Y Balance Test for healthy older women: protocol adaptations and test-retest reliability

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Abstract

There are several tests to assess dynamic balance in older adults, however many of these tests are indicated for the most fragile population to evaluate fall risks. Considering the increase in the number of older people engaged in fitness programs and therefore the improvement of their physical capacities and motor skills, a valid and reliable test to assess dynamic balance of this population is of great importance for both scientific and clinical purposes. The objectives of the present study are to adapt the Y Balance Test (YBT) instrument and protocol for active, older women and to determine its between-session reliability. Fifty-one healthy women (aged 66.6 ± 5.3 years) underwent an adapted version of the YBT where the working limb was allowed to return to and make contact with the support base before a new trial. The interval between testing and retesting ranged from five to seven days. Intraclass correlation coefficients (ICC) and the Bland-Altman plot method were used to quantify between-session test-retest reliability and its level of agreement, while the Minimal Detectable Change quantified the scores' smallest detectable differences for the adapted version. The ICC results for all variables are above 0.90, indicating excellent between-session test-retest reliability. Levels of agreement are good and real score differences lower than 3.6% of the mean can be detected. In addition, the protocol allowed for the complete execution of the task in less time and without a fear of falling, which improved the effectiveness of the test sessions. In conclusion, the adaptations proposed for the equipment and protocol, called YBT-Aged, produced highly reliable results to assess dynamic balance in a group of active older women.

Keywords: Dynamic balance; Functional test; Older women; Psychometric properties.

Introduction

Balance is a prerequisite for functional competence, as it is crucial for performing daily living activities effectively[1]. Impaired balance during dynamic tasks can be a significant risk factor for falls among the older population, with approximately 50% of all falls occurring during walking. In clinical settings, having valid and reliable methods to assess the balance abilities and motor skills of older adults is essential for monitoring the effectiveness of interventions aimed at improving motor skills, enhancing quality of life, and preventing falls in this demographic.

Within the older population, various instruments are utilized to assess balance and mobility functions. These include the Timed Up and Go test (TUG)[2] which was developed to assess functional mobility and dynamic balance control in frail older adults, the Berg Balance Scale[3], which objectively measures an individual's ability to maintain balance across a series of predetermined tasks, the Tinetti Performance Oriented Mobility Assessment[4],which evaluates gait and balance during daily activities while also addressing fear of falling, and the Dynamic Gait Index[5], which assesses gait balance and fall risk under more demanding conditions. However, with the increasing engagement of older individuals in activities like sports, dance and regular fitness programs, some of these functional tests may not adequately challenge this active demographic[6].

The Y Balance Test Lower Quarter (YBT-LQ)[7] protocol is considered an important instrument for the assessment of fall risk in the older population[8] and for monitoring lower limb rehabilitation in athletes[9,10]. It assesses the stability of a single lower limb while the other limb moves in different directions: anterior, posteromedial, and posterolateral.

More recently, a systematic review of the reliability studies for the YBT-LQ was conducted[11] to identify variations related to gender, athletic status and competition level, as well as to assess its validity in predicting injury risk in sports. While moderate to high-quality evidence was observed for reliability, the YBT-LQ was not deemed a valid tool for predicting injury risks in athletic populations. The authors recommend establishing population-specific cutoff points (considering factors such as age, gender, and sport) to improve the process of clinical decision-making when utilizing this tool.

However, the validity of the YBT-LQ has been confirmed for assessing dynamic balance in both sedentary[12] and active older individuals[8]. Additionally, it has been shown to be effective for monitoring rehabilitation progress following anterior cruciate ligament reconstruction surgery[9]. The reliability of the YBT has been confirmed as good and excellent for lower limb ranges and composite scores for adolescents and adults[13], for subjects aged 70-80 years[8,14], and for healthy women aged 50-79 years[15].

Our previous laboratory practice involving Y Balance testing with active older women revealed that many of the volunteers, despite being physically active and healthy, encountered unavoidable difficulties in maintaining their working limb off the ground during the three trials of the same direction. Additionally, numerous participants reported experiencing fear of falling during the execution, hindering their ability to complete the standardized protocol. This often leaded to numerous invalid trials and prolonged test sessions, causing early fatigue. Indeed, some studies have even reported falls during testing[8] or suggested modifications to the protocol for women aged 50 to 79[15], aiming to enhance test efficiency and safety.

Therefore, while standardized balance tests aimed to the older population are too easy for active seniors, the YBT in its original version prevents many from completing their dynamic balance assessment. Therefore, this study seeks to develop an adapted version of the YBT instrument and protocol specifically tailored for active older women and evaluate the between-session test-retest reliability of the proposed version. The hypothesis posits that the proposed instrument and protocol modifications will yield a functional test equally as reliable as the original YBT, while enhancing safety and efficacy in assessing dynamic balance among healthy, active older women.

Methods

This was a cross-sectional observational study that used a quantitative approach to the research problem, aiming to adapt a functional test protocol and describe its reliability properties.

Participants

Active seniors are considered "older adults, typically those aged 55 and above, who maintain a high level of physical, social, and mental activity. The term emphasizes a lifestyle that prioritizes health, vitality, and engagement in various aspects of life, contrasting with a more sedentary or passive approach to aging", as defined by the World Health Organization (WHO) in 2002[6].

Participants completed self-administered questionnaires, including an adapted version of the Baecke Questionnaire on Habitual Physical Activity for older adults[16] to classify their activity levels; the Rolland Morris Disability Questionnaire – Brazil[17] to assess disability related to non-specific low back pain, while the Falls Efficacy Scale International Questionnaire - Brazil (FES-I-Brazil)[18] was employed to evaluate fear of falling.

From a non-probabilistic sample of 300 active older women who were enrolled in a fitness program at the University, 70 agreed to participate. The inclusion criteria were:

(1) women over 60 years-old; (2) active in fitness programs twice a week for at least three months; (3) with non-specific chronic low back pain lower than 14 points. The exclusion criteria were: (1) presence of any neurological, vestibular or musculoskeletal dysfunctions; 2) with non-specific chronic low back pain higher than 14 points. Participants were informed about all the procedures and fifty-three women signed the Free and Informed Consent Form according to Resolution 466/2012 of the National Health Council. This study was approved by the Research Ethics Committee of our Institution under CAAE number: 10584919.8.0000.539 and registered in the Brazilian Clinical Trials platform under UTC number: U1111-1235-8023. Two women did not perform the test and the retest. Fifty-one women concluded the study protocol, a sample of sufficient size to achieve a reliability study of adequate quality[19].

Instrument

The YBT measures the reach of the lower limbs in the anterior (ANT), posteromedial (PM), and posterolateral (PL) directions while in unipodal support[21]. For the purpose of adapting the YBT to the specific population of the study, a new instrument was constructed and a new protocol was tested. The objective was to ensure more security and shorter testing sessions without lessening the excellent metrical properties of the YBT.

The instrument was inspired by tools already on the market, such as the Y Balance Test of the Lower Quarter (YBT-LQ)[13,20], but with changes made to the dimensions and materials of the support's surface. The adapted instrument was built with affordable, sustainable materials, wood and galvanized steel, and is portable and simple to assemble (FIGURE 1). The instrument consists of a fixed wooden support base that measures 20 cm wide, 50 cm long, and 4.6 cm high and three moveable blocks that each measure 14 cm wide, 30 cm long, and 4.6 cm high and slide over a 150 cm metal rod. The posterior stems create a 90-degree angle with relation to each other and angles of 135 degrees with the anterior stem[6]. Each rod has a sliding block that indicates the reach in millimeters. The fixed base provides support for one foot while the indicator block is moved with the contralateral (working) limb to its maximum reach in each of the three directions. The markings on the support base and the color difference of the foot support are to serve as visual guidance.

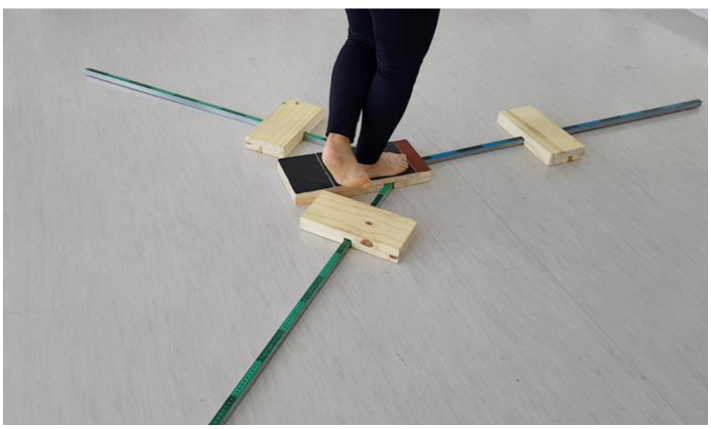

FIGURE 1 - Adapted instrument for YBT-Aged. The support base is in the center, the three sliding blocks are on their respective rods.

The support limb is located in the exact center of the base, at the intersection of the posterior and anterior rods. The support base is of a sufficient length to support both feet, but not so wide that the working limb can fully rest after executing the reach. The base was roughened with sandpaper to increase the friction of the support foot and improve safety during the test.

Procedures

Before performing the YBT-Aged, the length of the lower limbs, meaning the distance from the anterosuperior iliac spine (ASIS) to the most distal point of the medial malleolus with the subject lying down[13] was measured with a flexible tape. All participants were barefoot and performed familiarization trials. After that, formal testing began, and they started the three trials in each direction with the right and left lower limbs.

In the initial position, standing on the support base with both feet, participants received the following standardized instruction: "With your hands on your waist, touch the front of the block with your right foot and push the block as far as possible, keeping your foot in contact with the block until the maximum distance is reached. Then, return your right foot to the starting position, resting both feet on the support base."

This protocol allowed the working foot to touch the support base after each complete trial. In addition, keeping the hands on the waist was standardized to avoid movements of the upper limbs and to ensure that balance during the unipodal reach was restored with trunk and lower limb strategies. Failed trials were repeated until three valid trials were obtained in each direction. This protocol was repeated by the same experimenter in the same place and environmental conditions after an interval of five to seven days. During this period, all participants declared having remained stable while going about their daily routines.

Selected Variables and Data Analysis

Three valid trials in each direction of reach were performed. Means and standard deviations for the maximum reach were calculated for the anterior, posteromedial, and posterolateral directions of both lower limbs. The measurements were given as a percentage of the lower limb length (%LL)[21].To calculate the normalized composite scores (CS), the maximum reaches in each direction were summed, then divided by three times the length of the right lower limb of each participant and multiplied by 100[13].

Relative reliability, the degree to which individuals maintain their position in a sample with repeated measures, was determined using the intraclass correlation coefficient (ICC) in its 95% confidence interval (CI)[22]. The ICC was estimated using a two-way mixed effects model, which separates the variability between trial and error in order to measure test-retest reproducibility between sessions. The results of the ICC were interpreted according to Fleiss (1986)[23]: ICC > 0.75: excellent; 0.40 < ICC < 0.75: moderate to good; and ICC < 0.40: bad. The ICC does not offer any information regarding changes between repeated tests or measurement errors.

The Bland-Altman method[24] was the second measure of reliability that was used to visualize the limits of agreement between test and retest measures for the CS. This method is a scatter plot showing the average of two measures on the X-axis and the difference between them, the bias, on the Y-axis[24]. Thus, it is possible to visualize the bias (how far the differences are from the zero value) and the error (the dispersion of the points of the differences around the mean) in addition to outliers and trends in the data.

Absolute reliability is the degree to which repeated measures vary for individuals when they are tested several times. This was evaluated using the calculation of the standard error of measurement (SEM), which is the standard deviation of all errors in one measure[25]. The lower the SEM value, the more reliable the measurement[22]. In addition, the practical significance of YBT-Aged was determined by calculating the minimal detectable change with 95% CI ($MDC_{95\%}$), which provides information on the minimum threshold for a measurement to ensure that the differences between test and retest scores are real and outside the error range[22,26]. Statistical analyses were performed using the Statistical Package for Social Sciences 2019 for Windows, v. 1.0.0.1298, with the level of significance set at 0.05.

Results

The characteristics of the participants are presented in TABLE 1.

TABLE 1 - Mean and Standard Deviation Demographics for the Experimental Group.

(n= 51)	Mean	Standard Deviation
Age (years)	66.8	5.2
Mass (kg)	66.3	13.8
Height (cm)	155.3	6.5
BMI (kg/m²)	27.4	5.0
LL (cm)	83.4	5.4
RM	6.4	4.8
FES-I-Brazil	31,0	11,9

BMI = body mass index; LL = limb length; RM = Rolland Morris Disability Questionnaire - Brazil; FES-I-Brazil = Falls Efficacy Scale International Questionnaire - Brazil.

For the Falls Efficacy Scale International Questionnaire - Brazil (FES-I-Brazil) scores greater than or equal to 23 points suggest an association with a history of sporadic falls, while 31 points or more suggests recurrent falls[18]. For the Rolland Morris Disability Questionnaire - Brazil scores greater than or equal to 14 indicate significant disability due to low back pain[17]. Thus, on average, the participants in this study can be classified as habitual fallers, though they were not limited by the presence of non-specific low back pain.

The selected variables for analysis were ICC, SEM, and MDC for the maximum reach of the right and left limbs and the Composite Score for each lower limb in three directions: ANT, PM, and PL. The means and standard deviations for the YBT-Aged performances normalized by the length of the right lower limb (%LL) for the tests and retests with support on the right and left feet are shown in TABLE 2.

TABLE 2 - Means and Standard Deviations of the Maximum Reach Values in the Test and Retest for the Anterior (AT), Posteromedial (PM), and Posterolateral (PL) Directions and for the Composite Scores (CS) for Right and Left Limbs, normalized by the length of the right lower limb (%LL).

	Right Limb Stance		Left Limb Stance	
	Test	Retest	Test	Retest
ANT (%LL)	63.73 ± 5.74	62.44 ± 6.37	64.15 ± 6.26	62.66 ± 6.42
PM (%LL)	89.72 ± 9.93	89.89 ± 9.99	91.04 ± 10.64	90.24 ± 12.08
PL (%LL)	87.82 ± 11.49	89.00 ± 11.46	88.84 ± 11.48	89.39 ± 12.08
CS (%LL)	80.42 ± 8.03	80.45 ± 8.42	81.34 ± 8.45	80.76 ± 9.29

The results for intraclass correlation coefficient with 95% confidence interval (ICC 95%CI), standard error of measurement (SEM), and minimal detectable change ($MDC_{95\%}$) are presented in TABLE 3.

TABLE 3 - Intraclass Correlation Coefficient ($ICC_{95\%CI}$), Standard Error of Measurement ($SEM_{\%}$), and Minimal Detectable Change ($MDC_{95\%}$) for the Anterior (ANT), Posteromedial (PM), and Posterolateral (PL) Directions and for the Composite Scores (CS) for Right and Left Limbs, Normalized by the Length of the Right Lower Limb (%LL).

	Right Limb Stance			Left Limb Stance		
	$ICC_{95\%CI}$	$SEM_{\%}$	$MDC_{95\%}$	$ICC_{95\%CI}$	$SEM_{\%}$	$MDC_{95\%}$
ANT (%LL)	$0.90_{(0.81-0.94)}$	0.60	1.67	$0.92_{(0.83-0.96)}$	0.63	1.75
PM (%LL)	$0.93_{(0.87-0.96)}$	0.99	2.72	$0.94_{(0.89-0.96)}$	1.12	3.11
PL (%LL)	$0.93_{(0.87-0.96)}$	1.13	3.14	$0.92_{(0.87-0.96)}$	1.16	3.22
CS (%LL)	$0.94_{(0.90-0.97)}$	0.81	2.25	$0.95_{(0.92-0.97)}$	0.88	2.43

Upper line: superior limit of agreement for a confident interval of 95%;
Lower line: lower limit of agreement for a confident interval of 95%;
DP: Standard deviation;
Stance foot: Right.
1.96 = z-score for 2 standard deviations.

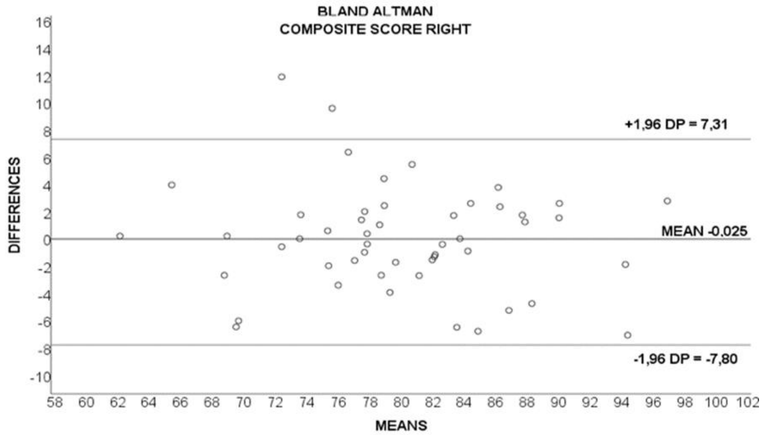

FIGURE 2 - Mean Absolute Agreement or Bias for the Composite Scores Test/Retest Values (right limb stance).

Upper line: superior limit of agreement for a confident interval of 95%;
Lower line: lower limit of agreement for a confident interval of 95%;
DP: standard deviation;
Stance foot: Left.
1.96 = z-score for 2 standard deviations.

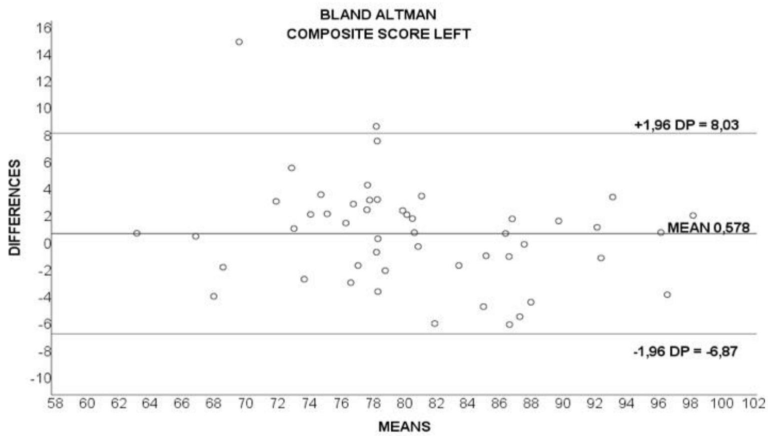

FIGURE 3 - Mean Absolute Agreement or Bias for the Composite Scores Rest/Retest Values (left limb stance).

According to FIGURES 2 and 3 there was a small proportional bias, and the mean differences between the Composite Score test and retest decreased as the average values increased. Additionally, there were two data points, 4% from total, which exceeds the upper limit of agreement. We suppose that these values are probably due to the presence of knee pain, which was reported by some of the participants during the retest.

In order to classify the performance of the participants in this study, we analyzed the frequency distribution of the Composite Score results, which considers the measurement of the three directions normalized by the length of the lower limb. These results were separated into five class intervals based on the mean and standard deviation and were considered as follows:

a) "bad": below the average minus two standard deviations;
b) "fair": between the average minus two and the average minus one standard deviation;
c) "good": between the average minus one and plus one standard deviation;
d) "very good": between the average plus one and plus two standard deviations;
e) "excellent": above the average plus two standard deviations.

In the TABLE 4 the frequency distribution of the Composite Score results are shown.

TABLE 4 - Analysis of the frequency distribution of the Composite Score results for the participants.

Estatística		CS-R	CS-L
N	Valid	102	102
	Missing value	0	0
Mean		80.44	81,06
Standard Error of Mean		0.81	0.88
Median		80.11	79.72
Mode		73.56[a]	75.10[a]
Standard Deviation		8.19	8.84
Variance		67.04	78.23
Amplitude		41.69	45.64
Minimum		62.05	62.18
Maximum		103.74	107.82

CS-R: Composite Score – Right;
CS-L: Composite Score – Left;
a: the lowest value for mode is shown.

These data are not normative, but a proposal for classification to be used for our group of participants, since they will be evaluated again with this test after the fitness program ends.

The TABLE 5 shows the classification for the Composite Score performance, according to the frequency distribution of the results.

TABLE 5 - Composite Score performance classification for the group, according to frequency results by standard deviation.

Class	DP	CS-R	CS-L
		range	range
1 - Bad	< -2 DP	0.0 - 64.1	0.0 - 63.4
2 - Fair	-2 DP to -1 DP	64.2 - 72.3	63.5 - 72.2
3 - Good	-1 DP to +1 DP	72.4 - 88.6	72.3 - 89.9
4 - Very Good	+1 DP to +2 DP	88.7 - 96.8	90.0 - 98.7
5 - Excelent	> +2 DP	96.9 - +	98.8 - +

DP: standard deviation;
CS-R: Composite Score – Right;
CS-L: Composite Score – Left.

Discussion

The present study aimed to adapt the YBT protocol and instrument to be applicable for physically active, older women and verify its test-retest reliability between sessions. The adapted version is called the Y Balance Test-Aged (YBT-Aged).

The $ICC_{95\%CI}$ results obtained with the YBT-Aged for all variables are above 0.90 and are indications of excellent reliability for test-retest between sessions (TABLE 3). For the normalized Composite Scores right and left lower limbs the $ICC_{95\%CI}$ denote excellent inter-session test-retest reliability. Our ICC results add new knowledge to those studies that assessed intra-rater and inter-rater reliabilities for the YBT[7,13,14] after applying the original protocol to older men and women.

The SEM% quantifies the precision of the individual measurements and our results with the YBT-Aged ranged from 0.60% to 1.16% of the scores, denoting low error levels. The $MDC_{95\%}$ describes the smallest detectable difference in the score that is a real change and not error and our results ranged from 1.67% to 3.22% of the scores, indicating that small, real differences can be detected. Our results for the SEM and the MDC for the normalized Composite Score are closer to those found by Freund et al.[15], but not as precise as those found by Sipe et al.[8] Our $MDC_{95\%}$ results denote that a change in performance can be detected when score differences are at least 2.24 to 2.42% in repeated tests.

The normalized Composite Score represents the summed results of the maximum lower limb reaches for all participants. The CS inter-session reliability was previously considered excellent for a small group of eight healthy, older women, but the time interval between these two test sessions was only five minutes[15], and fatigue may have affected the scores. On the other hand, we calculated test-retest reliability in fifty-one active women aged 66.6 (± 5.3 years) between two sessions that were five to seven days apart.

The levels of agreement for the Composite Scores with the YBT-Aged are good and real score differences lower than 3.6% of the mean can be detected. Compared to previous reliability studies of the YBT, this is the first to present the extreme limits of agreement with Bland-Altman dispersion graphics. Bland and Altman (1986)[24] have recommended that 95% of the data points should lie within ± 2 standard deviations of the mean difference in order for there to be agreement between values. Thus, according to FIGURES 2 and 3, the level of agreement in this study can be considered good. The two data points which exceed the upper limit of agreement may be resulted from knee pain of some participants, that was only reported after the retest session. Although the presence of pain in these cases did not prevent the retest, the retest result was limited and this increased the dispersion between the two consecutive measurement sessions. Previous evidence has shown that YBT performance can be affected by knee injuries, pain and recent knee surgeries[9,10].

Adaptations to the dimensions and material of the YBT instrument allowed for reduced production costs by using sustainable materials. Additionally, while the original version of the YBT usually takes 30 minutes[8,13], the YBT-Aged lasted only about 15 minutes; adapting the protocol allowed the execution to be successfully concluded in less time, thereby preventing fatigue and obtaining more reliable measures. Our instructions were easy to understand as well, which resulted in shorter test sessions and no need to watch a video before beginning[15].

The participants of this study were asked to maintain their daily routines during the test-retest interval and we are confident that their abilities related to the execution of the YBT-Aged did not change within a week, nor were their results influenced by any memory and learning effect[22].

Balancing the body in one leg standing while moving the other leg in different directions challenges the body's balance control mechanisms to a greater extent than standing still. Thus, the tasks proposed by the YBT and the YBT-Aged require an ability to respond to internal and external perturbations without falling and resisting to destabilizing forces[28]. For this reason, the YBT is considered a valid tool for assessing dynamic balance[8,13,15].

The increased size of the support base of the YBT-Aged allowed the participants' feet to return to the base safely without losing the fundamental characteristics of the dynamic balance test. In addition, while a wooden support base for the older population has already been suggested as being more stable than a PVC base[15], the wooden base of this instrument was delimited, and sandpaper was affixed to the support surface, which guaranteed more friction and thereby greater security for the support foot while the working limb moved in the three directions. There were no falls during our test sessions, and all participants were able to perform the entire protocol at once. For practical purposes, our trial directions were not randomized, namely so the execution would be easier to understand and quicker to perform; however, this could be considered a methodological limitation.

Regular engagement in fitness and exercise programs is one of the determinants of active aging[29]. Health professionals may use the YBT-Aged as a functional test to help monitor dynamic balance in this population, thereby improving the quality of life among older women. Therefore, we proposed a performance classification for the YBT-Aged for our group of older women, which will be used to monitor future improvements in their dynamic balance abilities.

However, several limitations of this study should be acknowledged: a) The study did not correlate non-specific low back pain or fear of falling with YBT-Aged performance, which could have provided valuable insight into whether these conditions affect test outcomes; b) It did not account for comorbidities such as hypertension and diabetes, which, even when controlled, may influence YBT-Aged results; c) Trial directions for the working foot were not randomized, which likely influenced the results. Normative data establishing the ability of older adults to perform the YBT-Aged have yet to be fully developed for this population in future studies.

In summary, our finding regarding the YBT-Aged support our hypothesis: we have evidences that the proposed adaptations of the YBT demonstrate excellent between-session reliability for the composite scores and directional reaches of the lower limbs (anterior, posteromedial, and posterolateral). Furthermore, the YBT-Aged maintains the strong metric properties of the original version.

Conclusion

The modifications proposed to the equipment and protocol, called the YBT-Aged, resulted in outcomes characterized by high between-session test-retest reliabilities. Moreover, these adjustments facilitated the completion of the task within a shorter duration and without inducing fear of falling, thereby enhancing the efficacy of the test sessions. Consequently, the YBT-Aged emerged as a highly reliable and safer tool for assessing dynamic balance in active elderly woman.

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Conflicts of interest

None.

Resumo

Y Balance Test para idosas saudáveis: adaptações do protocolo e confiabilidade teste-reteste.

Existem vários testes funcionais usados para avaliar o equilíbrio dinâmico de pessoas idosas, porém a maioria desses é indicada para a população mais frágil, a fim de avaliar riscos de queda. Considerando o aumento do número de pessoas idosas engajadas em programas de condicionamento físico e, consequentemente, a melhora de suas capacidades físicas e habilidades motoras, um teste válido e confiável para avaliar o equilíbrio dinâmico dessa população é de grande importância tanto para fins científicos quanto clínicos. Os objetivos do presente estudo são adaptar o instrumento e o protocolo do Y Balance Test (YBT) para mulheres idosas ativas e determinar a sua confiabilidade entre sessões. Cinquenta e uma mulheres saudáveis (66.6 ± 5.3 anos de idade) foram submetidas a uma versão adaptada do YBT em que o membro em atividade foi autorizado a regressar e a entrar em contacto com a base de apoio antes de uma nova tentativa. O intervalo entre o teste e o reteste variou de cinco a sete dias. Os coeficientes de correlação intraclasse (CCI) para todas as variáveis são superiores a 0.90, indicando excelentes confiabilidades teste-reteste entre sessões. Os níveis de concordância são bons e podem ser detectadas diferenças reais de pontuação inferiores a 3.6% da média. Além disso, o protocolo permitiu a execução completa da tarefa em menos tempo e sem medo de queda, o que melhorou a eficácia das sessões de teste. Em conclusão, as adaptações propostas para o equipamento e o protocolo, denominadas de versão "Y Balance Test-Aged", produziram resultados confiáveis para avaliar o equilíbrio dinâmico em mulheres idosas ativas.

Palavras-chave: Equilíbrio dinâmico; Teste funcional; Mulheres idosas; Propriedades psicométricas.

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