



**THE STRUCTURAL FOUNDATION OF IMMUNITY EXPLORING THE AYURVEDIC  
CONCEPT OF SAMHANANA BALA AND ITS CORRELATION WITH  
VYADHISHAMATVA (DISEASE RESISTANCE)**

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**ABSTRACT**

This article explores the classical Ayurvedic concept of *Vyadhikṣamatva* (disease resistance or immunity) and its foundational link to *Samhanana Bala* (strength derived from structural compactness). In *Ayurveda*, *Vyadhikṣamatva* is the inherent capacity to prevent disease (*Vyādhi-utpād-pratibandhakatva*) and to suppress a manifest disease (*Vyādhibala-Virodhitva*). This resilience is closely intertwined with *Bala* (strength/vigor), which is broadly classified as innate, temporal, and acquired. The term *Samhanana* refers to the body's physical integrity—the optimal cohesion, firmness, and proportion of *Mamsa* (muscle), *Asthi* (bone), and *Rakta* (blood). It is one of the ten essential parameters (*Daśa-vidha Parīkṣā*) used in patient assessment. A body with excellent compactness (*Pravara Samhanana*) is considered to possess superior strength (*Uttama Bala*), while poor compactness (*Avara Samhanana*) indicates low strength, establishing *Samhanana* as a key structural determinant of physiological resilience. The article posits that *Samhanana Bala* serves as the physical substrate for robust *Vyadhikṣamatva*. Modern research increasingly recognizes the role of physical fitness, lean mass, and musculoskeletal integrity in influencing systemic inflammation and immune outcomes, suggesting plausible physiological correlates for this ancient linkage. We propose an integrative research agenda to systematically validate the *Samhanana–Bala–Vyadhikṣamatva* triad. Future studies should correlate traditional *Samhanana* grading with objective metrics such as DXA/BIA for body composition, grip strength, and specific immune biomarkers. Validating this connection could establish *Samhanana Bala* as an early structural marker of immune competence, guiding personalized interventions involving diet, exercise, and Ayurvedic *Rasayana* (rejuvenative) therapies for enhanced public health and resilience.

**KEYWORDS:** Ayurveda, Vyadhikṣamatva, Samhanana, Bala, Immunity, Structural Integrity, Body Composition, Rasayana, Disease Resistance.

**INTRODUCTION**

In classical *Ayurveda*, the notion of immunity is embodied by the concept of *Vyadhikṣamatva* (viśaya = disease, kṣamatva = capacity to resist). It denotes the inherent ability of an individual to oppose or tolerate disease, prevent its onset, and recover efficiently when afflicted.

*Ayurvedic texts often explain Vyadhikṣamatva in two dimensions<sup>[1]</sup>*

1. *Vyādhibala-Virodhitva* – the capacity of the body to counteract or suppress a manifest disease.
2. *Vyādhi-utpā..d-pratibandhakatva* – the power to prevent the manifestation or recurrence of disease.

In modern parlance, these map loosely to (a) the ability to fight infection or disease progression, and (b) preventive or barrier immunity (resilience).

*Ayurveda* links *Vyadhikṣamatva* to multiple pillars of physiology — *doṣas*, *dhātus*, *agni*, *ojas*, and the integrity of *srotas*. Balanced *doṣas*, optimal metabolic fire, healthy tissue nourishment, and maintained functional channels (*srotas*) are all considered prerequisites for robust disease resistance.

Furthermore, *Ayurveda* equates *Bala* (strength, vigor) with the power of immunity. *Bala* is considered in three forms: *Sahaja Bala* (innate or constitutional strength), *Kalaja Bala* (strength modulated by age, season, time), and *Yuktikrita Bala* (acquired strength via diet, lifestyle, and therapeutics).<sup>[2]</sup>

Because *Bala* and *Vyadhikṣamatva* are conceptually interwoven, factors that enhance *Bala* are also considered foundational to improving one's immune resilience.<sup>[3]</sup>

#### ***Samhanana Bala*: Definition and Its Physiological Role<sup>[4]</sup>**

While *Bala* in *Ayurveda* is broadly “strength,” *Samhanana* refers to the compactness, integrity, and cohesion of the bodily framework. In the classic *Daśavidha Parīkṣā* (tenfold examination), *Samhanana Parīkṣā* is used by the clinician to assess the bodily build and internal compactness (bones, muscles, joints, vasculature) of an individual.

The term “compactness” (*Samhanan*, *Samhita*, *Samyojana*) implies well-bound tissues, symmetric proportions, cohesive joints, and properly aligned musculature. A body with optimal *Samhanana* is called *su-samhanana* (good compactness), while lesser or unbalanced compactness is termed *madhyama* or *āvāra Samhanana*.

Several authors relate *Samhanana* with *Bala*: a person possessing *su-samhanana* is presumed to have *uttama Bala* (excellent strength); moderate *Samhanana* corresponds to moderate strength; and *āvāra Samhanana* indicates weaker strength.

#### **Definition and Classical Sources**

- *Samhanana* is one of the components in the *Daśavidha Parīkṣā* (the tenfold examination) used in assessing a patient's *Bala* (strength), health status (*Svastha*), and capacity to benefit from therapies.
- The classical texts (*Charaka*, *Suśruta*, etc.) associate *Samhanana* with the tonic state of *Mamsa* (muscle tissue), *Asthi* (bone tissue), and *Rakta* (blood tissue) — i.e. how well these tissues are nourished, firm, properly proportioned, and functional.
- *Samhanana* is classified typically into three levels: *Pravara* (excellent), *Madhyama* (moderate), and

*Avāra* (poor/low), depending on the degree of compactness, firmness, symmetry, muscle tone etc.

Interestingly, modern *Ayurvedic* scholarship is exploring how *Samhanana* may serve as a surrogate marker for physiological robustness, tissue health, and disease resistance (i.e., immune competence) — because compact, well-nourished tissues are less vulnerable to pathological invasion or degeneration.

In sum, *Samhanana Bala* can be viewed as the structural foundation of physiological resilience — a steady, well-organized bodily substrate upon which the dynamic aspects of immune readiness (*Vyadhikṣamatva*) are superimposed.

Thus, in *Ayurveda*, immunity is not a separate isolated system, but expresses through the synergy of *Bala*, *Samhanana*, *Agni*, *dhātus*, and *Ojas*. In this article, we will further explore how *Samhanana Bala* — the compactness and integrity of bodily architecture — relates to immune strength (*Vyadhikṣamatva*), and whether this link has plausible physiological correlates or measurable parameters in modern science.<sup>[5]</sup>

#### **LITERATURE REVIEW**

##### **Defining *Samhanana Bala*<sup>[6,7]</sup>**

*Samhanana* refers to the compactness and cohesion of the body — well-formed bones, firmly bound joints, and properly attached muscles and tissues. It represents the structural integrity of the body framework. *Bala* denotes strength, vigor, and the capacity to resist disease (*Vyadhikṣamatva*). *Ayurveda* recognizes that good *Samhanana* directly contributes to *Bala*, as a well-knit body offers greater endurance and disease resistance.

##### **Components of *Samhanana Bala* include**

- Musculoskeletal integrity – strong bones, joints, and muscles that ensure stability and resilience.
- Tissue cohesion – proper binding of *dhātus* and intact *srotas*, supporting nourishment and defense.
- Constitutional basis (*Prakṛti*) – *Kapha*-dominant individuals often show better *Samhanana*, while *Vāta* types may have less compactness.

Thus, *Samhanana Bala* can be understood as the strength arising from structural compactness, forming the physical foundation of immunity in *Ayurveda*.

In the *Vimāna Sthāna*, Āchārya *Charaka* emphasizes that the patient is the central focus of medical practice. Examination of the patient is essential to assess longevity, strength, and the degree of morbidity. The choice and dosage of drugs must be tailored according to the patient's strength, since inappropriate administration of highly potent therapies without proper evaluation can be harmful. A weak patient may be unable to tolerate powerful remedies, particularly those dominated by *Agni* and *Vāyu*, as well as invasive procedures such as

cauterization, alkali application, or surgery, which may even prove fatal due to their intense and intolerable effects. Therefore, in such individuals, treatment should be initiated with mild, gentle, non-harmful, and gradually progressive therapies that avoid complications or emergent conditions. This principle is considered especially important in the management of women, who are described in the texts as having a tender, delicate, and sensitive constitution, with comparatively less strength and greater dependence on others.

Conversely, if a drug of low potency is administered without proper examination in patients who are strong but afflicted with severe disorders, it proves ineffective. Hence, thorough examination of the patient is essential, taking into account *Prakṛti* (constitution), *Vikṛti* (morbidness), *Sara* (quality of tissues), *Samhanana* (compactness of the body), *Pramāṇa* (body measurements), *Satmya* (adaptability), *Satwa* (psychological strength), *Āhāra Śakti* (digestive and assimilative capacity), *Vyayāma Śakti* (capacity for exercise), and *Vaya* (age), in order to evaluate the degree of strength.

The *Aṣṭāṅga Saṁgraha* highlights that the health of a child at birth is largely dependent on the mother's dietary regimen during pregnancy. *Ayurveda* prescribes monthly guidelines (*garbhini paricharya*) to ensure the well-being of both mother and fetus. In the context of *samhanana*, it is stated that if a pregnant woman consumes *kṣīra-yavāgu* (gruel prepared with milk) in the eighth month, she gives birth to children with superior *samhanana* [Ast. Sa. Śārīra Sthāna 3/11]. Thus, women anticipating the birth of a well-built child are advised to enhance the quality of their diet during pregnancy.

*Samhanana* is also affected by prolonged illness, leading to its decline. Depending on the underlying pathology, patients may be advised *brimhaṇa* (nourishing therapy) or *lāghana* (lightening or reducing therapy). When these interventions are practiced appropriately and in proper dosage, they help restore compactness of the body [Ast. Sa. Sūtra Sthāna 24/68].

Āchārya *Suśruta* further explains that individuals with well-developed musculature exhibit *su-samahata* (well-built) body types. Based on the principle of *sāmānya-viśeṣa*, muscle tissue is best nourished by consuming meat or meat preparations. Thus, individuals who regularly consume meat, meat soups [Su. Sa. Sūtra Sthāna 46/365], or other animal protein sources—given that muscles are predominantly composed of proteins—are more likely to develop *pravara samhanana* (superior compactness).<sup>[8]</sup>

Vyadhikṣamatva is the classical Ayurvedic notion of disease-resistance (immunity) — described as the capacity to prevent disease onset and to withstand or recover from disease.<sup>[9]</sup>

Ojas, Agni and Bala are central determinants: *Ojas* (vital essence) represents the subtle end-product that confers resilience, *Agni* (metabolic fire) maintains tissue nourishment and immune readiness, and *Bala* (strength) is the observable capacity to resist disease.<sup>[10]</sup>

## BALA<sup>[10]</sup>

### Vyadhikṣamatva and Its Relationship with Bala

In *Ayurveda*, *Vyadhikṣamatva* refers to the body's inherent ability to resist and combat diseases. This concept is closely linked to *Bala*, which encompasses both physical and mental strength. *Charaka* emphasizes that the foundation of health relies entirely on *Bala*, which can be categorized into three types:

#### 1. Sahaja Bala (Innate Strength)

This is the constitutional strength present from birth, inherited from one's parents. It encompasses both physical and mental aspects and is influenced by the quality of the parents' reproductive elements and the mother's health during pregnancy. *Sahaja Bala* can be correlated with innate immunity, as it represents the body's natural resistance to diseases.

#### 2. Kalaja Bala (Seasonal and Age-Related Strength)

This type of strength varies according to seasons and the individual's age. During certain seasons, such as late winter, spring, and summer (*Adana Kala*), the body's strength is lower. Conversely, during stormy seasons, harvest time, and winter (*Visarga Kala*), the strength is higher. Additionally, strength is minimal in childhood and old age, while it peaks during youth. *Kalaja Bala* reflects the body's adaptability to environmental changes and aging processes.

#### 3. Yuktikṛta Bala (Acquired Strength)

This strength is gained through a balanced lifestyle, including proper diet, physical activity, and the use of rejuvenative therapies (*Rasayana*). By following healthy practices, individuals can enhance their resistance to diseases. *Yuktikṛta Bala* corresponds to acquired immunity, where the body develops strength through external factors and conscious efforts.

In summary, *Vyadhikṣamatva* is the body's capacity to prevent and combat diseases, and it is fundamentally dependent on the strength (*Bala*) derived from these three sources. Maintaining and enhancing these types of *Bala* through appropriate lifestyle choices is essential for preserving health and preventing illness.

#### 4. Correlation Between Samhanana Bala and Immunity

Structural compactness (*Samhanana*) supports *Bala* — a well-knit musculoskeletal and tissue framework reduces vulnerability and is classically associated with better *Vyadhikṣamatva*.<sup>[11]</sup>

By maintaining tissue cohesion and intact *srotas*, *Samhanana Bala* is said to strengthen physiological

barriers and systemic resilience, thereby aiding prevention and recovery.

### 5. Modern Perspectives and Correlations<sup>[12]</sup>

Analogues in contemporary medicine include physical fitness, lean mass, bone-muscle integrity and connective-tissue health — all of which influence susceptibility to infection and recovery. Studies link lower muscle mass/strength and adverse body composition with higher inflammatory markers and worse outcomes (ScienceDirect).

Practical biomarkers that could map to *Samhanana* include body composition (DXA/BIA), grip strength, bone density and inflammatory/immunity markers (CRP, selected cytokines, lymphocyte counts).

### 6. Clinical and Lifestyle Implications<sup>[13]</sup>

Daily routines (*Dinacharya*), balanced diet, targeted exercise (to preserve muscle and bone), and Ayurvedic *Rasayana* interventions are recommended to preserve *Samhanana Bala* and *Vyadhikṣamatva*. Evidence exists for several *Rasayana* herbs/formulations showing immunomodulatory effects in experimental and clinical studies.

## CONCLUSION AND DISCUSSION

*Samhanana Bala* — the body's structural compactness — is tightly linked in Ayurveda to immune competence. Integrative research using objective body-composition measures (DXA/BIA, grip strength) alongside immune biomarkers and standardized *Samhanana* scoring would clarify and validate this traditional linkage for modern practice.<sup>[13]</sup>

While *Ayurveda* has long emphasized the interrelationship of *Samhanana* (structural compactness), *Bala* (strength), and *Vyadhikṣamatva* (immunity), modern science has only partially explored these connections. A clear research gap exists in systematically correlating structural integrity (body composition, musculoskeletal strength) with functional immunity (biomarkers, resilience to infection).

Bridging this gap could open new avenues for integrative health assessment: using *Samhanana Bala* not only as a traditional prognostic tool but also as a structural marker of immune competence. Future studies combining Ayurvedic examination with modern metrics like DXA scans, grip strength, inflammatory markers, and nutritional indices could validate this linkage.

### Such integrative models would help

- Develop early screening tools to identify individuals at higher disease risk due to weak compactness or poor *Bala*.
- Guide personalized interventions in diet, exercise, and *Rasayana* therapy to enhance both structure and immunity.

- Provide a holistic framework that unites ancient insights with modern preventive medicine, ultimately strengthening public health strategies.

Thus, understanding the *Samhanana–Bala–Vyadhikṣamatva* triad offers a promising frontier in building resilient, health-promoting systems that transcend disciplinary boundaries.

## Future Research Directions

### 1. Cross-sectional correlation of *Samhanana Bala* and body composition

In classical *Ayurveda* links *Samhanana* (structural compactness) with *Bala* (strength), future studies could stratify individuals based on *Samhanana Bala* grading and compare them with objective musculoskeletal indices such as lean mass, bone density, and grip strength. Modern evidence already shows a strong correlation between grip strength and muscle mass as indicators of systemic health (Chan et al., 2022; Wu et al., 2022).<sup>[14]</sup>

### 2. Immune marker pilot trial based on *Samhanana Bala*

To explore direct links with immunity, individuals grouped by *Samhanana Bala* could be compared for immune competence using markers like lymphocyte subsets, CRP, IL-6, and immunoglobulins. Prior studies demonstrate that low lean mass is associated with increased inflammation, adverse outcomes, and reduced resilience (Thackeray et al., 2021; Li et al., 2025), suggesting measurable pathways through which structural strength may influence immunity.<sup>[15]</sup>

### 3. Intervention study with *Rasayana* and lifestyle measures

A randomized study could test whether *Rasayana* formulations (e.g., *Aśvagandhā*, *Āmalakī*) combined with structured exercise and balanced diet enhance both *Samhanana Bala* and immune markers. Preclinical and clinical reports already highlight immunomodulatory and restorative effects of *Rasayanas* (Sibina & Rajam, 2024; Datta et al., 2022), making this an evidence-based strategy for integrative validation.<sup>[16]</sup>

The Ayurvedic construct of *Vyadhikṣamatva* (disease resistance or immunity) is fundamentally linked with *Samhanana Bala* (strength derived from structural compactness). Classical treatises such as the *Caraka Samhitā* (Sūtrasthāna 7/17) and *Suśruta Samhitā* (Sūtrasthāna 35/16) recognize *Samhanana* as a prognostic determinant, where superior compactness (*Pravara Samhanana*) confers enhanced *Bala* and longevity, whereas poor compactness (*Avāra Samhanana*) is associated with diminished vitality and greater susceptibility to disease. Thus, *Samhanana* was conceptualized not merely as an anatomical feature but as an integrated marker of resilience.

### Ojas and Immune Competence

The ultimate expression of tissue integrity in *Ayurveda* is *Ojas*, considered the quintessence of all *Dhātus* and the substratum of *Vyadhikṣamatva*. Adequate *Samhanana* ensures proper *Dhātu-paripūrṇatva* (optimal tissue formation), which supports the stability of *Ojas*. This construct resonates with biomedical evidence linking musculoskeletal health to systemic immune function. Clinical studies report that reduced lean mass is associated with impaired lymphocyte proliferation, elevated inflammatory mediators, and poorer outcomes in both infectious and chronic diseases (Thackeray et al., 2021; Li et al., 2025). Thus, the Ayurvedic concept of *Ojas*, mediated through *Samhanana Bala*, may be interpreted as the physiological correlate of modern immune competence.

### Role of Agni and Dhātu Pāka

The maintenance of *Samhanana Bala* is further dependent on balanced *Agni* (digestive and metabolic activity). Proper *Agni* ensures effective *Dhātu Pāka* (tissue metabolism), resulting in compact and stable structural integrity. Conversely, deranged *Agni* leads to incomplete *Dhātu* formation, impaired *Samhanana*, and weakened *Vyadhikṣamatva*. This Ayurvedic framework aligns with evidence that malnutrition, metabolic inefficiency, and sarcopenia compromise tissue strength and immune response, underscoring the convergence of traditional and modern perspectives on metabolism, tissue health, and immunity.

### Musculoskeletal Health as a Proxy for Bala

From a translational viewpoint, *Samhanana Bala* can be objectively correlated with modern indices of musculoskeletal integrity. Handgrip strength, for instance, has been validated as a predictor of overall morbidity, frailty, and mortality in diverse populations (Chan et al., 2022; Wu et al., 2022). Similarly, bone mineral density and lean mass quantified through DXA or BIA provide measurable proxies of tissue compactness. These biomedical markers parallel the Ayurvedic assessment of *Samhanana*, thereby offering a bridge between traditional prognostic criteria and contemporary clinical practice.

### Rasāyana Interventions and Immunomodulation

*Rasāyana* therapy, described as the means to promote *Dhātu-nourishment*, stabilize *Ojas*, and augment *Vyadhikṣamatva*, acquires renewed relevance in the present context. Herbs such as *Aśvagandhā* (*Withania somnifera*), *Āmalakī* (*Emblica officinalis*), and *Gudūci* (*Tinospora cordifolia*) are documented to enhance tissue strength and immune resilience. Recent experimental and clinical studies substantiate these traditional claims, reporting immunomodulatory, antioxidant, and anti-inflammatory properties of *Rasāyana* formulations (Sibina & Rajam, 2024; Datta et al., 2022). This convergence provides a mechanistic framework wherein *Rasāyana* intervention strengthens *Samhanana*, stabilizes *Ojas*, and thereby augments immune competence.

### Public Health and Research Implications

The conceptual linkage between *Samhanana*, *Bala*, and *Vyadhikṣamatva* also has significant implications for predictive and preventive health care. Just as grip strength,  $VO_2$  max, and body composition analysis are employed in modern preventive medicine, *Samhanana* assessment could serve as a cost-effective screening tool for identifying individuals at higher risk of morbidity. Future research should adopt a three-tiered approach: (i) cross-sectional studies correlating *Samhanana* grading with objective indices of muscle and bone health; (ii) longitudinal studies examining the incidence of infections and chronic diseases across *Samhanana* categories; and (iii) interventional studies testing the efficacy of *Rasāyana* and lifestyle measures in enhancing both *Samhanana Bala* and immune biomarkers.

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