

DESIGNING AND VALIDATION OF ARDHASHAKTI VYAYAMA SCALE

Pallabi Manjari singha¹, Jotiram Maske Patil², Parameswar G.H³, Khalid B.M⁴, B.S Savadi⁵

1. 2nd year PG Scholar Dept of Kriya Shareera
2. Professor and HOD Dept of Kriya Shareera
3. Associate Professor Dept of Kriya Shareera
4. Assistant Professor Dept of Samhita Siddanta
5. Principal And HOD Dept of Shalya Tantra, SJGAMC, KOPPAL -583231

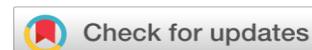
Corresponding Author: basaknabanita59@gmail.com<https://doi.org/10.46607/iamj2412012024>

(Published Online: January 2024)

Open Access

© International Ayurvedic Medical Journal, India 2024

Article Received: 16/12/2023 - Peer Reviewed: 30/12/2023 - Accepted for Publication: 15/01/2024.



ABSTRACT

Background: *Vyayama* is essential for the maintenance of health and also to eradicate the disease. *Acharya Charaka* says regular and proper exercise makes strongness and steadiness of body entities. *Acharya Sushruta* says people should practice physical exercise daily up to their *Ardhashakti*, i.e., half of their physical capacity. In *Ayurveda*, it is mentioned that excess *Vyayama* leads to severe complications, so during *Vyayama*, a person should follow *Ardha Shakti Vyayama Lakshana*. The *Ardha Shakti Vyayama* scale is needed to access the *Ardha Shakti Vyayama Lakshana*, so a study has been conducted to prepare the *Ardhashakti Vyayama* scale.

Aim & Objectives: This study aims to design and validate the *Ardhashakti Vyayama* scale (ASV scale) in a sample of 50 healthy individuals.

Design: A cross-sectional survey study.

Methods: The *Ardhashakti Vyayama* scale has been designed and validated by reliability and validity tests like Face Validity, Content Validity, and Construct validity. The reliability analyzed by Cronbach's α coefficient is 0.824 and KMO Bartlett's test value is 0.799. The Exploratory Factor Analysis was carried out using Kaiser's criteria for extracting factors with Varimax rotation.

Results: *Ardhashakti Vyayama Lakshana* in this study sample reproduced the similar structure of the original Face validity, Content validity, and Construct validity met the standards, internal consistency was excellent with KMO Bartlett's Test value 0.799 and Cronbach's α coefficient 0.824 which is highly significant.

Conclusion: The *Ardhashakti Vyayama* scale is a valid and reliable instrument for assessing *Ardhashakti Vyayama Lakshana* in healthy individuals.

Keywords: Reliability, Validity, *Ardhashakti Vyayama*

INTRODUCTION

Acharya Charaka says in *Charaka Samhita Sutrasthana* 7/31 Such a *Vyayama* (physical action)¹ which Should be done in proper matra and is capable of bringing about bodily stability and strength is known as *Vyayama* (physical exercise). *Vyayama* is always being practiced only in moderation. *Acharya Charaka* says *Ati Vyayama* is always hazardous to health like गजं सिंह इवाकर्षन् सहसा स विनश्यति ॥² If they are over-done, they cause over-exertion, giddiness etc, which is not desirable. So, they are to be practiced until they bring about lightness, etc. *Ayurveda* has recognized the importance of *Vyayama* 2000 years ago in health maintenance. *Acharya Charaka* says regular and proper exercise makes the strongest and steadiest in body tissues. *Acharya Charaka* in *Charaka sutra* mentioned *Samyak Vyayama Lakshana*, i.e., Perspiration, enhanced respiration, lightness of the body, inhibition of the heart, and such other organs of the body are indicative of the *Vyayama* being performed correctly. *Acharya Sushruta* says in *Sushrutsamhita Chikitsasthana* 24/47-48³ Persons for the maintenance of health should do physical exercise daily up to *Ardhashakti* i.e half of their capacity irrespective of seasons; otherwise, it would prove injurious. *Ardhashakti Vyayama*, which makes the *Prana Vayu*, situated in the heart, come out through the mouth (hard breathing) in human beings is indicative of “*Balardha*” *Vyayama* or the *Vyayama* up to half of one’s capacity. *Ardhashakti Vyayama Lakshana* show when there is an appreciation of Exhale of air by mouth ,also *Acharya Dalhana* on the context of *Ardhashakti Vyayama Lakshana* mentioned dryness of mouth and perspiration in the shoulder, forehead, nose, and hands and legs.by assessing the *Ardhashakti Vyaya-*

ma Lakshana the persons potential limit to do the *Vyayama* can be assessed. This reference also suggests limitation of the duration of *Vyayama*. After presence of above-mentioned signs and symptoms, one has to stop further exercise.so there is a necessity to analyze or to establish the proper *Vyayama* to avoid the consequence of improper *Vyayama*. By assessing the *Ardhashakti Vyayama Lakshana* the persons potential limit to do the *Vyayama* can be assessed.by knowing the potential limit of *Vyayama* a person can avoid the life-threatening diseases like heart disease, diabetes and arthritis etc. *Acharya Charaka* also mentioned that *sharirika Bala* can be assessed by *Vyayama shakti* .In *ayurveda Bala* assessment is the preliminary step to go through any treatment procedure, and the *Sharirika Bala* of a person can be assessed by the persons physical ability to do work. There is an importance of assessment of proper measure *Vyayama* during the process of physical exercise to avoid the consequence of improper *Vyayama* which is hazardous for health. *Ardhashakti Vyayama Lakshana* tool which will be the most important tool to assess the capacity to do *Vyayama*.

MATERIALS AND METHODS

I. Designing the *Ardhashakti Vyayama Lakshana* Scale

A questionnaire for evaluating *Vyayama Shakti* was created in light of the lack of instruments for the examination of *Ardhashakti Vyayama Lakshana* and its significance for both disease treatment and health maintenance. The *Sushruta Samhita*, an authoritative *Ayurvedic* source, was thoroughly searched both printed and electronically for this, and the *Lakshana* of the *Ardhashakti Vyayama* was taken into consideration when creating the questionnaire.

Research Questions:

To design and validate Ardashakti Vyayama Scale(AVS) based on the description of Mukha soshā, Sweda Pradurbhaba in Sushruta Samhita.

Scale and response format:

The questionnaire was framed in a close-ended Likert format with 5 options for each question i.e always, often, Sometime, Rarely, never. I always was graded as 5, often as 4, sometimes as 3, often as 2 and never was graded 1.

Validity

Face Validity

Face validity is checking of tool for its validity on the face of it. The face validity evaluates the following of the questionnaire, Readability⁴, Clarity of wording, Layout and style, Feasibility. Face validity indicates the questionnaire appears to be appropriate to the study purpose and content area. It is the easiest validation process to undertake but it is the weakest form of validity. It evaluates the appearance of the questionnaire in terms of feasibility, readability, consistency of style and formatting and the clarity of the language⁵

Content Validation: Any tool's content validation indicates how well each item in the tool matches the idea under examination. Usually, the qualitative technique is used to test it. The Ardashakti Vyayama Lakshana Questionnaire's content was validated through an analysis of the Sushruta Samhita references. Experts in Ayurveda additionally cross-validated the chosen variable and its measurement

capabilities to ensure that it is a reliable means of determining the dominance of a specific Ardashakti Vyayama Lakshana. A sheet with specific factors from the Ardashakti Vyayama Assessment Questionnaire was given to each Ayurvedic expert, and they were asked to indicate the degree to which each variable applied to the identification of Ardashakti Vyayama Lakshana dominance. The deduction was noted. The expert group was made. Questions rated **Five** out of **Five** with first two levels were finally taken for the study⁶

Construct Validation:

To make a construct validity test, every individual question in the Ardashakti Vyayama Lakshana Assessment Questionnaire was cross-examined by an expert group to see the feasibility of the Ardashakti Vyayama Scale, the standard reference of Sushruta Samhita about Ardashakti Vyayama is was converted into 10 questionnaires and every individual question in the Ardashakti Vyayama Assessment Scale was cross examined by an expert group to see the feasibility⁷ of the Ardashakti Vyayama to be conducted by either of common methods of clinical methods i.e inspection and interrogation . The entire questions were found to be convincing for their examination through interrogation met after analyzed the scale assessed factor analysis test with by KMO Bartlett .⁸ The questionnaire is assessed with the following heading.

RATING	ASV SCALE INDEX
EXCELLENT	> 48
GOOD	42-48
AVERAGE	33-42
LOWER AVERAGE	28-33
POOR	< 28

RELIABILITY

Internal consistency.

Internal consistency is typically a measure based on the correlations between different items on the same test (or the same sub scale on a larger test). It measures whether several items that propose to

measure the same general construct produce similar scores. Internal consistency is usually measured with Cronbach's alpha, a statistic calculated from the pair wise correlations between items. Cronbach's alpha value for each question varies from 0.651 to 0.806 giving it an acceptable internal consistency.

FACTOR ANALYSIS:

It is an all-purpose term for a group of methods mainly employed in data reduction and summarization. An entire set of interdependent relationships is examined using factor analysis, an interdependence technique that does not distinguish between dependent and independent variables. The following situations call for the use of factor analysis. In a subsequent multivariate analysis, a new, smaller set of uncorrelated variables should be identified to replace the original set of correlated variables. To pinpoint the underlying dimensions that is, the factors that account for the relationships between a group of variables. To find a new, smaller set of uncorrelated variables to use in multivariate analysis in place of the initial set of correlated variables. To select important variables for use in a subsequent multivariate analysis by narrowing down a larger set of variables. To select important variables from the appropriateness of factor analysis is assessed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy; a value of 0.799 indicates that the analysis is appropriate. It is a general term for a set of techniques primarily used for summarizing and reducing data. Factor analysis is an interdependence technique that looks at a set of interdependent relationships without making a distinction between dependent and independent variables. Factor analysis should be used in the following scenarios: A new, smaller set of uncorrelated variables should be found in a subsequent multivariate analysis to take the place of the initial set of correlated variables. To

pinpoint the underlying dimensions, or contributing variables, that account for a group of variables' correlations. larger set into a smaller set so they can be used in a later multivariate analysis.

RESULTS

Face Validity:

The questionnaire was given to 50 healthy individuals and face validity was assessed for clarity of words, layout and style, and likelihood of the target audience's ability to understand the questionnaire. All participants responded satisfactorily.

Content Validity:

The questions were reviewed by Ayurvedic subject experts for content validation. The clarity of wordings lay out and style of the questionnaire was assessed by giving the prepared format to 50 healthy volunteers. The *Ardhashakti Vyayama* Assessment scale that was finalized was cross-examined by an expert group to see the feasibility of the *Ardhashakti Vyayama* evaluation to be conducted by either of common methods of clinical methods i.e inspection and interrogation.

Construct Validity:

Factor analysis was done to analyse the correlation existing between the different sets of variables in the questionnaire. A correlation matrix was done and the KMO Coefficient of more than 0.6 was considered in the study.

Reliability and Cronbach's Alpha

The Internal consistency shows the Cronbach's Alpha value 0.824 which is excellent and reliable.

Cronbach's Alpha	No of Items
0.824	10

Table No: 1 (Table showing the value of Cronbach's Alpha)

Factor Analysis:

The KMO and Bartlett's Test value is .799 and the P value is 0.000 which is highly significant.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.799
Bartlett's Test of Sphericity	139.837
Approx. Chi-Square	45
df Sig	0.000

Table No:2(Table showing the value of KMO and Bartlett's Test)

Descriptive Statistics

	Mean	Std. Deviation	Analysis N
Qn 1	2.800	1.15511	50
Qn 2	3.0400	1.10583	50
Qn 3	2.6000	1.26168	50
Qn 4	2.3400	1.15370	50
Qn5	2.2000	0.88063	50
Qn 6	2.1400	1.06924	50
Qn 7	2.1400	1.12504	50
Qn 8	2.8800	1.39445	50
Qn 9	3.0400	1.12413	50
Qn10	2.9600	1.38446	50

Table No:3(Table showing the value of Descriptive Statistics)

DISCUSSION

A consideration for the current study's design was the lack of instruments for evaluating *Ardhashakti Vyayama*. An essential tool for assessing health is the fundamental idea of *Vyayama*, in general, and *Ardhashakti Vyayama* in particular. These foundational ideas were thoroughly examined through an examination of the core *Ayurvedic literature*. It was discovered that the majority of the attributes listed in the old texts about *Ardhashakti Vyayama* still hold true today. After gathering all of the *Lakshana* and turning them into questions, a closed-ended questionnaire was created. These questions were graded using a five-point Likert scale. The following was considered when framing the questionnaire. After submitting the questionnaire to subject experts for content validation, it was discovered that the questionnaire accurately represented the content under investigation. The questionnaire's face validity was verified by ensuring that it was clear and easy to understand. After conducting a construct validity analysis to determine its clinical applicability, it was discovered that *Ardhashakti Vyayama* could be easily accessed through an interview process. When factor analysis was performed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, it was determined that the analysis was appropriate. Cronbach's alpha was used to check internal consistency, and the results showed that it was statistically significant.

CONCLUSION

The assessment of *Ardhashakti Vyayama* Scale is a very essential tool in Bala analysis. This acts like a window to understanding the individual's physical ability. There is a big lacuna to access the *Ardhashakti Vyayama* assessment of an individual is concerned. This is my very first attempt in this direction. An interview of an individual based on this questionnaire will serve as an effective and objective analysis of the scale of *Ardhashakti Vyayama*.

ACKNOWLEDGEMENT:

It is with immense gratitude that we acknowledge the support and help of our institution SJGAMC&H, Koppal, and our principal Dr. B.S Savadi for all the support and motivation in this study.

REFERENCES

1. Kashinath Shashtri ,Dr.Gorakhanatha chaturvedi chaukambha bharti academy first edition Charaka Samhita hindi vyakhya sutra sthana sloka no 7/31 page no 131.
2. Kashinath Shashtri ,Dr.Gorakhanatha chaturvedi chaukambha bharti academy first edition Charaka Samhita hindi vyakhya sutra sthana sloka no 7/35 page no 132
3. Yadavaji Trikamji Acharya, Narayan Ram Achary, editors. Nibandha Sangaraha dalhan commentary on Sushruta Samhita by Acharya Sushruta, Chikitsa stana ; Anagatabadha Pratishedham adhyayama: chapter 24, sloka no 47. Varanasi: Chowkhambha Sanskrit S
4. Development and validation of Ayurveda-based assessment scale for anxiety Basavaraj R. Tubaki a, G.S.

- Lavekar b, C.R. Chandrashekar c, T.N. Sathyaprabha d, Bindu M. Kutty d,
5. A pilot study on design and validation of Manasa prakriti questionnaire Ravi k v, ¹chiplunkar Shivprasad² Shetty Suhas kumar³
 6. Erlbaum Associates; 1988. [33] Gupta Atrideva, editor. Astanga sangraha by Acharya Vagbhata, Sutrasthana ; dohadi vijanaiya adhyaya, chapter 19, verse 6. Varanasi: Krushnadas Academy; 2002. p. 153. [34] R Tubaki Basavaraj, Chandrashekar CR, Sudhakar D, Sathya Prabha TN, S Lavekar G, Kutty Bindu M. Clinical efficacy of Manasamitra vataka (an Ayurveda medication) on generalized anxiety disorder with comorbid generalized social phobia: a randomized controlled study.
 7. J Alternative Compl Med June 2012;18(No. 6):612e21. [35] Tubaki Basavaraj R, Verma Anupriya, Sasidharan Arun, Sulekha S, Chandrashekar CR, Sudhakar D, et al. Manasamitra vataka and shirodhara treatment preserve slow-wave sleep and promote sleep continuity in patients with generalized anxiety disorder and Comorbid generalized social phobia. Curr Sci 2016;111(NO. 2):283e92
 8. Validation of the humor styles questionnaire in health care professionals Miriam lenero cirjano, Juan Ignacio Torres-Gonzalez 20 November 2022

Source of Support: Nil

Conflict of Interest: None Declared

How to cite this URL: Pallabi Manjari Singha et al: Designing and validation of Ardhashakti Vyayama scale. International Ayurvedic Medical Journal {online} 2024 {cited January 2024} Available from: http://www.iamj.in/posts/images/upload/155_161.pdf

ANEXXURE

ASV Scale (*Ardhashakti Vyayama Scale*)

Name: _____ Age: _____

1. Do you feel Dryness of mouth during Exercise?

(a) Never (b) Rarely (c) Sometimes (d) Often (e) Always

2. By doing rapid Exercise do you appreciate exhale of air by Mouth?

(a) Never (b) Rarely (c) Sometimes (d) Often (e) Always

3. During Exercise is their appearance of Sweat in Axilla?

(a) Never (b) Rarely (c) Sometimes (d) Often (e) Always

4. During Exercise is their appearance of Sweat on Forehead?

(a) Never (b) Rarely (c) Sometimes (d) Often (e) Always

5. During Exercise is their appearance of Sweat on Nose?

(a) Never (b) Rarely (c) Sometimes (d) Often (e) Always

6. During Exercise is their appearance of Sweat over the Joints of Hands?

(a) Never (b) Rarely (c) Sometimes (d) Often (e) Always

7. During Exercise is their appearance of Sweat over the Joints of Legs?

(a) Never (b) Rarely (c) Sometimes (d) Often (e) Always

8. During Exercise is their appearance of Sweat all over the Body?

- (a) Never (b)Rarely (c) Sometimes (d) Often (e) Always

9. Do you feel Lightness in the body after Exercise?

- (a) Never (b)Rarely (c) Sometimes (d) Often (e) Always

10. Do you appreciate hunger & thirst after Exercise?

- (a) Never (b)Rarely (c) Sometimes (d) Often (e) Always