
Figure 1 - Systolic, diastolic and mean blood pressure during the 24 hours, sleep and wake phases.



SBP = Systolic blood pressure; DBP = Diastolic blood pressure; MBP = Mean blood pressure. Statistical difference by two-way ANOVA.
Figure 2 - Systolic, Diastolic and Mean blood pressure every two hours, for 24 hours.

Discussion

The current study indicated that a single session of Mat Pilates did not change ambulatory BP responses during 24 hours after its performance in non-obese postmenopausal women. Moreover, this exercise did not change BPV during this period in this population.

Blood pressure analyzes after physical exercise have been studied in the last decades, and BP reductions after a single exercise session were observed in both high cardiometabolic risk [14] and healthy populations [4,15]. When comparing BP responses between different types of exercise, aerobic exercise seems to be more effective in promoting BP reductions, either in 24-hour, awake or sleep phases [10], but that are still little explored after Pilates performance. Thus, to our knowledge, the present study was the first to investigate BP responses through ABPM in postmenopausal women after a Mat Pilates session. Therefore, despite having a relatively small sample size, but which is in accordance with the sample calculation and similar studies, it has clinical relevance, since this is a population predisposed to develop cardiovascular diseases [1], and who is also the one who most seeks the practice of the Pilates for treatment or prevention of various diseases [5].

Table II - Blood pressure variability.

	Control (Mean ± SD)	Pilates (Mean ± SD)	Mean difference (CI 95%)	p-Value
SD_{24}				
SBP (mmHg)	11.4 ± 3.1	11.6 ± 1.6	-0.19 (-1.74 to 1.36)	0.80
DBP (mmHg)	9.2 ± 1.9	9.5 ± 1.8	-0.23 (-1.41 to 0.95)	0.69
MBP (mmHg)	9.2 ± 2.2	9.5 ± 1.5	-0.29 (-1.20 to 0.63)	0.51
SD_{dn}				
SBP (mmHg)	9.7 ± 2.2	10.2 ± 2.0	-0.43 (-1.43 to 0.57)	0.37
DBP (mmHg)	7.9 ± 1.5	8.1 ± 2.1	-0.22 (-1.31 to 0.87)	0.67
MBP (mmHg)	7.7 ± 1.7	8.0 ± 1.9	-0.31 (-1.41 to 0.78)	0.55
ARV				
SBP (mmHg)	8.9 ± 1.9	9.4 ± 2.0	-0.49 (-1.30 to 0.32)	0.22
DBP (mmHg)	6.8 ± 1.2	7.0 ± 1.4	-0.27 (-0.80 to 0.27)	0.30
MBP (mmHg)	6.6 ± 1.3	6.8 ± 1.3	-0.23 (-0.81 to 0.35)	0.42

SD = Standard deviation; CI = Confidence interval; SBP = Systolic blood pressure; DBP = Diastolic blood pressure; MBP = Mean blood pressure; SD_{24} = mean of 24 hours standard deviations; SD_{dn} = mean of day and night standard deviation corrected for the number of hours included in each phase; ARV = mean differences weighted by the time interval between consecutive readings. Statistical difference by Student t-test.

In this sense, a review [16] about Pilates in hypertensive patients suggested that the benefits of this method are similar to traditional isometric exercises in BP reduction, since they are widely used in Pilates. They also suggest that this type of resistance training is more attractive to practitioners than usual weightlifting training, thus increasing adherence to physical exercise. This characteristic gains great importance in hypertensive patients due to the low adherence to the drug treatment [17], being that the use of non-pharmacological strategies as a form of antihypertensive treatment has become one of the main demands of patients, caregivers and health professionals [18].

However, when analyzing a single session of Pilates, hypotensive responses do not look promising in healthy populations. In studies similar to the present study, with normotensive women after menopause [19], young men [13] or women already trained in the modality, mostly normotensive [20], demonstrated that there was no hypotensive effect of a single Pilates session when comparing to the control in the first 60 minutes post exercise. This result is maintained even though it has increased the bioavailability of salivary nitrite (nitric oxide precursor, a potent vasodilator) [19]. On the other hand, a study with hypertensive patients [21] demonstrated SBP and MBP falls between 5 and 8 mmHg, 60 minutes after the Pilates session compared to the control. Is important to note that these studies, monitored the BP responses for a short period of time (around 60 minutes) and not during 24h as our study.

Although in normotensive patients Pilates does not appear to be effective in promoting BP responses acutely, studies with chronic interventions [8,9] have also been investigating this phenomenon and found promising cardiovascular outcomes, mainly fall in resting SBP [8]. However, clinical trials are still quite conflicting. For example, SBP falls were found after Mat Pilates training phase in young women [7]

and in elderly women [8]. On the other hand, in another study [22], it was found that 20 sessions of Pilates is not able to decrease BP in sedentary young women.

Besides the direct benefits in BP, there is evidence that the practice of Pilates can bring benefits to body composition [23], lipids profile [24], fasting glucose [25], bioavailability of salivary nitrite [19] and symptoms of anxiety and depression [26]. These data may suggest indirect control of BP in long term, by reduction of associated factors.

In addition to BP values being important predictors of cardiovascular risk, the way these values fluctuate during the day (i.e. BPV) are also important to identify low risks of cardiovascular diseases [27]. Although the practice of regular exercise has an apparent correlation with lower values of BPV [28], in the present study we did not find differences in any BPV index after Mat Pilates performance. This results corroborates with several exercise studies with healthy men and women with same age [29-31]. However, it is worth mentioning that these studies analyzed chronic effects of exercise and most of them intervened with aerobic exercises [29-31], some with dynamic resistance [32] or isometric [33], but we do not know about these variables after Pilates training.

It is also worth mentioning that the characteristics of exercise can influence these responses. In the present study, the intensity of exercise was moderate (RPE between 11 and 14) and duration of 50 minutes, and no BP reduction after the exercise performance was evidenced. In this sense, although some studies show that exercise intensity does not influence the hypotensive response of exercise [34], others demonstrate that exercise intensity may influence the duration of such response [35,36], just as the magnitude may be dependent on the duration of the exercise [37]. In addition, this relationship with intensity and duration of training also seems to influence the responses of BPV [38]. It is important to note that it is not easy to control the exercise intensity during Mat Pilates performance due the characteristics of the mixed movements (aerobic, resistance and isometric) when compare with the performance of only aerobic (running, jogging or walking) or resistance exercise for example.

Another interesting point is that, in general, Pilates proves to be quite safe for practice, since it causes minor changes in HR, SBP and Double product during exercise [13,39]. In addition, the parasympathetic parameters of heart rate variability do not change after a Pilates session in a normotensive population [19]. These results may suggest a low degree of autonomic stress post Pilates session in this population, whereas traditional resistance exercise seems to generate the highest post-exercise autonomic stress [15,19]. However, in hypertensive patients these values were altered [21].

Finally, an important characteristic of this population that might have limited the occurrence of PEH is the resting BP value, since baseline BP was normal, which prevents a large magnitude of BP falls, but which may be different in hypertensive patients [40]. In this sense, in populations with cardiometabolic dysfunctions the results in BPV after exercise also seem to be promising [41], which may suggest a more interesting regulatory effect in this type of population, but which are still little studied after Pilates training. These differences may occur due to compensatory mechanisms, such as the baroreflex, which prevent large magnitude in hypotension in normotensive individuals [40]. It is worth mentioning that the present study did not evaluate those mechanisms associated with variations in BP or BPV, as it was not proposed for this analysis.

Considering the above mentioned, this study has clinical relevance since it provides an alternative to traditional exercises when trying to understand the res-

ponses in women's BP after menopause to the Pilates method. In addition, this study will be the basis for possible future studies with hypertensive women, since we verified the safety of the method session in the cardiovascular system in women without the disease. Thus, more studies are needed to investigate the physiological mechanisms using different devices of Pilates Methods. In addition, for the best application in clinical practice, it is necessary to conduct investigations on chronic responses to Pilates training and in hypertensive individuals.

Conclusion

Based on our results we conclude that a single session of Mat Pilates does not change post-exercise ambulatory blood pressure responses nor blood pressure variability during 24 hours in non-obese post-menopausal women.

Academic link
This article represents part of the master's dissertation of Jaqueline Pontes Bartista, supervised by Professor Guilherme Morais Puga at the Federal University of Uberlândia, Postgraduate Program in Health Sciences - FAMED-UFU, Uberlândia, MG.

Potential conflict of interest
No conflicts of interest with potential potential for this article have been reported.

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Authors' contributions
Conception and design of the research: JP Batista, LAS Matias, TCF de Souza, APM Resende and GM Puga; Obtaining data: JP Batista, IM Mariano, AL Amaral, LAS Matias, TCF de Souza, APM Resende and GM Puga; Analysis and interpretation of data: JP Batista, IM Mariano, AL Amaral, LAS Matias, TCF de Souza, APM Resende and GM Puga; Statistical analysis: JP Batista and IM Mariano; Obtaining financing: JP Batista, GM Puga; Writing of the manuscript: JP Batista, IM Mariano, AL Amaral, LAS Matias, TCF de Souza; Critical review of the manuscript for important intellectual content: APM Resende, GM Puga.

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Supplementary table I. Pilates exercise program.

Exercise	Description
	Warm up
Roll up	Dorsal decubitus, arms going toward the shoulder line, and from there the head starts to rise and the trunk curls towards the feet.
Knee folds	Lie on your back with your pelvis in neutral position, with your knees bent and feet flat. Exhale and tighten your abs to lift your right leg straight up to 90 degrees. Inhale, then exhale and lift your left leg straight up to 90 degrees. Lower your legs to the floor.
Knee sways	Lying in a dorsal decubitus with a bend in your knees and your feet relaxed flat on the surface. Keep your knees and feet lightly touching and your shoulders flat against the surface as you slowly sway your knees together from side to side.
	Training
The one leg stretch	Neutral position lying on back, slowly raise one leg and bend it, forming a 90° angle, without leaving the neutral position. Extend the leg forward taking care not to arch your back and raise the other leg extending to which it was folded but without lowering the leg.
One leg circle (right / left)	Dorsal decubitus, straight legs and circular movements with both legs, one at a time clockwise.
One leg circle (right / left)	Dorsal decubitus, straight legs and circular movements with both legs, one at a time in the counterclockwise direction.
The shoulder bridge in the ball	Lying face up, bend the knees and place the feet on top of a stability ball. Rest on the shoulders and the upper back while keeping the body in a straight line from the knees to the head. Slowly lower the hips back down to the ground, keeping the ball still.
Abdominal with the ball	Contraction of the abdominal muscle, leave the hip on the floor and support both legs on top of the ball, with the hands resting on the chest, remove the shoulder blades from the floor and return to the starting position.
The Hundred with flex	Lying with the backrest on the mat, head and torso slightly raised, legs raised and arms stretched to the side of the hip without touching the ground. Inhale to raise the head and trunk until reaching the base of the scapula, maintaining control of the body and returning to the initial position. The flex ring should be held between the ankles.
The double leg stretch	Neutral position lying on your back, slowly lift your legs and bend them at a 90° angle, without leaving the neutral position. Extend your legs forward taking care not to arch but without letting your legs touch the ground.
The Shoulder Bridge	Lying face up, bend the knees and place the feet on the ground. Rest on the shoulders and the upper back while keeping the body in a straight line from the knees to the head. Slowly raise and lower hips back to the floor.
The Shoulder Bridge with one leg (right / left) and flex	Lying straight up, bend your knees and extend one leg toward the ceiling. Rest on the shoulders and upper back, keeping the body straight from the knees to the head. Slowly raise and lower your hip back to the floor. Repeat this movement with the other leg. Hold the flex ring at chest height with your elbows bent at shoulder height and tighten every time your hips are raised.
The shoulder bridge with flex ring	Lying face up, bend the knees and place the feet on the ground. Rest on the shoulders and the upper back while keeping the body in a straight line from the knees to the head. Slowly lower the hips back down to the ground. Position the flex ring between the inner thigh and press every time you lift your hip from the floor.

Supplementary table I. Continuation.

Exercise	Description
Swimming	Neutral position facing down, raise arms and place forward for a V with shoulders. The lumbar area should be stable, without letting the belly yield towards the floor, but keeping the abdomen contracted. Lift both the right arm and the left leg simultaneously at the same height. Lower your right arm and left leg at the same time. Repeat the exercise using the left arm and right leg this time.
The Swan dive in the ball	Ventral decubitus on top of the ball, palms resting on the floor, elbows extended. Hold the extension of the spine, trigger abs, buttocks, contractors and shoulders away from the ears as the body moves up and returns to the ball.
Board	Lean forward, lean on the elbows in the ground aligned with the shoulder. Then raise the hip, keeping only supported by the tip of the feet and the elbows. Exercise has no movement, characterizing isometry.
	Cooling down
Spine Stretch	Sitting with the spine straight, legs stretched and open slightly beyond the width of the hips. The arms remain stretched forward, always maintaining the alignment of the shoulder blades. It takes the chin to the chest and rolls the column forward, forming a "C". The chest should pass over the thigh and the inner part of the thighs should be lengthening. Return the movement to the starting position.
Cat Stretch	In four supports, with hands under the shoulders, the knees under the hips and the legs apart in the distance of the hips. Pelvis and spine in the neutral position. The head should follow the alignment of the thoracic spine. The movement is to articulate the spine, without misaligning the hands and legs. Tilt posteriorly to the pelvis and round the spine, sequentially joining the coccyx to the head. Maintain the position with the abs contracted and supporting the head with relaxed shoulders. We rejoined the spine sequentially to an extension of the thoracic.
Roll down	Stand your feet shoulder-width apart. The column must be in a neutral position. Lower the body, rolling it forward, keeping the muscles of the neck and arms totally relaxed. Try touching the shins or feet with your hands. Slowly return to the starting position.